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Mainstreaming the gender perspective in industrial innovation policy
A proposed framework for UNIDO's Industrial Policy Lab

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Mainstreaming the gender perspective in industrial innovation policy
A proposed framework for UNIDO's Industrial Policy Lab

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Executive summary

Introduction

The scope of this report is twofold: first, we present a conceptual framework for mainstreaming the gender perspective in industrial innovation policy. Second, building on this framework, we propose some elements to guide the development of a dedicated gender mainstreaming workstream within UNIDO's Industrial Policy Lab (IPL).

The conceptual framework

The conceptual framework outlined in this report serves as a practical guide for documenting and analysing industrial innovation policies through a gender-sensitive lens. It facilitates a reflection on the elements to consider when designing such policies. The framework is structured around four key pillars:

- UNIDO's approach to fostering innovation and industrialization as drivers of inclusive and sustainable development;
- The need to accelerate progress towards the United Nations' Sustainable Development Goals (SDGs), particularly SDG5: "Gender Equality" and SDG9: "Industry, Innovation and Infrastructure";
- UNIDO's understanding of industrial policymaking as a multidimensional, evidence-based approach to inform decision-making processes and track progress towards achieving an agreed set of industrial development goals; and,
- An initial review of the Latin American experience.

A policy cycle approach to policymaking

The proposed framework for mainstreaming the gender perspective in industrial innovation policy follows a five-stage policy cycle, which includes a *diagnosis* phase, a *strategy formulation* stage, the definition of *policy*, including concrete instruments to support *policy implementation*, and the final stage of *monitoring and evaluation* (M&E) to sustain policy learning and accountability. Diagnosis involves identifying the realities that need to be transformed; strategy focuses on defining the goals to be achieved; policy instruments design intervention tools and actions to facilitate this transition; implementation applies the instruments; and M&E measures and analyses impacts and outcomes.

The concept of the policy cycle allows us to highlight the resources and capabilities needed at each stage of the policymaking process based on the premise that any policy aimed at transforming an established reality must be grounded in an experimental and iterative process of diagnosis, testing and adjustment. In this respect, this is a "living" document intended to be enhanced through the application of this guide in real policy scenarios, helping us identify key elements and future lines of research to improve public policy for development.

Gender mainstreaming

Mainstreaming requires consideration of how different genders may be impacted at each stage of the policymaking cycle. During the diagnosis phase, this entails identifying existing gender gaps and setting specific objectives in the strategic planning phase to address and eliminate them. Implementation must account for the gender composition of beneficiaries and how gender influences the content and outcomes of the policy initiative, which may take the form of a programme or a specific project. Finally, the M&E stage should include gender-disaggregated data and policy assessments.

Two elements emerge as key enablers of a successful industrial innovation policy with a gender perspective. First, these policies must be embedded within broader strategies for industrial development and gender equality; otherwise, they risk reinforcing existing technological and gender disparities. Second, effective implementation requires a combination of multiple capabilities, including institutional expertise, gender-focused training, and comprehensive understanding of the specific environment to be transformed.

Latin America and the Caribbean: An overview

The geographical scope of the evidence supporting this proposed framework focuses on countries in the Latin America and the Caribbean (LAC) region, considering the role of national specificities and the development challenges presented by emerging technologies. This evidence draws from a review of literature on innovation systems and development in the LAC region, complemented by stakeholder interviews and analyses of practical cases of industrial and innovation policies that have incorporated gender perspectives. Eleven countries were initially identified based on their institutional frameworks, policy experiences and gender mainstreaming initiatives. A more detailed analysis was conducted on industrial innovation policies in three of these eleven countries. Interviews with relevant stakeholders and documentary analyses were carried out for Chile, Peru and the Dominican Republic.

The findings indicate that policies in these countries incorporate the gender perspective through mechanisms such as "premium" financial incentives, mandatory quotas and prioritization criteria. Lessons for an Industrial Policy Lab for Gender Mainstreaming (IPL-GM) derived from this review include the importance of aligning gender-related incentives with industrial development goals and the need for strong institutional capabilities for effective policy integration.

Towards an Industrial Policy Lab for Gender Mainstreaming

The findings from applying the conceptual framework to the case of LAC reveal a heterogenous situation in the region, and highlight the importance of integrating the gender perspective into a broader industrial development strategy based on innovation. This aligns with the goal of establishing an Industrial Policy Lab for Gender Mainstreaming (IPL-GM). Future steps include defining the case selection, organizing the workshop agenda, and applying the framework to gain deeper insights. These initiatives could contribute to UNIDO's efforts to advance gender-inclusive industrial innovation policies.

This report contributes to the activities of UNIDO's IPL in 2025. The IPL will support the review and refinement of the conceptual framework while expanding the compilation of documented cases. This compilation will serve as a repository of best practices and critical components for designing industrial innovation policies with a gender perspective. The intended outcome of this emerging work within UNIDO's IPL is to provide a minimum evidence base for UNIDO Member States to mainstream gender considerations into the formulation of policies that foster industrial innovation.

A. Mainstreaming the gender perspective in industrial innovation policy: A conceptual framework

1. Introduction

This document is an output of the workstream "Female Participation in Medium- and High-Tech Industries in Latin America and the Caribbean (LAC)", which is part of the project "Science, technology and innovation for the achievement of Sustainable Development Goal 9" currently being implemented by UNIDO with support from the Government of the Republic of Korea. The objective of this workstream is to:

(i) propose a conceptual and methodological framework for documenting cases of industrial policies aimed at closing the gender gap in the productive sector;

(ii) document illustrative public policy cases targeting gender gap reduction in medium- and high-tech industries to build a compilation of diverse direct and indirect policy approaches; and,

(iii) support a capability-building agenda for policymakers by providing tools for policy design, implementation and monitoring from a gender perspective. These efforts serve as the foundation for a dedicated line of work within UNIDO's IPL.

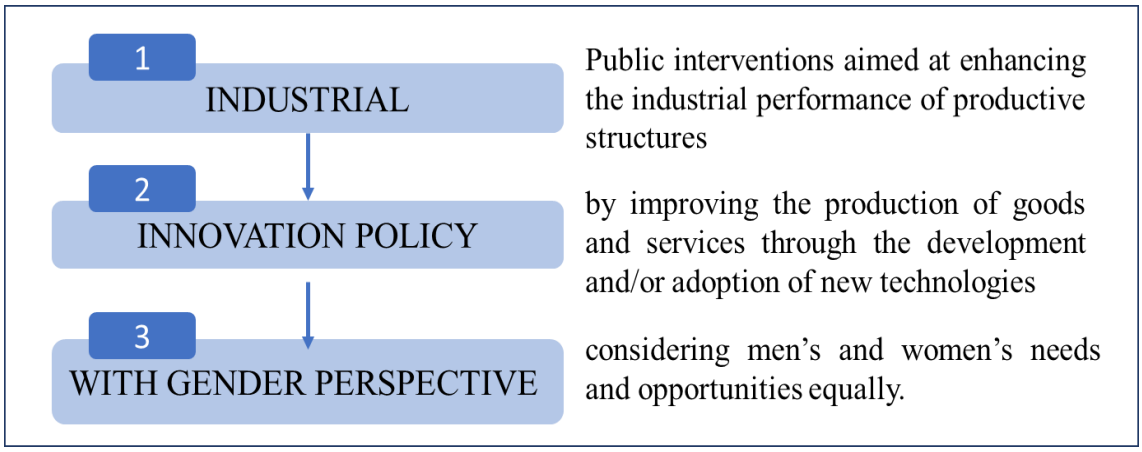
The remainder of this document is structured as follows: after this brief introduction, Section 2, based on the literature, discusses the interplay of industrial and innovation policies. Against this background, we introduce the notion of gender mainstreaming, including key concepts and evidence on the gender gap. Section 3 outlines the conceptual framework, describing how different elements and relationships within the policy process can be analysed and measured. A set of questions to address gender mainstreaming at each stage of the policy cycle is presented as well. An overview of the situation in LAC and a preliminary identification of cases are discussed in Section 4. Section 5 concludes with a summary and the next step towards establishing an industrial innovation policy lab with a gender perspective.

2. Innovation, industrial development and gender

2.1. Industrial innovation policy

This section provides a summary of the theoretical foundations of the proposed conceptual framework that connects gender mainstreaming and industrial innovation policy (Fig. 1). The concept of industrial innovation policy emerges from two well-established streams of literature, namely the stream on industrial policy, on the one hand, and that on industrial innovation, on the other. Both have a long tradition in economic literature, particularly within development studies. Recognition of the complementary nature of innovation and industrialization has emerged from these strands of research, alongside the policies designed to support them (Freeman and Soete 1997; UNIDO 2016). More recently, Bonvillian (2024) proposed an integrative definition of these two areas, drawing on the experience of the United States. The author highlights the role of industrial innovation policy as a means for governments to foster innovation approaches within a broadly defined industrial economic policy framework. In this context, the government's scope includes, but is not limited to, supporting research and development (R&D) and the subsequent stages of implementing technological innovations.

Figure 1. Key concepts



Source: Authors' elaboration.

In the LAC context, the literature on industrial policy can be traced to industrialization based on the import substitution strategy that was prevalent during the mid-1950s (Prebish 1949) and globally during the post-war economic expansion (Kaldor 1966; OECD 1964).

Despite the symbiotic relationship between industrial and innovation policies in the literature, UNIDO has identified structural disconnects between the entities responsible for industrial policy and those mandated with promoting innovation among firms in developing countries. This disconnect helps explain—at least in part—the development challenges faced by many developing countries, preventing them from improving their innovation performance, accelerate industrialization and achieve the SDGs (UNIDO 2023).

To date, studies on industrial policy have focused on various aspects of industrial development, such as internationalization, technological upgrading and job creation. Additionally, while the concept of industrialization was initially associated with the manufacturing sector, the extended scope of technological change has demonstrated that primary and services activities can also contribute to a sustained growth strategy based on increasing value added (Attiah 2019; Dasgupta and Singh 2005; Frenken, van Oort, and Verburg 2007; Perez 2010). This shift highlights that increasing value added is a critical element for any long-term growth strategy (Barletta, Pereira, and Yoguel 2014; Frenken et al. 2007). In the case of LAC countries, the region's historical productive structures have placed technological upgrading and structural change at the centre of industrial policy literature (Erbes, Katz, and Suarez 2016).

The recent *rebirth* of industrial policy is based on similar premises of growth and development, but is taking place in a context shaped by the convergence of at least three phenomena. At the geopolitical level, we are witnessing a rebalancing of power, marked by the rapid rise of China as

a major producer of goods, services and technology, impacting global production and trade (Santiago, Haraguchi and Lavopa 2024). In terms of technology, disruptive technological change driven by information and communication technologies, biotechnology and nanotechnology are also making a significant impact. Finally, there is an urgent need for sustainable development, given the environmental impact of industrial production (Aiginger and Rodrik 2020; Lundvall 2023; UNIDO 2024).

Despite the similarity in the premises underpinning interest in industrial policies, development challenges are far more complex today. Industrialization is not simply about increasing the number of industries or pursuing a protectionist strategy. Current discussions on industrial policy emphasize the need for structural transformation (Barletta 2024), sustainable growth (Lundvall 2022), and welfare (Suárez and Erbes 2021), aligning with discussions of policies beyond growth accounting to include sustainability and inclusiveness as important development outcomes. Debates on industrial policy now focus on how to balance economic, social and environmental outcomes (UNIDO 2016), while integrating insights from different economic, technological and public policy realms (Artecona and Velloso 2022).

We posit that industrial innovation policy can be defined as public actions designed to enhance the performance of industrial structures by strengthening capabilities to produce goods and services through the development and/or adoption of new technologies. These policies encompass efforts to foster innovation at the firm level, whether such innovation is new to the firm or at the global level, or whether it is radical and disruptive or merely incremental. This includes policies supporting R&D or any other technological capabilities (including capital goods acquisition), policies to promote investment projects to develop or adopt new technologies, and policies for encouraging the growth of technology-based companies. This also includes policies targeting improvements in productive processes (process innovation) and the development or enhancement of products (product innovation). The emphasis on capacity development is a major distinction relative to Bonvillian's definition (2024), as it allows for the inclusion of efforts aimed at advancing industrial and innovation capabilities in developing countries.

Since Schumpeter's concept of creative destruction (1912), innovation has been recognized as the engine of sustained industrial growth. Extensive theoretical and empirical evidence shows that technological change enables sustained increases in income by generating added value. Within this framework, innovation is defined as the application of new productive techniques, business processes or the development of new products. This includes both radical and incremental developments and innovations that are new to the firm and new at the global level (OECD 2005).

Innovations result from the creation, application and exploitation of knowledge generated from scientific and technological practices related to experience and on-the-job learning, or embodied in machinery and equipment. Innovation efforts involve investments in the creation, application and exploitation of knowledge, while innovation linkages consist of interactions between firms and other organizations within the ecosystem that influences the innovation process. This is what innovation literature refers to as the 'innovation system', which can be national, regional, sectoral or technological, depending on the focus of the analysis.

The national innovation system framework was developed in the nineties as an analytical tool to explain the innovation process. Initially applied to developed countries, it rapidly expanded to LAC (Chaminade, Lundvall, and Haneef 2018; Erbes and Suarez 2016) and other developing regions. While defining or analysing this framework is beyond the scope of this document, it is worth noting that innovation policy is not just about influencing what takes place within firms but also what takes place within the system, whether connected to the presence or absence of institutions or the linkages between them (Arocena and Sutz 2016). Innovation policy also addresses systemic innovation obstacles or barriers to innovation.

National and regional specificities influence the innovation process. In the case of LAC, these specificities result from several stylized facts that shape how firms in the region pursue innovation (or more generally, competitiveness), and how they respond to industrial policy (Dutrénit and Katz 2005; Erbes and Suarez 2020). Historically, the LAC region has been characterized by a paradox: despite strong policy efforts aimed at building scientific and technological capacities, the region features very low levels of investment in science, technology and innovation (STI) (Crespi and Dutrénit 2014). This has resulted in underdeveloped systems with limitations to effectively manage processes of greater technological complexity, where achieving scale plays an important role.

A second stylized fact is that the public sector predominantly finances and executes most R&D investments and activities, creating systems focused on producing scientific knowledge within the academic sphere. The flip side is weak innovation dynamics in the private sector, which is concentrated in a few largely monopolistic companies across multiple productive sectors—referred to as 'islands of modernity'—which compete at the international frontier, while failing to drive the rest of the system forward. The result is a steadily growing gap between LAC and the technological frontier.

Finally, a third stylized fact is the presence of intra- and inter-national heterogeneity. Structural heterogeneity poses an additional challenge for policymakers, as industrial innovation policy must address a wide range of technological capabilities and competitiveness issues.

Accordingly, industrial innovation policy can be oriented towards firms or the innovation system, but its primary goal is developing technology as a means for improving firms' industrial performance.

2.2. Mainstreaming the gender perspective

This document builds on two stylized facts: the existence of a gender gap that disadvantages women in the industrial sphere (WEF 2023), and the need for public policy interventions to close this gap and address its root causes (UNIDO 2015). **The gender gap is significant and is characterized by persistent disparities between men and women in terms of participation, career advancement and income levels within the productive structure.**[1]

The gender gap in the industrial context is evident across two dimensions: vertical and horizontal. The vertical gap refers to the low participation of women in the labour force, in top decision-making positions, or in more technologically complex activities (such as R&D labs), as well as the presence of a gender wage gap for similar roles. The horizontal gap refers to the underrepresentation of women in certain productive sectors while they are overrepresented in others. For example, the participation of women in low-tech and low-productivity industries, such as textiles and personal services, is higher compared to sectors such as information technology (IT) and business services (CEPAL; OIT 2019). These vertical and horizontal gaps are also found within firms, for instance, with a high participation rate of women in administrative and commercial activities, and low in production and logistics.

Adding a gender perspective to industrial innovation policy requires both mainstreaming the gender perspective and closing the gender gap. **Mainstreaming considers how the intrinsic characteristics of men and women influence or interact with each component of public policy at every stage of the policymaking process**. In this respect, mainstreaming is a strategy rather than a single policy, requiring multiple interventions and the integration of measures to ensure that an individual's gender assigned at birth does not determine their opportunities (UNIDO 2015). For instance, gender mainstreaming involves considering how to define the policy problem to account for the differences between men and women, how to ensure policy

[1] Given the limited data available on genders beyond male and female, this document adopts a binary classification. This does not underestimate the impact of the gap on other diversities but highlights the need for further research and the collection of data on the subject.

implementation effectively reaches beneficiaries depending on their gender, and which indicators are needed to measure a policy initiative's impact on men's and women's lives. In the context of industrial development, gender mainstreaming entails considering how women and men are affected differently in terms of wages, career opportunities or entrepreneurship.

UNIDO's approach to inclusive and sustainable industrial development rests on the notion of equality, with gender being a dimension warranting special consideration. Where a gender gap exists, any public policy framed within this strategy should aim to empower women (and girls) to eliminate disparities in opportunities between men and women, participation and other relevant dimensions. Consequently, the presence of gender-based differences should inform the definition of policy problems to be addressed or the realities to be shaped through policy initiatives.

In the context of **industrial innovation, gender mainstreaming entails considering how differing educational and professional trajectories of men and women may influence their likelihood of benefitting from the policy**, for instance, in terms of developing innovation management capabilities to lead R&D teams, access entrepreneurship opportunities to establish their own firms, or to occupy decision-making positions that determine and benefit from innovation initiatives.

Historical differences between men and women are closely linked to the traditional roles they have been assigned in society, with a predominantly sex-based division of labour. These roles influence men's and women's professional trajectories and career opportunities; moreover, they lead to different needs to both fulfil their assigned roles and to challenge them (UNIDO 2015). On the one hand, there are practical needs, namely short-term needs allowing men and women to fulfil their roles. For instance, women bear a greater share of reproductive (unpaid) work, such as household tasks and caretaking responsibilities; hence, they may require more special leave provisions and more flexible work schedules. These are *practical* needs.

However, the unequal distribution of reproductive labour between genders creates a need for public policy assistance that acknowledges the value of this type of work and that promotes co-parenting. This is a *strategic* need. Similar considerations can be made in terms of capabilities. For multiple reasons, women are underrepresented in science, technology, engineering and mathematics (STEM) fields, i.e. they are also underrepresented in STEM-based sectors, including IT. Affirmative actions to increase the participation of women in these sectors address a *practical* need, while public policies to increase the number of female students pursuing STEM careers address a *strategic* need.

In summary, the presence of a gender gap in the productive structure implies that any public policy that disregards the differences in personal and professional trajectories and opportunities between men and women will inevitably perpetuate and actually widen the gap. Incorporating a gender perspective is essential to promoting inclusive and sustainable industrial development. **Mainstreaming the gender perspective in industrial innovation policy entails ensuring that efforts to enhance the industrial performance of productive structures through technological innovation address men's and women's needs and rights equitably, providing equal opportunities for personal and social development.** This approach ensures that the policy contributes to both industrial development and gender equality.

3. A conceptual framework for mainstreaming gender in industrial innovation policies

3.1. Main pillars

In this section, we outline the basic elements of a conceptual framework designed to serve as a practical guide for mainstreaming the gender perspective in industrial innovation policy. The conceptual framework aims to support the policymaking process in fostering industrial development, with gender equality based on two complementary perspectives:

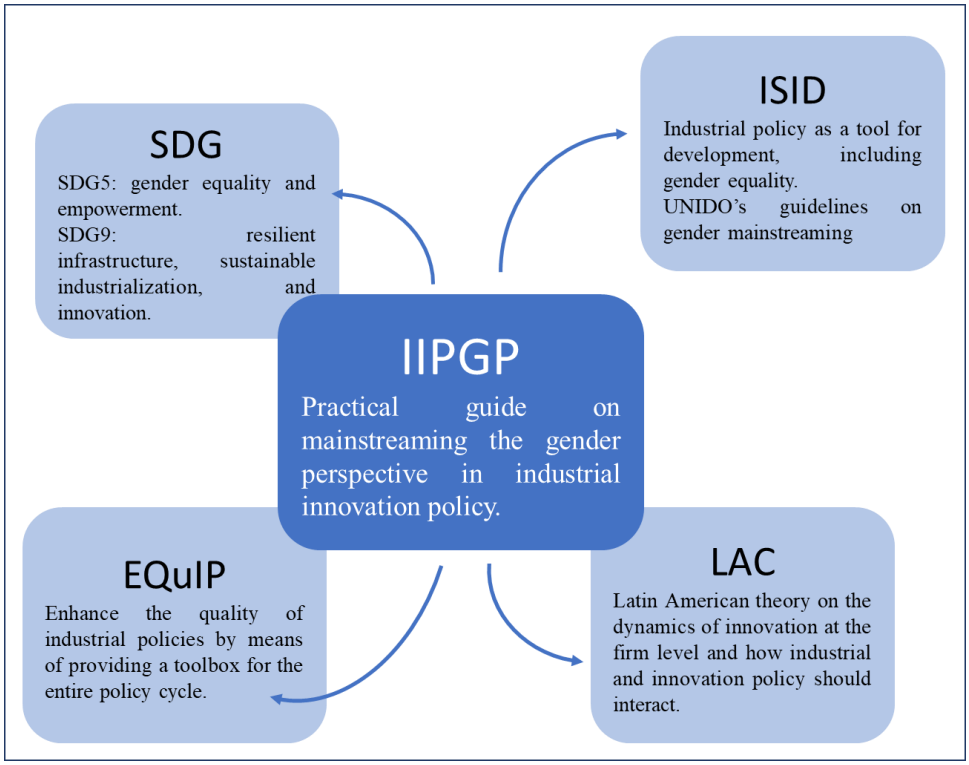
- **Ex-ante through policy assessment and design, and**
- **Ex-post through policy evaluation of results and impacts of public action.**

The conceptual framework proposes a methodological approach and guidance for analysing cases of industrial innovation policy with a gender perspective. It integrates lessons from the EQuIP (Enhancing the Quality of Industrial Policies) toolkit (UNIDO and GIZ 2024a, 2024b), UNIDO's ongoing work on gender mainstreaming, literature on gender gaps, and literature on LAC approaches to national innovation systems, firm-level innovation and economic performance. This document provides tools for policy documentation and analysis, focusing on essential policy elements, common enablers and obstacles, required capabilities and institutional configurations.

Section B presents the results of an initial application of the conceptual framework to illustrative public policy cases in the LAC region. These policies aim to close the gender gap in medium- and high-tech industries. Together, the conceptual framework and the preliminary case studies contribute to building an evidence base to support policymakers' capability development through a potential IPL.

Four pillars support the formulation of the proposed conceptual framework (Fig. 2). First, the framework draws on the **Sustainable Development Goals (SDG)**, in particular SDG5 and SDG9.[2] SDG5 promotes gender equality and the empowerment of women and girls. This involves closing multiple gender gaps. SDG9 focuses on building resilient infrastructure, promoting sustainable industrialization and fostering innovation. Recognition of the longstanding interplay between innovation, industrialization and development, as reframed under innovation theory (Freeman and Soete 1997), is central to SDG9. One key element of the SDGs is their systemic nature: they cannot be achieved in isolation but require coordinated actions across all 17 Goals. In short, this document explores the connections between the Goals in relation to innovation, industrialization and gender equality.

Figure 2. Four pillars underpin the proposed conceptual framework



Source: Authors' elaboration.

The second pillar is based on the 2013 Lima Declaration: Towards **inclusive and sustainable industrial development (ISID)**[3], which identifies gender equality as a key element of industrial policy as a tool for development. Building on this premise, UNIDO published the "Guide on gender mainstreaming. Business, investment, and technology services for private sector

[2] https://www.un.org/sustainabledevelopment/
[3] https://www.unido.org/sites/default/files/files/2018-12/UNIDO_GC15_Lima_Declaration.pdf

development"[4] in 2015. This guide is one of several among a suite of blueprints the Organization has published to align the SDGs with the pursuit of gender equality (e.g. for energy and climate change projects[5] in 2014, and more recently in 2021 for project cycles[6]). These documents provide key definitions of gender equality, women's empowerment and methods for measuring the gender gap. These definitions inform the conceptual framework presented in this document.

Thirdly, **UNIDO and GIZ's EQuIP project**[7] aims to enhance the quality of industrial policies through a set of tools that support the design and implementation of industrial policies. The EQuIP toolbox covers the entire policy cycle, including diagnosing the policy problem, identifying and defining it, and establishing indicators for policy monitoring and evaluation to provide feedback for a new cycle. It also offers indicators and key metrics on how to integrate different policy objectives (economic performance, capability development, structural change) and different SDGs (climate change, poverty alleviation). Gender equality in manufacturing is one of those tools (UNIDO and GIZ 2024a). The EQuIP project provides definitions of industrial inputs, outputs and institutional settings necessary for understanding evidence-based industrial policymaking.

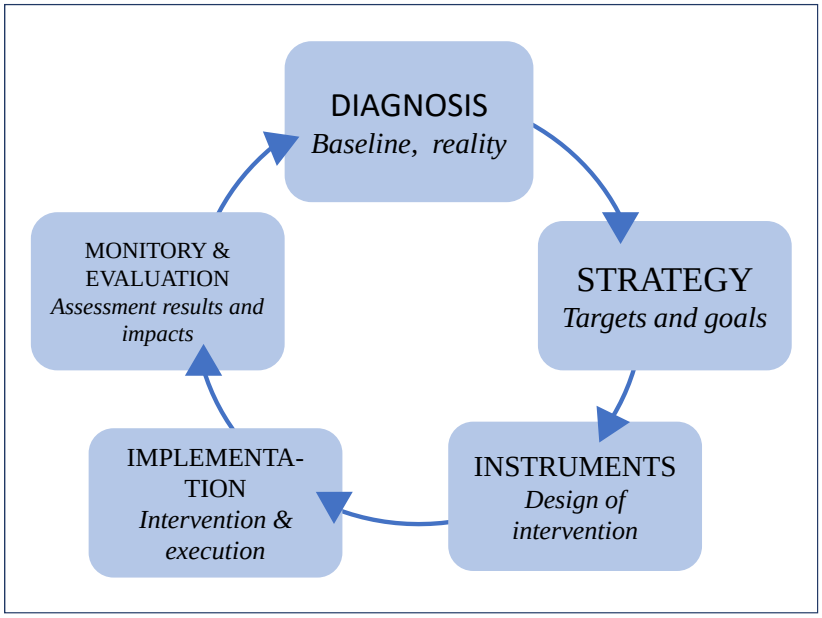
Finally, to connect these general frameworks with LAC's specificities, the region's innovation theory is incorporated into the approach as a final, but no less important pillar. LAC countries have a longstanding tradition of developing industrialization theories as a means to achieve development goals. From the seminal contributions of Sabato and Botana (1968), Herrera (1971) and Furtado (1961) to contemporary works under the Lalics network (Cassiolato and Lastres 2008; Dutrénit and Sutz 2014; Erbes and Suarez 2016), the region has developed a robust body of theoretical and conceptual literature based on evidence, which captures the dynamics of innovation at the firm level and provides insights into how industrial and innovation policy should interact. These contributions enrich this document by offering practical concepts to guide the **design and implementation of industrial innovation policy with a gender perspective (IIPGP).**

[4] https://www.unido.org/sites/default/files/2016-03/new_Guide_on_Gender_Mainstreaming_Business_Investment_and_Technology_Services_for_Private_Sector_Development__3__0.pdf
[5] https://www.unido.org/sites/default/files/2015-01/Guide_on_Gender_Mainstreaming_ECC_0.pdf
[6] https://www.unido.org/sites/default/files/files/2021-06/Gender_mainstreaming_Guide_1_Main guide.pdf
[7] https://www.equip-project.org/

3.2. Gender mainstreaming in industrial policymaking

UNIDO conceptualizes the industrial policymaking process as encompassing five stages: diagnosis, strategy setting, formulation of policy and corresponding policy instruments, implementation, M&E (see Fig. 3). Diagnosis involves defining the current reality that needs to be adapted or transformed, while strategy setting establishes the goals to be achieved to bridge the gap between the current reality and the desired industrial outcome(s). The policy instruments stage entails the design of intervention tools, programmes and measures to close the gap between the diagnosis and the industrial goals. Implementation focuses on applying these instruments and interventions. Lastly, the M&E phase formalizes policy learning by assessing impacts and results, which then feed back into a new policy cycle.

Figure 3. Industrial policy cycle



Source: Authors' elaboration based on (UNIDO and GIZ 2024a).

UNIDO's diagnostic tools adopt an input-output approach to industrial performance. Inputs (industrial drivers) include productive, technological, innovative and infrastructural capabilities, as well as organizational characteristics and arrangements (e.g. market share). Industrial outputs are derived from an approach to industrial policymaking aimed at balancing better economic performance, increased competitiveness, and progress towards social inclusiveness or environmental sustainability.

This document focuses on industrial innovation policy. Accordingly, the relevant inputs and outputs are those related to the creation, application and exploitation of knowledge. Innovation is considered a process that consists of inputs and outputs that mutually reinforce the knowledge

production process within an innovation system. Innovation inputs refers to the capabilities and investments firms allocate to the innovation process. Innovation outputs consist of new products and services and new business ventures. These outcomes should have an impact on several dimensions of firm performance. Finally, there are systemic and environmental factors that influence the innovation process, such as the supply of knowledge (the science and technology (S&T) system), the types of linkages and norms that shape the innovation system, and the barriers and obstacles that affect both innovation decisions (e.g. financial constraints) or outcomes of the innovation process (e.g. the intellectual property rights (IPR) system).

It is worth noting the significance of LAC specificities here (Barletta, Suarez, and Yoguel; Gabriel 2020; Crespi and Zuniga 2012). Regarding innovation inputs—and considering the heterogeneity within the productive structure (both inter- and intra-sectoral)—R&D capabilities may be as important as engineering or design capabilities. In addition, given the average distance to the international technological frontier, investments in machinery, hardware and software may hold equal relevance to investments in consulting, training or R&D. On the output side, while patents and other intellectual property rights are common measures of results, incremental innovations, adaptations of existing products, and the introduction of new-to-the-firm business practices can also significantly impact firm performance. Moreover, the average innovative behaviour of firms in the region tends to align more closely with these latter types of results, which require investments beyond formal R&D.

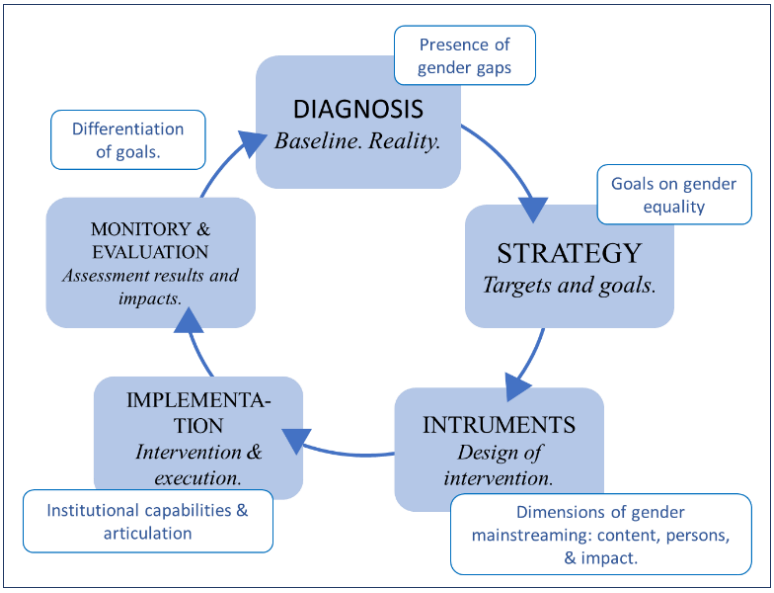
From a conceptual point of view, these specificities highlight the limitations of adopting policies designed for other innovation systems (primarily developed ones). Such policies usually follow innovation models where knowledge creation mostly emerges from S&T activities and typically results in patent applications. In the case of LAC, the creation of capabilities, the adaptation of innovations developed elsewhere, and the performance of informal R&D are key innovation activities with a potentially high impact on firm performance (Barletta et al. 2024).

3.2.1. Gender perspective and the policy cycle

Adding a gender perspective to the industrial innovation policymaking cycle involves considering gender differences throughout the entire policymaking process (see Fig. 4). At the diagnosis stage, gender gaps in the subject of the public policy and the sources of these inequalities must be determined (see UNIDO and GIZ 2024b). Next, an additional set of goals and objectives must be identified – differentiating them from the original industrial strategy is key to moving to the implementation stage. The goals of gender mainstreaming are derived from both the practical and strategic needs of both men and women, aiming to close and ultimately eliminate the gender gap.

Policy measures to reduce that gap are usually aligned with short- and medium-term goals (e.g. introducing female quotas in innovation funds to increase the number of female-led firms receiving funding). Meanwhile, eradicating the root causes of inequality requires long-term goals that call for profound societal transformations (e.g. mandatory paternity leave to foster a more equal distribution of reproductive work).

Figure 4. Gender perspective and the policy cycle



Source: Authors' elaboration based on (UNIDO and GIZ 2024a).

At the policy formulation and implementation stages, mainstreaming involves considering gender specificities in terms of the content, target group and impact of the given policy strategy, programme or action. Mainstreaming in terms of "content" refers to the characteristics of the proposed public policy solution, which should require the integration of a gender perspective into its formulation. For example, a project aimed at developing a new drug should consider gender specificities in the design of clinical trials.[8] Another example involves public training programmes in STEM-related fields that acknowledge the relatively low participation rate of women in these fields, outlining specific measures to attract and retain women in the programme.

The second dimension of mainstreaming relates to the target group affected by or benefitting from the public policy item (beneficiary). Typically, beneficiaries of industrial innovation policy are firms (or their projects). However, these firms are staffed by individuals responsible for making decisions and implementing activities. Thus, mainstreaming means considering the gender

[8] See McKee and McRae-Clark (2022) and Onizuka and Onizuka (2024) for two interesting cases about the relevance of a gender perspective in antidepressant dosage and osteoporosis diagnosis, respectively.

composition of the individuals participating in an innovation project or activities. For instance, a policy that funds R&D activities should account for the participation of women in firms' R&D labs. Similarly, a policy funding the acquisition of capital goods or any other innovation activities might require firms to report the participation of women in decision-making roles and evaluate this as an allocation criterion. This dimension also includes gender training for individuals responsible for selecting beneficiaries. For instance, female-led startups or inventions designed by women tend to address women's needs more closely than men's (considering women constitute half the population). Consequently, the usefulness or potential economic benefit of these firms or their inventions must be evaluated by individuals equipped to recognize and assess gender-specific aspects.[9]

The third and final dimension of mainstreaming relates to the impact of the promoted innovation (which is distinct from the impact of the policy itself). Innovation results might not be neutral in terms of the gender gap.[10] While not all impacts of potential innovations can be foreseen, it is important to consider their potential differential effects. For instance, there is plenty of evidence of the presence of a gender bias in several software developments based on artificial intelligence (AI) (Bajorek 2018). Hence, an innovation policy aimed at fostering such innovations should require potential beneficiaries of public support to address how they will minimize (avoid) gender bias in the expected AI algorithms.

The last stage of the policy cycle is M&E, where two sets of goals must be evaluated. On the one hand, policy goals related to the diagnosis and the policy's outcomes, such as the beneficiaries reached, the cost of the intervention, or other objectives set during the design stage, must be considered. On the other hand, goals related to gender perspectives, such as collecting data on gender breakdown (number of beneficiaries by gender), and more ambitious goals related to the gender gap must be taken into account. This assessment requires a clearly defined baseline, which should be established at the start of the policy cycle. EQuiP provides valuable indicators on this subject (UNIDO and GIZ 2024b).

Finally, a comment on strategic plans: evidence suggests that successful gender mainstreaming is only possible when it is integrated into a broader strategy to enhance firm performance (ITU 2023). The absence of such a complementary approach may be as detrimental as the absence of a gender strategy altogether. For instance, the promotion of female entrepreneurship in LAC

[9] See Kanze et al. (2018) for an illustrative case about the impact of the lack of a gender perspective in venture capital funding.
[10] See Forman et al. (2019) for an illustrative case about the higher probability of women being severely injured in a car accident.

without simultaneously promoting a more suitable innovation system that encourages entrepreneurship will likely encounter the same obstacles faced by any entrepreneur, regardless of his/her gender.

Conversely, closing the gender gap at the industrial level also requires efforts in other areas of the economic and social structure, such as improving income distribution, enhancing school enrolment and advancing digital literacy, among others. Industrial policy initiatives should align with broader strategic plans to close the gender gap at the national level. For instance, increasing female participation in the IT sector requires not only incorporating a gender perspective into industrial policies aimed at expanding the sector, but also embedding a gender perspective into education policies to encourage more women to pursue IT-related university degrees. In short, as highlighted by Edquist and Borras' (2019) concept of holistic approaches to innovation policy and considering the complexity of development more generally, a policy that is disconnected from a broader, integrated national strategy cannot be expected to significantly drive change and generate meaningful development impacts.

3.3. Policy instruments

There are multiple classifications of policy instruments. One of the simplest classifications is provided by Borrás and Edquist (2013), who group innovation policy tools into financial or economic, regulatory and soft instruments. Financial instruments provide funding or economic incentives (e.g. tax deductions linked to R&D projects). These instruments (incentives) are usually optional and contingent upon specific behaviours of beneficiaries. Incorporating a gender perspective into financial instruments might include, for instance, additional funding if certain gender conditions are met (e.g. achieving gender parity in the R&D teams responsible for the submitted project).

The second type of instrument relates to regulations, which are usually mandatory, such as laws linked to environmental sustainability. Most gender-related regulations include the implementation of anti-violence protocols or ensuring gender-inclusive infrastructure, such as providing separate bathrooms and dressing rooms. The most common regulatory innovation instruments with a gender perspective are found in public procurement, where certain levels of female-led firms must be represented among government suppliers.

The final type of policy instruments are soft ones, such as training, sensitization programmes, help desks, and efforts to increase the visibility of key elements of innovation and gender. These instruments aim to raise awareness and, to some extent, address gender and technological gaps. Among these instruments, those focused on the creation and accumulation of capabilities might

be the most impactful for innovation. A notable example of an innovation policy with a gender perspective is the promotion of IT training courses requiring specific levels of female participation. In this case, the gender perspective is present in the expectation of a lower level of female demand for this type of training, prompting the implementation of additional measures to help close the gender gap.

It is worth noting two distinctions here. The first relates to the type of affirmative actions used to ensure compliance with a policy instrument. This may include quotas, such as requiring the inclusion of women in R&D teams to access additional funding. A second type of affirmative action involves obligations for public officers when deciding on public procurement. Finally, some initiatives may require additional efforts to achieve certain levels of female participation in a certain policy initiative.

The second differentiation concerns the objectives pursued through policy instruments. The policy's objective is to increase the level of R&D investments, based on the assumption that this will positively impact innovation outcomes and, consequently, firm performance. Integrating a gender perspective may aim to bridge the gender gap in R&D teams. The assumption (based on available evidence) that higher female participation increases the likelihood of successful R&D outcomes may or may not be part of the policy, and cannot serve as the justification for including a gender perspective. This differentiation of objectives is important when evaluating policy outcomes and impacts. The increase in R&D at the firm and sectoral level is an indicator of the policy's outcome, while the number of women included in R&D teams indicates the gender perspective results within the policy. Additionality effects on innovation outcomes or on female participation are indicators of the policy's impact. In short, policies should be evaluated in terms of their objectives.

Finally, this section has focused on firms and on the individuals involved in innovation activities within those firms. Another dimension of innovation policy is the systemic one. Innovation policy instruments may include financial incentives, compulsory regulations and soft measures to establish linkages within the broader innovation system. This may include cooperation activities with R&D institutions, training programmes at universities to update workers' technological skills, or direct investments in public infrastructure, such as industrial parks, to foster cooperation among firms. All of these policy measures can integrate a gender perspective, including affirmative actions within teams and leadership. Clearly defining industrial, innovation and gender-related objectives is key to successfully navigating each stage of the policy cycle.

3.4. The IIPGP matrix

Table 1 summarizes the IIPGP matrix. The challenge of the IIPGP matrix lies in integrating multiple goals, objectives, instruments and capabilities. At the diagnosis stage, it involves understanding how the innovation process (inputs, outputs and linkages) interacts with the drivers of industrial development and how the gender gap both affects and is affected by these drivers and interactions. At the strategy stage, it requires anticipating how the innovation process can influence industrial performance while simultaneously contributing to closing and eliminating the gender gap. At the policy formulation and implementation stages, the challenge is to align the policy mix with the mix of instruments, namely integrating policy tools (financial, regulatory and soft) with the various dimensions of mainstreaming (content, persons, impact). This can only be achieved if institutional capabilities are developed and deployed to integrate industrial, innovative and gender-related strategies for sustainable development.

Table 1. Matrix of industrial innovation policy with a gender perspective

<table>
<tr><th>Policy cycle</th><th>Industrial</th><th>Innovation</th><th>Gender</th></tr>
<tr><td>Diagnosis</td><td>Drivers</td><td>Inputs / Outputs
Systemic linkages</td><td>Gaps</td></tr>
<tr><td>Strategy</td><td>Performance</td><td>Impact</td><td>Equality</td></tr>
<tr><td>Instruments</td><td colspan="2">Financial, regulatory & soft</td><td rowspan="2">Mainstreaming: content, persons, impact</td></tr>
<tr><td>Implementation</td><td colspan="2">Institutional capabilities</td></tr>
<tr><td rowspan="2">Monitoring and evaluation</td><td>Industrial goals</td><td>Innovation goals</td><td>Gender goals</td></tr>
<tr><td colspan="3">Sustainable industrial development</td></tr>
</table>

Source: Authors' elaboration

Based on the proposed conceptual framework, Table 2 presents questions intended to guide reflections on the basic elements of a gender mainstreaming exercise.

Table 2. Key questions for documenting policy initiatives

Policy cycle	Key questions
Diagnosis	• How is industrial development defined? • How is innovation defined? • What is the current state of innovation at the firm and sectoral levels? • Have any gender gaps been identified? Which ones? • Are national strategies aligned with benchmarks or challenges related to industrial development? How about in terms of the gender gap? How closely is the policy's diagnosis aligned with this general plan? • Does the diagnosis include an analysis of the innovation system?
Strategy	• Has a benchmark for industrial innovation been established? What are the baseline indicators? What are the expected outcomes in terms of these indicators? • What indicators are used to monitor the gender gap? What are the expected results? • How are gender-related challenges integrated within industrial innovation challenges? • Are there any systemic determinants of the gender challenges? Which systemic linkages will be required?
Instrument	• Is the gender-related intervention based on a strategic plan, programme or an action within the industrial policy? • What instruments are associated with the industrial innovation intervention and with the gender intervention? What is the nature of such instruments, e.g. financial, regulatory or soft instruments? • What is the nature of gender-related actions (e.g. quotas for specific types of firms in public procurement, mandatory or administrative requirements)? Do these actions focus on the proposal's content, the responsible teams, the expected results or a combination of these?
Implementation	• How is the institutional setup organized for implementing the initiative in terms of allocated resources (human, financial, political)?

	• What capabilities have been incorporated within the implementation team? Are these capabilities based on institutional, gender-related, industrial innovation or field knowledge?
Monitoring and evaluation	• Who is responsible for monitoring the initiative? • What resources have been specifically allocated for monitoring the initiative? Are these resources part of the same team responsible for implementation, or are they part of a transversal area? • Does the initiative include baseline indicators? Does it outline clear goals related to innovation, industry and gender? • How is success defined? To what extent are beneficiaries involved in the monitoring process? • Does the initiative establish adjustment mechanisms? Does it outline the evaluation process?

Source: Authors' elaboration

B. Application to Latin America and the Caribbean

1. Preliminary identification of cases

To test the conceptual framework, a preliminary study was conducted to examine the state of IIPGP in the LAC region. The study commenced with a review of a pre-identified set of cases, including data collected from official documents and websites. Additionally, a brief survey (Appendix 1) was distributed to key stakeholders, requesting information on the situation in their respective countries or the national agencies they represent.

Eleven countries were preliminarily identified based on evidence of their experience in IIPGP: Argentina, Brazil, Chile, Colombia, the Dominican Republic, Mexico, Nicaragua, Panama, Paraguay, Peru and Uruguay. This initial selection was informed by these countries' participation in international networks of academics and policymakers (RELADII, RICYT and LALICS, among others), by their long-standing history of public support to innovation and industrial promotion, and the preliminary identification of processes of gender mainstreaming derived from their institutional set up (Table 3).

Cases were analysed at the national level. However, given the heterogeneity in the region, the analysis of sub-national cases could help in identifying good (and reproductible) practices, for instance selecting a subnational case of a geographically large country and of a geographically small one. Argentina is an example where subnational experiences could contribute to a

compilation of cases for a comparative analysis. Similarly, Brazil could offer insights from a large country perspective, although sub-national cases would also provide a significant contribution to the compilation of cases.

A dozen interviews were conducted between July-September 2024 with policymakers responsible for managing the policy initiatives included in the review, and with other key stakeholders (e.g. scholars). The interviews were conducted remotely using the *Meet* platform. To ensure confidentiality and as a methodological strategy, interviews were not recorded; instead, notes were taken, with follow-up questions, where necessary, sent by email. In some cases, a second interview was conducted. Respondents were selected by identifying the person responsible for managing the policy initiative, or the higher hierarchical official available. From these interviews, additional key stakeholders were identified, either from the same agency or academic sector.

Prior to the interview, respondents received a brief presentation of the project and a minimal set of questions (Appendix 2). For the second round of interviews, questions were sent in advance by email. Interviews and information exchanges were conducted in Spanish, with translation into English carried out for reporting purposes. Information from websites and official documentation was collected, analysed and systematized, serving both as inputs for the interviews and as part of the subsequent case documentation.

The exploratory work identified three cases of gender mainstreaming within industrial innovation policy (Table 4): (i) additional innovation funding for existing female-led firms (Chile); (ii) prioritization criteria in funding for startups led by women (Peru); and (iii) dedicated quotas for female-led micro, small and medium-sized enterprises (MSMEs) (the Dominican Republic). These cases represent potential participants for the IPL-GM to analyse the policymaking processes that have facilitated, at least to some extent, gender mainstreaming: promotion of existing firms with mandatory R&D performance (Chile); (ii) linkages with academic environments (Chile); (iii) promotion of new technological firms (Peru), and (iv) public procurement (the Dominican Republic).

Table 3. Preliminary identification of cases

Country	Gender Agency	Innovation Agency	Industrial Agency
Argentina	Ministry of Women, Genders, and Diversity (until 2023)	Agencia Nacional de promoción de la I+D+i (Agencia I+D+i)	Ministerio de Producción y Desarrollo Productivo (since 2023 Ministry of Economy)
Brazil	Secretariat for Policies for Women (similar rank to Ministry)	Financiadora de Estudos e Projetos (FINEP)	Ministry of Industry, Foreign Trade and Services
Chile	Ministry of Women and Gender Equity	Corporación de Fomento (CORFO)	Ministry of Economy, Development, and Tourism
Colombia	Ministry of Equality	Colciencias (since 2018 Ministry of STI)	Ministry of Commerce, Industry, and Tourism
Dominican Republic	Ministry of Women	Ministry of industry, commerce and MSMEs	Ministry of Industry, Commerce, and MSMEs
Mexico	Secretariat for Substantive Equality and Women's Development (created in 2024)	Consejo Nacional de Humanidades, Ciencias y Tecnologías (CONACYT)	Secretariat of Economy
Nicaragua	Ministry of Women	Gabinete Nacional de Ciencia, Conocimiento, Tecnología, Investigación e Innovación	Ministry of Development, Industry, and Commerce
Panama	Ministry of Women	Secretaría Nacional de Ciencia y Tecnología (SENACYT)	Ministry of Commerce and Industry
Paraguay	Secretariat for Women	Secretaría Nacional de Ciencia y Tecnología (SENACYT) / Prociencias	Ministry of Industry and Commerce
Peru	Ministry of Women and Vulnerable Populations	Consejo Nacional de Ciencia, Tecnología e Innovación Tecnológica (CONCYTEC) / Proinnovate	Ministry of Production
Uruguay	National Institute for Women (under Social Development Ministry)	Agencia Nacional de Investigación e Innovación (ANII)	Ministry of Industry, Energy, and Mining

Source: Authors' elaboration

Table 4. Industrial innovation policies with gender perspective

Country	Initiative	Institution	Gender action	Link
Chile	Sumate a innovar / Innova region	CORFO	Additional founding	Link
Peru	Start-up Perú	Proinnovate	Prioritization criteria	Link
Dominican Republic	Compras públicas	Public Procurement General Directorate (Finance Ministry)	Quota	Link

Source: Authors.

2. Illustrative cases of IIPGP

Table 5 presents the IIPGP matrix for the cases of Chile, Peru and the Dominican Republic, focusing specifically on the gender-related dimension of public policy actions. This analysis, along with the regional review in Section B.3, aims to test the conceptual framework and provide insights for the implementation of Industrial Policies with a Gender Perspective (IPGP). This systematization draws on three initiatives: *Súmate a Innovar* and *Innova Región* implemented by CORFO (Chile), *Start-Up Perú* implemented by ProInnovate (Peru), and *Compras Públicas Inclusivas* under the jurisdiction of the Public Procurement General Directorate of the Dominican Republic.

One common element of these cases is that they represent policies with a gender perspective rather than initiatives that exclusively target women. This reflects an integrated approach to policy design, aiming to simultaneously promote innovation and gender equality, which are key objectives of the project.

Another common characteristic is the focus on increasing participation of female-led firms within the productive system by incorporating additional incentives into existing industrial policies. However, the underlying diagnoses between the cases differ. In Chile and Peru, the primary challenge are the additional barriers female-led firms and startups face in accessing funding, particularly for innovation. Conversely, the diagnosis in the Dominican Republic highlights the obstacles female-led MSMEs face in becoming public sector suppliers. These challenges arise from several factors, including cultural biases against female-led firms, insufficient entrepreneurial capabilities, and the lack of formalization in business processes (e.g. legal registration and accountability mechanisms).

As regards policy instruments, the three cases share a focus on the dimension of individuals (see Section 4.2), meaning that incentives are tied to the characteristics of the individuals leading the company or project, rather than the content or societal impact of the policy initiative. However, the implementation of these instruments varies across policies. In Chile, additional financial incentives are provided, with female-led firms receiving a 10 per cent bonus on total grants. In contrast, both Peru and the Dominican Republic employ regulatory instruments. In Peru, regulations stipulate that in the event of a tie in funding calls, priority should be given to female-led startups. In the Dominican Republic, public procurement regulations require that all public agencies observe a quota for contracting female-led suppliers.

Table 5. Policy cycle – gender mainstreaming – selected cases

Policy cycle	Chile	The Dominican Republic	Peru
Diagnosis	Funding gap for female-led firms	Obstacles for female-led MSEMs to become public suppliers	Funding gap for female-led startups
Strategy	Increased participation	Increased participation	Increased participation
Instrument	Persons / financial	Persons / regulatory (quota)	Persons / regulatory (prioritization)
Implementation	General frameworks	Training, national laws	Regulation of calls
Monitoring and evaluation	Continuous: dedicated department	Continuous: information technologies	Sporadic: ad-hoc evaluations

Source: Authors.

Significant differences were observed in the policy implementation and M&E phases, which enhance the illustrative value of this preliminary selection of cases. In Chile, implementation is guided by national strategic plans for Gender Equality and Industrial Development, which are operationalized through CORFO's guidelines for policy design and execution. CORFO demonstrates strong institutional capacity, integrating training in gender perspectives with innovation theory to support policy development.

In the Dominican Republic, implementation is based on the enforcement of national laws that establish quotas for female-led firms. This effort is complemented by awareness initiatives for public officials and training programmes for female-led firms, developed in collaboration with national universities.

In Peru, gender mainstreaming in Start-up Perú is less extensive; a gender perspective is only applied in cases of tie-breaking during funding calls. Preliminary interviews suggest that the initiative's implementation was driven by two key factors, namely the personal commitment of senior officials within ProInnovate, and the initiative of the international funder, particularly the Inter-American Development Bank (IDB). This effort is considered a preliminary step towards developing a more inclusive policy framework.

The final stages of the policy lifecycle also reveal differences across countries. In Chile, CORFO has a specialized department responsible for systematizing and publishing statistical data, monitoring and evaluating the outcomes of each funding call, and providing feedback to support institutional learning and improvement. In the Dominican Republic, advancements in information and communication technologies (ICTs) have been part of a broader effort to increase transparency in public administration. These technological upgrades facilitate the publication of public suppliers, tenders and their results, improving the systematization and analysis of policy outcomes, including the integration of gender mainstreaming. In Peru, policy monitoring was conducted through an ad hoc evaluation process, commissioned and funded by the IDB, which is also financing the programme. While the Peruvian agency expressed interest in understanding the policy's impact on gender gaps, the priorities of the international organization, as the initiator of the review and improvement process, prevailed.

These three cases represent potential participants in an IPL-GM lab, given the trajectory of each policy in terms of industrial promotion with a gender perspective, and the potential to assess their impact and improve results. They also demonstrate interesting developments in terms of capabilities and coordination with other institutions within each national system, which might provide valuable insights into the systemic dimension of innovation policy.

3. Gender mainstreaming in industrial policy in Latin America

The review of these cases yields preliminary conclusions about the state of industrial innovation policy in LAC countries with a gender perspective and the path forward towards implementing an IPL-GM.

Firstly, two types of industrial innovation initiatives were identified: on the one hand, policies, programmes and actions with calls exclusively targeted at women; on the other, initiatives that incorporate a gender dimension. According to interviewed policymakers and key stakeholders, the impact of initiatives that exclusively target women tends to be lower than that of initiatives embedding a gender dimension within broader industrial public interventions (for instance, *Sumate a innovar* specifically for female-led firms). These women-specific initiatives also

reportedly receive fewer applications than general calls, which may negatively affect institutional perceptions of such interventions. In some cases, policymakers observed that participating in women-only calls may even negatively affect how industrial communities perceive women's projects. Further research is needed to quantify the impact of such initiatives on institutional and industrial perspectives. General industrial innovation policies with a gender perspective, rather than those exclusively targeting women, appear to be more effective, as they offer an integrated approach where equality, innovation and industrialization are treated as equally important dimensions of sustainable development.

Various types of policy instruments were observed, including prioritization criteria, additional financial incentives and quotas. Beyond measurable outcomes in gender gap reduction, respondents noted a positive effect on institutional awareness and the agency's political position on gender equality. Furthermore, the more binding the instrument, the stronger the agency's commitment to closing the gender gap. In summary, a stronger commitment to gender perspectives within policy initiatives sends a clear signal to the broader system, increasing the likelihood of driving change across institutions. This is essential for advancing gender equality in the industrial sector, and may help explain the perceived limited impact of gender-specific incentives. In this context, IPL-GM represents an opportunity to identify good practices in countries where gender has already been mainstreamed and to raise awareness and trigger new mainstreaming processes in countries where only the innovative and industrial dimensions are currently observed.

While policymakers acknowledged the success of initiatives in raising awareness within industry, it remains unclear whether they effectively increase female participation. For instance, data from Start-up Perú indicate stable levels of female involvement throughout the entire policy implementation process. Female participation remained at around 25 per cent during the submission, allocation and execution stages (Di Crocco, Fiorentin, and Pereira 2024). This suggests that the additionality of gender-focused incentives may not be as significant as anticipated. It may also suggest pre-existing gaps (e.g. a reduced number of women-led firms eligible for support), highlighting opportunities to improve the diagnosis stage. IPL-GM could shed light on diagnosing gender gaps and identifying the most effective tools for enhancing female participation.

Finally, the preliminary review of cases and policies in LAC highlights three key lessons to guide future research and policy agendas. First, the cases of Chile and the Dominican Republic demonstrate that gender-related incentives, whether exclusively for women or embedded in broader industrial promotion frameworks, should align with more ambitious goals for both

industrial development and gender equality. Training in startup creation, for instance, is essential for fostering new businesses, while enhancing women's capabilities in funding and leading startups is critical for increasing female-led ventures. Achieving industrial development with a gender focus requires robust industrial promotion combined with women's empowerment. For instance, in the Dominican Republic, women in charge of MSMEs received training from national universities, enabling them to participate in public tenders. In Chile, a national mission pursued by the Ministry of Economy aims to transform the productive structure into a more resilient one. Under this general umbrella, policies can incorporate a gender perspective that combines technological upgrading with equality, and sends a clear signal to national and subnational agencies about the importance of sustainable and inclusive development.

The second lesson concerns institutional capabilities, which aligns with the broader innovation policy premise that effective public policy requires capable states. This is especially true for integrating industrial, innovation and gender-related objectives in policies. The Chilean case serves as an illustrative example of how policymakers with strong backgrounds in innovation development theory, linked to Chile's and the rest of the region's academic sector (and the world's), have developed robust, evidence-based policies that are grounded in a clear diagnosis and articulate clear goals and strategies. Policymakers need the skills and institutional frameworks to harmonize sometimes contradictory agendas. The reviewed cases suggest that coordinated strategies for inclusive and sustainable development, industrial innovation and gender gap reduction are more successful when unified under a cohesive national plan. An IPL-GM can support the creation and accumulation of capabilities by facilitating interactions among policymakers from diverse backgrounds and contexts, as well as with academics from different backgrounds and with different expertise. An IPL-GM can enhance policymakers' capacity development by providing tools for policy design, implementation and monitoring from a gender perspective.

The final lesson relates to the types of projects women tend to carry out. While additional research is needed to validate this observation, experts interviewed—particularly in Chile and Peru—highlighted a tendency for women to propose "triple-impact" projects that enhance firms' technological advancement, competitiveness and environmental impact—an observation supported by gender studies (Koning, Samila, and Ferguson 2021; Loarne-Lemaire et al. 2021). Bridging the gender gap in the industrial sector is equally critical for sustainability, competitiveness and technological progress as it is for promoting equality. Diversity plays a key role in boosting firms' competitiveness (McKinsey & Company 2020). Thus, strategies to empower women and initiatives aimed at improving firm performance through technological

advancement and innovation must be closely coordinated. Within this context, the IPL-GM emphasizes the need for integrated actions that simultaneously address gender equality, industrial development and innovation. The integration of these dimensions is essential to fostering environmentally and socially sustainable growth pathways, aligning with broader goals of inclusive and equitable development.

4. Towards an Industrial Policy Lab for Gender Mainstreaming

In this report, we propose a conceptual framework to support the policymaking process for promoting industrial development with a gender perspective through two complementary stages of public policy: ex-ante policy design and ex-post policy evaluation.

Based on a review of industrial innovation policies with a gender perspective across eleven LAC countries, we observe growing awareness in the region of the importance of gender equality, which is gradually being integrated into industrial innovation policies. However, there remains a need for a cohesive policy framework within comprehensive national development plans, which addresses both industrial growth and gender equality from a systemic perspective.

The region's progress in industrial innovation policy has led to the accumulation of relevant institutional capabilities; however, further development is needed to integrate this experience within a gender-related framework that goes beyond traditional labour market interventions focused solely on increasing female participation. In other words, mainstreaming a gender perspective into a national strategy for competitiveness, technological advancement and sustainability is essential.

The current state of industrial innovation policies with a gender perspective across LAC is heterogeneous. Recent initiatives present ideal opportunities for policy evaluation. By contrast, long-standing industrial innovation policies offer fertile ground for integrating gender mainstreaming practices. These areas represent promising avenues for future research agendas on innovation, industrial development and gender equity.

The next step is to propose some basic elements for an IPL-GM, aimed at building and consolidating capabilities to integrate a gender perspective into industrial policy. This initiative will be grounded in the conceptual framework presented in this document, which highlights the critical role of diversity in fostering sustainable growth and enhancing firm-level competitiveness. The policies reviewed from Chile, Peru and the Dominican Republic provide valuable cases for the IPL-GM, as they represent distinct approaches to incorporating a gender perspective into industrial innovation policies. These cases vary in their levels of mandatory compliance;

moreover, the types of policy instruments they use differ. Other countries in the region, such as Brazil with its extensive industrial policy experience, or Uruguay, which has undergone rapid industrial transformation and demonstrates increasing awareness of gender mainstreaming, also present compelling opportunities for inclusion in the IPL-GM.

The next steps entail selecting countries and policies, designing the agenda, and organizing workshops and seminars for the IPL-GM. The preliminary regional analysis presented in this document underscores the need for training initiatives in the following areas:

- **Gender mainstreaming:** Industrial innovation policies with a gender perspective must go beyond simply increasing female beneficiaries. They require strategic and coordinated efforts across public sectors to address multiple gender gaps simultaneously, with a particular focus on reducing disparities in leadership positions within industrial structures.

- **Gender and industrial productivity:** Gender equality extends beyond women's empowerment to include the broader benefits of diversity for economic and innovative performance. Policies must acknowledge the role of diversity in driving innovation and competitiveness and identify how closing gender gaps can contribute to these outcomes.

- **Gender perspective in M&E:** Effective monitoring of industrial innovation policies with a gender perspective requires more than tracking the number of women beneficiaries. It necessitates data on existing gender gaps (diagnostic phase), insights into systemic conditions affecting the closure of these gaps, and an evaluation of how these gaps evolve in relation to policy implementation. Gender-sensitive data on policy outcomes and impacts is essential, both in terms of industrial innovation and the specific gaps targeted by the policy.

Future steps include refining case selection, identifying key topics for workshops, and planning interactive training sessions. Applying the conceptual framework in subsequent analyses can provide deeper insights into regional dynamics, highlight critical elements, and enhance understanding of the challenges that lie ahead. This approach will support UNIDO's IPL-GM in delivering evidence-based recommendations to Member States, enabling them to effectively integrate a gender perspective into industrial innovation policies.

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Appendix 1

Preliminary survey
PUBLIC POLICY FOR INDUSTRIAL INNOVATION WITH A GENDER PERSPECTIVE (PPIIPG)

Public policy for industrial innovation refers to state actions aimed at promoting the development and/or application of new knowledge (including new knowledge specific to firms) in the production of goods and delivery of services, enabling companies to achieves incremental improvements or disruptive (radical) changes in their processes or products.
Gender perspective: the recognition of sex-based inequalities in the industrial world, manifesting as systematic differences among men, women and other gender identities. These differences can result in participation, promotion or income gaps. The inclusion of a gender perspective implies that public policy for industrial innovation incorporates actions aimed at reducing these gaps.
Given these definitions, and for sectors with higher technological complexity, we would appreciate it if you could identify:

1. A public policy for industrial innovation with a gender perspective that is currently being implemented in the country.
    a. Name
    b. Responsible portfolio
    c. Link to the law/programme/action

If you wish to include more than one (suggested: no more than 3), please add them at the end and order them based on government prioritization.

2. A public policy for industrial innovation that is currently being implemented in the country, where there is governmental interest and an opportunity to incorporate a gender perspective.
    a. Name
    b. Responsible portfolio
    c. Link to the law/programme/action
    d.

If you wish to include more than one (suggested: no more than 3), please add them at the end and order them based on government prioritization.

Appendix 2

Presentation of the project
PUBLIC POLICY FOR INDUSTRIAL INNOVATION WITH A GENDER PERSPECTIVE (PPIIPG)

The general objective of this project is to identify public policy criteria to promote an increase in female participation in high and medium technology industries in Latin America and the Caribbean.

This initiative arises from the double necessity of public policy: on one hand, to promote sustained industrial development based on innovation and technological change; and on the other, to address the gender gaps present in the productive sector, which are manifested in a lower participation of women in high-level decision-making positions and/or in technologically complex roles within high-tech industries and the most dynamic sectors.

The first stage of this project consists of mapping an illustrative set of industrial innovation policies with a gender perspective that have been implemented in Latin American and Caribbean countries. This will be accomplished through semi-structured interviews with policy makers and other key informants who, due to their involvement in the design and implementation of policies, can facilitate the documentation and systematization of the cases examined.

The documentation of several illustrative cases will contribute, in a second phase, to the development of a conceptual document that serves as a roadmap for future documentation, systematization, and analysis efforts.

It is anticipated that the design of a conceptual framework and an initial survey of cases will help generate a library of industrial policy cases with a gender perspective, leading to the establishment of a collection of illustrative cases from which best practices and recommendations for gender-sensitive industrial innovation policies can be derived.

In a schematic manner, the first round of interviews is structured around three key questions: how the problem was defined, and implementation was designed, which other institutions (actors) should have been involved, and what are the main lessons learned.

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PUBLIC POLICY FOR INDUSTRIAL INNOVATION WITH A GENDER PERSPECTIVE (PPIIPG)

The general objective of this project is to identify public policy criteria to promote an increase in female participation in high- and medium-technology industries in Latin America and the Caribbean.

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The first stage of this project involves mapping an illustrative set of industrial innovation policies with a gender perspective that have been implemented in Latin American and Caribbean countries. This will be achieved through semi-structured interviews with policy makers and other key stakeholders who, due to their involvement in the design and implementation of policies, can facilitate the documentation and systematization of the cases examined.

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In a schematic manner, the first round of interviews is structured around three key questions: how the problem was defined and how the implementation was designed, which other institutions (actors) should have been involved, and what the main lessons learned are.

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