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The advancement of industry 4.0 and the transformations in the labor market closing gender gaps? policies under debate

El avance de la industria 4.0 y las transformaciones en el mercado de trabajo ¿cerrando brechas de género? políticas en debate

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ABSTRACT

The writing aims to share the progress of a research project that analyzes three strategic economic sectors for Argentina's sustainable and inclusive development, such as the Science and Technology sector, the Popular Economy, and Industry 4.0. We will focus on the latter, one of the economy's most dynamic sectors and with great capacity for expansion and job creation. In dialogue with profound changes being carried out aimed at promoting gender equality, and in line with the presence of gender machinery at the highest state levels, we propose to account for the policies and actions being carried out at the National level, at the level of the Province of Buenos Aires, in Córdoba and Santa Fe, which seek to close inequality gaps in the sector. These provinces were selected based on having Women's Ministries where one of their objectives is to mainstream the gender perspective in state management. Along these lines, the programs and actions carried out by the aforementioned ministries will be presented, as well as those specific to the sector, typifying them based on what type of gender gap they are addressing. Whether it addresses labor segmentation or, on the other hand, addresses other issues linked to violence, care, participation and promotion, and income.

Keywords: gender equality, industry, employment market, public policy.

RESUMEN

El objetivo del escrito es compartir los avances de un proyecto de investigación que analiza tres sectores económicos estratégicos para el desarrollo sustentable e inclusivo de Argentina, como lo son el sector de Ciencia y Tecnología, el de la Economía Popular y el de la Industria 4.0. Nos centraremos en este último, que es uno de los sectores más dinámicos de la economía y con gran capacidad de expansión y de generación de puestos de trabajo. En diálogo con profundos cambios que se están llevando, tendientes a promover la equidad de género, y en consonancia con la presencia de maquinarias de género en los máximos niveles estatales, nos proponemos dar cuenta de las políticas y acciones que se están adelantando a nivel Nacional, a nivel de Provincia de Buenos Aires, en Córdoba y Santa Fe, que buscan cerrar brechas de desigualdad en el sector. Dichas provincias fueron seleccionadas en función de contar con Ministerios de Mujeres donde uno de sus objetivos es transversalizar la perspectiva de género en la gestión estatal. En esta línea, se presentarán los programas y acciones adelantadas por los ministerios antes mencionados, así como los específicos del sector, tipificándolos en función de qué tipo de brecha de género se encuentran abordando. Si la misma atiende a la segmentación laboral o, en cambio, se aboca a otros temas vinculados a violencia, cuidados, participación y promoción e ingresos.

Palabras clave: Igualdad de género, industria, mercado de empleo, política pública.

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INTRODUCTION

This paper analyzes some of the results of an ongoing project entitled "Systematization and analysis of gender public policies in strategic sectors. Instruments for closing labor gaps", carried out jointly by three research teams belonging to the Universidad Nacional de José C. Paz, Universidad Nacional de General Sarmiento and Universidad Nacional del Litoral. The general objectives of the project are:

1. to systematize and analyze public policies from a perspective that seeks to account for the approaches to current generic inequalities in three labor and substantive sectors for the development of the country, which are: industry 4.0, production of scientific-technological knowledge, and popular economy.

2. to identify cross-cutting and specific public policy instruments for each sector, which contribute to closing labor gaps. In this paper, we systematize and present the public policy instruments related to the Industry 4.0 sector, which focus on addressing gender labor gaps. Likewise, as there is a territorial cut in the approach to labor, we focus on the policies implemented at the national level aimed at the sector, as well as those applied in the provinces of Buenos Aires, Santa Fe, Neuquén, and Córdoba.

The reason for selecting these sectors is that they are considered substantive to the country's development. Regarding Industry 4.0 in Argentina, the Argentina 4.0 Productive Development Plan defines it as a new way of producing through the implementation of interconnectivity, automation, and real-time data management technologies. It is thus established, both in the Plan and in the literature, as a set of technological systems made up of devices and components whose main characteristic is their systemic integration (Kim & Lee, 2015). It should be noted that there is a strong debate in the specialized literature regarding the scope of Industry 4.0; on the one hand, there are those who argue that it is a new techno-organizational paradigm (the fourth industrial revolution), to the extent that these new technologies lead to radical changes in the relations of production, consumption, and interaction in society (Brixner *et al.*, 2020). On the other hand, other studies argue that it is a deepening of the current paradigm, marked by information and communication technologies (ICTs), which originated in the fifth technological revolution of the 1970s (Perez, 2009). In any case, 4.0 technologies can potentially transform all productive sectors, labor relations, and every dimension of life in society.

The impact of Industry 4.0 on productive structures and the labor market is twofold. On the one hand, there is a decreasing trend in the levels of employment in routine jobs (both manual and cognitive), in the sense that automation and artificial intelligence technologies tend to displace work linked to tasks of less technological complexity (Roitter, 2019), which configures a new modality in which the processes of "technological unemployment" occur. On the other hand, there is the emergence of new jobs, linked to tasks of greater technological complexity and associated, of course, with the most dynamic companies of Industry 4.0 and with the demand for highly skilled jobs, particularly in connection with the disciplines of Science, Technology, Engineering, and Mathematics (STEM) (Cefis *et al.*, 2023).

As is the case in the traditional view of innovation and employment, the effect of the incorporation of technologies at the firm level cannot be approached in the same way as the effect of technological change on employment at the aggregate level (Calvino & Virgillito, 2017). The literature specialized in the subject suggests that firms may displace routine jobs as a result of the incorporation of innovations, although this is going to depend on the type of innovation introduced and the type of employment quantified (Vivarelli, 2014). Thus, at the total company level, even in the short term, innovation can have positive effects on employment. At the aggregate level, and in the medium term, technological change modifies the composition and organization of employment, and generates higher levels of demand for skilled jobs (replacement of "*blue collar*" by "*white collar*"). However, given the gender composition of the labor market, the impacts of Industry 4.0 on it are also unequal in terms of men and women since the starting point is an unequal and disadvantageous structure for women (Durán, 2021). In the professional field, the rate of women studying and graduating from technological careers demanded by Industry 4.0 is lower than that of men (45% in applied sciences in 2019, while active female students represented 37%, according to the SPU). Indeed, it is to be expected that the higher demand for jobs will coincide with a masculinized supply and, therefore, that the "displacement effect" generated by technological unemployment will be mostly on female workers. Therefore, the existence of policies aimed at this sector is essential to address the gaps.

Based on this consideration, in this paper, we will systematize and present the policies in force in Argentina aimed at reducing gender labor gaps in the Industry 4.0 sector. The main objective is to identify gaps, improvements and new intervention strategies. In this framework, a classification of gender gaps in the labor market was made from the following dimensions: violence, care, participation, training, perspective, and income. Gender gaps were defined as the systematic differences between men and women that may or may not be explicit and actually or potentially affect their participation in the world of work. Within this framework, policies aimed at reducing these differences implemented by national and provincial ministries were selected (see section 2 for more details). The selection included current policies that included the terms "women", "dissidence" or "gender" in their official texts and that aimed to contribute to closing sex-gender gaps in the world of work. Following Borrás and Edquist (2013), policies were also classified according to the mode of intervention: economic and financial (i.e., including as an incentive the granting of economic resources through various modalities), regulatory (such as legal and regulatory frameworks) and awareness-raising (linked to public discourse and training).

Based on the systematization, we have counted a total of fourteen policies implemented to close labor gaps in the selected territorial cutout, ten of which belong to national portfolios. In this sense, for the Industry 4.0 sector we found a predominance of initiatives that address the type of participation gap. In turn, the modes of intervention are mainly of quota (regulation) and economic type. These are general policies that include the gender dimension, whose primary objective is not the closing of gaps but the promotion of the sector in some dimension, with the inclusion of a differential promotion if this perspective is included, either in terms of participation, perspective, and/or training. In turn, the gender perspective does not appear in the policies, although it is mentioned in the cases in which it is included; this gives rise to a series of ambiguities for the companies in terms of participation and, likewise, for the evaluations, in the cases in which the type of policy merits it, because it is subject to particular subjectivity. Finally, another issue observed is the interest on the part of national and provincial agencies that are not aimed at closing gender gaps (such as those of production, economy, among others linked to the productive sphere), which opens a window of opportunity for the intervention of the agencies intended for this purpose (ministries and gender agencies, women, depending on their denomination in the territorial space) to incorporate the gender perspective in a cross-cutting manner.

The rest of the paper is organized as follows: after this introduction, section two details the methodology used for the survey of policy instruments, programs, and projects at the national level and in the provinces mentioned. Section three, on the other hand, focuses on the analysis of these policies. Finally, the last section presents the reflections of the analysis and policy recommendations of the entire work.

MATERIALS AND METHODS

Methodology for the survey and systematization of policies, programs and projects

In accordance with the objective set out in the present project, regarding the systematization of policies aimed at closing gaps in the Popular Economy sector, in the first instance a database has been built with all public policy actions (policies, programs, and projects) of the national state and five selected provincial states (Nation, Buenos Aires, Santa Fe, Neuquén and Córdoba), which aim to close gender gaps in the world of work, in this case, in the Popular Economy sector. The criterion for the geographical selection was based on the existence of an agency dedicated to Women, Gender, and Diversities at ministerial level. For this purpose, a survey and systematization of secondary information was carried out, which followed a series of criteria and steps detailed below.

Level and portfolio

Table 1 below systematizes the agencies of each State (national and provincial) that were identified as relevant for the analysis. As can be seen, in addition to the Ministries of Women, Gender, and/or Diversity, as the case may be, we selected those ministries and other agencies whose policies directly affect the labor market. In this sense, we have collected information from the ministries of economy, production, industry, science and technology, social development, employment and labor, and also the agencies for the promotion of productive activity with a focus on science, technology, and innovation. In turn, we included the development secretariats due to their comprehensive approach.

In total, we have surveyed twenty-four ministries, of which five are national and nineteen are provincial (five in Buenos Aires, seven in Córdoba, three in Neuquén, and four in Santa Fe). Also, the Secretaries of Planning and Action for Development (COPADE) and Territorial Development and Environment of Neuquén, which are part of the provincial government's cabinet. In addition, the R+D+I Agency, which depends on the National Ministry of Science, Technology, and Innovation; the Scientific Research Commission (CIC) of the Ministry of Production, Science and Technological Innovation of the province of Buenos Aires; the Córdoba Agency of the Ministry of Science and Technology; the Santafesina Agency, which depends on the Ministry of Production, Science and Technology; and the Neuquén Agency, which depends on COPADE. Thus, the total number of agencies surveyed is thirty-one.

Table 1.
Selected national and provincial government agencies for the survey of policies

Nation	Buenos Aires	Córdoba	Neuquén	Santa Fe
Ministry of Women, Gender and Diversity. Ministry of Economy. Ministry of Social Development. Ministry of Science, Technology and Innovation. Ministry of Labor, Employment and Social Security. R&D&I Agency	Ministry of Production, Science and Technological Innovation. Ministry of Women, Gender Policies and Sexual Diversity. Ministry of Community Development. Ministry of Habitat and Urban Development. Ministry of Labor. Commission for Scientific Research. Research Commission (CIC)	Ministry of Science and Technology. Ministry of Women. Ministry of Employment and Vocational Training. Ministry of Habitat and Family Economy. Ministry of Industry, Commerce and Mining. Ministry of Social Development. Ministry of Labor. Córdoba Agency.	Secretariat of Planning and Action for Development (COPADE). Ministry of Women and Diversity. Ministry of Social Development and Labor. Ministry of Production and Industry. Secretariat of Territorial Development and Environment. Neuquina Agency	Ministry of Production, Science and Technology. Ministry of Social Development. Ministry of Labor. Ministry of Equality, Gender and Diversity. Santafesina Agency.

Source: own elaboration

Policy identification and selection

Based on the selection of agencies explained in the previous section, and in accordance with the objectives of the study, all public policies published in official bulletins, norms, and regulations that included the terms "women", "dissidence" or "gender" in their official texts were surveyed. Only those public policies that had the direct objective of closing gender gaps, or that included at least one action aimed at closing gaps in the world of work, were retained. Given the theoretical framework, the following definitions were adopted:

a) "World of work": is the sphere in which the activities of production, reproduction, distribution, and consumption of goods and services are materialized.
b) "Gender gaps" are defined as systematic differences between men and women that actually or potentially affect their participation in the world of work and are not necessarily explicit.

Policies that included inclusive language or recognition of diversities but did not include specific actions to close the gap were not included.

Systematization

For the systematization of the information, each public policy was classified according to its purpose, the gap it is intended to impact, and the instrument through which it is proposed to do so. Thus, the following classifications were adopted:

a) Subject: specific policies linked to closing the gap and policies that included actions for closing the gap.
b) Gaps: these were classified in terms of orientation in the work environment in relation to closing gaps in terms of income, participation, promotion and violence.
c) Instrument: these were classified in terms of regulatory, economic and/or financial, and awareness-raising. Regulatory instruments result from legal frameworks that compulsorily imply the inclusion of the gender perspective. Economic instruments imply an incentive and can be compulsory or prioritization. Within these instruments, a distinction was made between those involving positive discrimination (gender quota). Finally, awareness-raising instruments are intended to make the problem visible and reflect on it. Within this last category, a distinction was made between training instruments.

RESULTS AND DISCUSSION

Analysis of surveyed policies

Once the respective survey and systematization of public policy actions was completed, we found that, for the Industry 4.0 sector, there are a total of fourteen initiatives whose objective is linked to closing gender gaps. Table 2

presents a summary and systematization of the policies, according to: the level of the agencies (nation and selected provinces); the object of the policy in terms of the gap; the gap it seeks to reduce, and the instruments with which they propose to do so.

Table 2.
Systematization of public initiatives for closing labor gaps in Industry 4.0

	I4.0 Eng.	OBJECT			GAP				INSTRUMENTS			
		Acc.	Part.	Promo.	Ingr.	Viol.	Multi.	Capac.	Quota	Sensib.	Econ.	
						NATION						
1	Knowledge Economy Promotion Regime		x	x								x
2	Trades 4.0		x	x						x		
3	Include 4.0		x	x						x		
4	Training 4.0		x	x						x		
5	To promote the Video Game Industry		x	x								x
6	Driving the Knowledge Economy (state-owned enterprises)		x	x								x
7	Empower Satellite and Aerospace		x	x								x
8	PROCER		x					x				x
9	Knowledge Economy Law		x	x						x		
10	Argentina Program		x	x						x		
						PROVINCE OF BUENOS AIRES						
11	Knowledge Economy Nodes (NECO)		x	x						x		
						PROVINCE OF CÓRDOBA						
12	Promoting Employment to the Knowledge Economy		x	x						x		
						PROVINCE OF NEUQUÉN						
13	SME training on I4.0 paradigm		x	x						x		
14	Creative Incubators		x	x					x			
	TOTAL	0	14	13	-	-	-	1	1	8	-	5

Source: own elaboration
Note: [I]Specific. [II]Actions. [III]Participation. [IV]Promotion.[V] Income. [VI]Violence. [VII]Multiple. [VIII]Training. [IX]Awareness. [X]Economic

Survey

In general terms, as shown in Table 1, we have observed a predominance of initiatives at the national level (10 out of 14), many of which are part of the Argentina 4.0 Productive Development Plan, referred to in the first section of this document. In second place is Neuquén with two initiatives, followed by Buenos Aires and Córdoba with one initiative each. It should be noted that it has not been possible to identify any type of program that adopts the characteristics enunciated at the beginning of the methodological section for the province of Santa Fe. The own characteristics that the Industry 4.0 sector has acquired for the policy in our country can be identified as a factor that helps to understand the situation exposed. That is, the national government level has assumed a more central role in the allocation of resources to this sector, and, in this sense, there is a greater number of national initiatives aimed at stimulating and supporting the development of Industry 4.0 in general.

On the other hand, regarding the gap these initiatives aim to solve, we found that the vast majority of them focus on "participation" issues (13 out of 14, more than 92%), above other types of gaps. Likewise, we have not identified policies and/or programs that focus exclusively on "promotion", "income" and "violence" gaps, but we did recognize one initiative that applies to "multiple" gaps according to the established criteria. Regarding the mode of intervention used by the programs and/or projects, we were able to identify a preponderance of "quota" mechanisms (8/14, more than 57%); as part of the "regulation" category, compared to "economic" instruments (5/14, more than 35%) and "training" (1/14, approximately 7%). Similarly, although the survey took into account another instrument, "awareness-raising", which was found for the other sectors analyzed (science and technology and the social and solidarity economy, as detailed in the introduction), for Industry 4.0 we did not find any initiatives that fit this type of mechanism.

Description of national policies

Regime for the Promotion of the Knowledge Economy

The Knowledge Economy Promotion Regime initiative arose in 2020 in the Ministry of Economy of the Nation and is executed by the Secretariat of Knowledge Economy. It is an initiative with actions aimed at reducing the participation gap through economic mechanisms. Its purpose is to promote those economic activities that involve the use of knowledge and the digitalization of information supported by advances in science and technology, the production of goods, the provision of services, and/or process improvements. This is an economic and financial instrument based on tax incentives insofar as those productive activities that are framed within the Knowledge Economy will have access to a monthly bonus to pay national taxes, discounts on Income Tax, and a reduction in the payment of export duties on services. These discounts will be increased in the event that the companies, after their registration, hire women and dissidents. In such cases, instead of granting a bonus equivalent to 70% of the taxes, a bonus equivalent to 80% will be granted.

Trades 4.0

Trades 4.0 is a program that is part of the Argentina 4.0 Productive Development Plan of the Ministry of Economy of the Nation for the year 2021. Like the previous policy, it introduces actions aimed at increasing participation but resorts to quota instruments (regulation). It is oriented to the training of trades linked to knowledge economy activities; it seeks to advance, particularly, in two directions, both in 4.0 training for top and middle management in companies -focusing on induction on technologies applicable to different processes that facilitate the functional definition of the necessary solutions- and in training in the management of technologies linked to 4.0 processes by productive branch. The program aims for half of the certified beneficiaries to be women, i.e., of the 4,000 people expected to be reached, 2,000 will be women.

Include 4.0

Include 4.0 is a program that, as in the previous case, is part of the Argentina 4.0 Productive Development Plan. This initiative has the same classification as Trades 4.0, that is, it includes the financing of training programs (through non-refundable contributions - ANR), to carry out professional training in knowledge economy and industry 4.0 topics for vulnerable populations. In this sense, it seeks to generate programs in 10 provinces, training 2,500 beneficiaries, of which 1,500 would be women (i.e., 60%).

Training 4.0

Another of the proposals included in Argentina's Productive Development Plan. The initiative is oriented in the same direction as Trades 4.0 and Include 4.0 in terms of purpose, gaps, and instruments. The program is a tax

exemption (i.e., tax credit) for companies that invest in 4.0 training. The Knowledge Economy Law establishes the possibility that those companies that incorporate 4.0 technologies in their productive processes may apply to the regime, and it is contemplated -as one of the dimensions for receiving the benefit- the development of training on the subject. It is expected that 600 individuals and/or legal entities will be registered in the National Registry of Beneficiaries of the Regime for the Promotion of the Knowledge Economy and to increase by 20% the hiring of women and dissident genders in the companies covered by the benefit.

Boosting the Video Game Industry

A program of the National Ministry of Economy, executed by the Secretariat of Industry and Productive Development, which was created in 2021 with the purpose of promoting the development and strengthening of the video game industry to contribute to the consolidation of this strategic sector. In this sense, it seeks to promote employment and the national production of digital and interactive entertainment developments, encourage investment and foster the development of technical and human resources specialized in the implementation of this activity, and improve the quality standards of video games.

This initiative offers an additional benefit for gender issues, i.e., if the project has a gender perspective in its design, the maximum amount of the non-reimbursable contribution is increased (by an additional $500,000, over a maximum of $10,000,000 for the rest of the projects), which may be used for any of the eligible expenses. At the same time, in order to be eligible, one of the following conditions must be met: i) the project must have an impact on gender issues, for example, the game's plot must have didactic characteristics on gender issues; ii) the applicant entities that make up the project must have a majority percentage of women occupying managerial positions and making up the team that will carry it forward. In this sense, we can identify it with actions aimed at closing participation gaps through economic tools.

Driving the Knowledge Economy (state-owned enterprises)

Program executed by the Knowledge Economy Secretariat, which originated in 2021 and aims to promote strategic sectors, understood as those in which economic activities are framed that apply the use of knowledge and the digitalization of information supported by advances in science and technology, to obtain goods, provide services and/or improve processes. The promotion of such sectors will be through the financing of projects that use the Knowledge Economy to solve technological challenges. In addition, open innovation will be promoted through the interaction between the public sector (driving companies), which is in charge of presenting the challenges, and the private sector (driven companies), whose task is to propose solutions.

In terms of the gender approach, this program includes the prioritization of projects that, in part, among the challenges raised, include solutions that strengthen gender equity or improve the quality of life of women or non-binary people. In this sense, it falls into the same category as Boosting the Video Game Industry.

Satellite and Aerospace Empowerment

The program Satellite and Aerospace Empowerment was born in 2021 as an initiative of the Secretariat of Knowledge Economy of the National Ministry of Economy, with the aim of boosting and providing greater dynamism to the Satellite and Aerospace industry. Its purpose is to encourage the development of knowledge economy activities, in order to contribute to the consolidation of this strategic sector.

Thus, in terms of gender gaps, the Satellite and Aerospace Empowerment program, on the one hand, obliges projects to have an impact on gender issues. On the other hand, it offers additional benefits if the organizations that make up the project have a majority percentage of women in management positions and in the composition of the team that will carry out the project. Indeed, if the company has a majority of women in management positions and also in the project team, they can receive AN additional amount of ANR for $2,000,000 (in the case of individual projects), and double this amount in the case of associative projects (over and above the $36,000,000 and $81,000,000 that they can request, respectively). In other words, it has actions to close participation gaps through economic instruments.

Competitiveness Program for Regional Economies (PROCER) - institutional strengthening

A program of the Ministry of Economy of the Nation under the responsibility of the Secretariat of Industry and Productive Development, aimed at improving the competitiveness of a set of key value chains located in provinces

outside the Pampas through interventions to support productive development in regional economies and in the prioritized chains; improvements in logistics activities, and support for investments that improve competitiveness through increases in productivity, value addition, innovation and access to markets.

Specifically, this initiative provides funding for technical assistance (transmission of information and knowledge) and professional consultancy services, with experience or expertise in specific areas through ANR. Of the eleven topics of the projects called for, one is on the gender perspective in the productive sector. In turn, the projects are selected at the provincial level according to a list of six prioritization criteria. One of them is the contemplation of the gender perspective. In this sense, the initiative has actions that contribute to closing multiple gender gaps through economic mechanisms.

Knowledge Economy Law

The Knowledge Economy Law (Law No. 27,570) is a national regulation enacted in 2020. It belongs to the portfolio of the nation's Ministry of Economy, and its execution depends, particularly, on the Secretariat of Knowledge Economy. This initiative has actions to close participation gaps by gender through quota strategies. The purpose of the law is to promote new technologies, generate added value, foster quality employment, facilitate the development of MSMEs, and increase exports of companies engaged in knowledge-based services. To this end, this law grants a bonus to pay national taxes equivalent to 70% of the employer's contributions of the personnel engaged in the activities to be promoted.

In terms of gender, according to the regulation, it seeks to reduce the existing gaps and, therefore, incorporates the gender perspective by increasing the aforementioned bonus by 10% in the event that the companies involved hire women and/or dissidents. Even so, this prioritization is shared for people with postgraduate degrees in engineering, exact or natural sciences, people with disabilities, residents of disadvantaged or less developed areas, and beneficiaries of social plans.

Argentina Program

Initiative of the year 2021 of the current Ministry of Economy of the nation and depends, particularly, on the Secretariat of the Knowledge Economy. The initiative shares the classification in terms of its object, the gaps, and the instruments used by the Law of Knowledge Economy just described. This national and federal program aims to train people in programming languages and knowledge, testing, and digital skills in order to enhance employability in the software and technology sector. It is aimed at all people who, with or without previous knowledge, want to start working in the technology sector, reside in Argentina, have completed high school and have access to the Internet and a computer.

Regarding the gender perspective, in the modification of the resolution that created this regulation, made in 2022, it is stated that a federal and gender perspective will be respected, with the aim of reducing pre-existing inequalities. At the same time, it is specifically established that gender criteria will be taken into consideration for the distribution of vacancies. Even so, such prioritizations are not unique but coexist with factors such as the temporality of the applications; the availability of vacancies; federal distribution; the declared domicile and that of the universities and training institutes provided by the course.

Description of provincial policies

Knowledge Economy Node (NECO)

The Knowledge Economy Node (NECO) is a program promoted by the Ministry of Production, Science and Technological Innovation of the Province of Buenos Aires and executed by the Industrial Planning Directorate, whose origin dates back to 2020. The initiative has actions aimed at reducing participation gaps with quota mechanisms as a category of the regulation concept. The objective of this initiative is to promote the development and strengthen the dynamic links between the companies of the Knowledge Economy, the Provincial Government, and the scientific-technological sector in the Buenos Aires territory in order to develop the activities promoted in the Provincial Law N° 15.339 (adhesion to the National Regime for the Promotion of the Knowledge Economy); the design of public policies of science, technology and production, and the creation of new productive sectors in the Province.

We find that in its article number 12, "Technological poles and/or parks and/or districts", it establishes that "The Executive Power will promote special benefits in the case of technological poles and/or parks and/or districts,

especially those that implement technological or educational innovations, develop sustainable lines or incorporate gender and inclusion policies, without prejudice to the exceptions or benefits established by the municipalities" (Law 15339, 2022, p. 15339). Such "special benefits" consist of an increase in the Gross Income Tax exemption floors and of 10% for micro, small and medium-sized companies.

Promotion of Employment to the Knowledge Economy

The program "Promotion of Employment to the Knowledge Economy" comes from the province of Córdoba, depends on the Ministry of Science and Technology of that province and has been implemented by the Secretariat of New Technologies and Knowledge Economy since 2020. The initiative was born with the aim of promoting economic activities that apply knowledge and digitalization of information, supported by advances in science and technology, in the production of goods, and the provision of services and/or process improvements. Like NECO, it has actions to close participation gaps with quota instruments (regulation).

In its fourth article, it establishes a differential allocation of the stimulus of 30% more in the case of hiring women, people with disabilities, people living in disadvantaged areas, transplanted people, transvestites, transsexuals, transgender people, or professionals with doctorates or post-doctorates in CTIM (Science, Technology, Engineering and Mathematics) disciplines.

Training of SMEs in I4.0 paradigm

This program comes from the Secretariat of Planning and Action for Development (COPADE) of Neuquén, created in 2022 and implemented by the Provincial Directorate of Science, Technology and Innovation. In general terms, this is a training program that seeks to promote the adoption of the Industry 4.0 paradigm and contribute to the digital transformation of the different productive sectors from the baseline within the framework of the Provincial Plan for the Development of the Knowledge Economy, and by virtue of the strategic alliances that link University, State, Society, and Business. For the selection of the people enrolled, criteria of gender equity, territorial balance, and occupational profile of the interested parties were followed. The initiative is classified in the same way as NECO and from the Employment Promotion to the Knowledge Economy program.

Creative Incubators

2022 Program of the Secretariat of Planning and Action for Development (COPADE) of the province of Neuquén, executed by the Provincial Directorate of Science, Technology and Innovation. This bet has actions aimed at reducing participatory gaps through training tools. Its main objective is to strengthen enterprises in the creative industries and design sector in the Province of Neuquén. The proposal refers to personalized support provided by specialists in management, administration, and positioning of products and services through virtual training meetings and personalized mentoring, in which contents related to marketing strategies are developed, with useful tools for the continuous improvement of business units. In addition, the UNCTAD - Empretec Entrepreneurial Behavior Development Workshop will be held in person.

In terms of gender, the incubation process includes sustainable business models with a gender perspective, among a long list of topics to be developed. At the same time, the gender perspective is established as a prioritization criterion, together with the stage of the enterprise, the activity developed, and the territorial distribution.

Comprehensive policy analysis

The policies explored in the different levels and portfolios of government, despite their diversity, present points of contact in terms of the problems they aim to solve. It is worth noting that none of the initiatives is dedicated exclusively to women and/or dissidents, but rather, on the contrary, they are aimed at the population in general and have extra benefits for "gender issues", as well as selection mechanisms with "gender criteria". Such is the case, for example, of the Regime for the Promotion of the Knowledge Economy of the National Ministry of Economy, which grants greater tax benefits to companies that hire women and dissidents. They can also apply to the benefit for hiring people with postgraduate degrees in engineering, exact or natural sciences, people with disabilities, residents in disadvantaged areas or areas of lesser relative development, and beneficiaries of social plans. At the provincial level, the analogous program in Córdoba is called Promotion of Employment to the Knowledge Economy. It grants 30% of the additional benefit of the stimulus allowance for the hiring of employment when the new position is occupied by women, transvestites, transsexuals, and/or transgender persons. In this case, the additional benefit also applies to other marginalized populations, such as people with disabilities, residents in disadvantaged areas, but

also to professionals with doctoral or postdoctoral degrees in the areas of STEM (Science, Technology, Engineering, and Mathematics). Therefore, the gender criterion, as in the national program, is combined with other prioritization criteria that address other problems of a dissimilar nature, in other words, priority is given to hiring people with doctoral degrees, such as people with disabilities or women.

On the other hand, the "gender" criterion is mostly approached from a "quota" perspective instead of proposing the mainstreaming of the perspective in the activity promoted or in the training provided. Such is the case of the policies studied in the previous section, which also give the same quota priority to population groups with highly differential needs and demands. The case that works as an exception in this sense is that of Boosting the Video Game Industry, of the National Ministry of Economy, which promotes the inclusion of the gender perspective in video games, as well as the generation of impacts while including the equal participation of women and men.

Another important dimension to highlight is the lack of precision when indicating the inclusion of the gender perspective. Several of the programs indicate prioritization of projects that include the gender perspective (Program for Competitiveness of Regional Economies [PROCER] of the National Ministry of Economy) and/or that generate impacts on this dimension (such as the Program to Attract and Strengthen the Video Game Industry of the National Ministry of Economy). However, there is no definition of what they mean by perspective. In this sense, the interpretation of the criteria included in the policy is highly subjective for the company, which limits the possibilities of including the perspective and/or eventual impacts in the proposal since they do not know what the inclusion of the perspective implies and what dimensions they apply as impact. Of course, this also implies a high level of ambiguity in the evaluation since the evaluation commissions should make ex-post considerations.

Finally, from the fact that the policies analyzed are not found in the gender units but mostly in other units or ministries of production, industry, and economy, both at the national and provincial levels, it is possible to identify an attempt to mainstream the gender perspective in those programs and/or projects that are outside the area that specializes in such issues. Here, in line with the previous approach, there seems to be a gap for women's ministries to define and conceptualize what it means to incorporate the gender perspective in policies, both in terms of project formulation and expected impacts. Thus, there seems to be a need for training spaces to incorporate the perspective more precisely into policies. Nevertheless, it is noteworthy that the policies of the portfolios studied, although lacking precision, include the gender perspective.

CONCLUSIONS

This paper aimed to present the first findings of a project focused on studying the existence of policies at the national and provincial level aimed at closing gender gaps in the world of work in three productive sectors. In that sense, we focused on the Industry 4.0 sector and on the national level and the provinces of Santa Fe, Córdoba, Neuquén, and Buenos Aires. The survey included the classification of policies in terms of the gap contemplated, as well as the mode of intervention. Thus, we found fourteen policies in force, ten of which depend on national portfolios, and the rest are divided into two units for Neuquén and one unit each for Buenos Aires and Córdoba. In terms of gaps, despite the fact that the research contemplated more types, the policies found were mainly framed in terms of participation.

First, none of the policies is aimed exclusively at closing the gaps. In other words, they are sectoral promotion policies that also include, in some way, the gender perspective. Mostly, this inclusion is found in the proposal of differential benefits for companies that have a greater number of women in the jobs occupied; that hire a greater number of women; when it is an employment policy; or that include in their proposals the perspective and/or guarantee impacts in terms of generating equity. Some, in addition to including women, also mention dissidents. However, in many cases, the additional benefit also applies equally if the company hires people with disabilities, people located in relatively less developed territories, or people with graduate or post-doctorate degrees. In other words, the gender issue is included in these policies, but together with other dimensions that are not necessarily related.

In addition to the above, we also observed that there is no policy position on what the gender perspective is. All this results in a vague inclusion of the perspective and a low number of policies that include it, in addition to the non-existence of policies that propose it exclusively. This is aggravated, moreover, by the lack of information regarding the scope of the policies: it is not known if, in the end, the beneficiary companies are the ones that hire doctors or women. Worse still, the hiring of PhDs in STEM disciplines is likely to increase gender gaps since these are sciences mostly studied by men. On the other hand, although there is a unit of measurement of labor gaps at the public level (used to label the budget with a gender and diversity perspective), these are not included in the policies

studied here. Of course, this lack of information also limits gender evaluations of the policies implemented. Thus, it is necessary to move towards a more in-depth analysis of such initiatives since -just because they mention gender criteria or benefits in the body of their texts- it is not possible to affirm that they effectively contribute to closing gender gaps in the Industry 4.0 sector.

In closing, we would like to highlight the importance of incorporating the gender perspective in policies aimed at the productive sector. Although incomplete, they imply a great advance in closing gender gaps in the labor market. Moreover, this type of evaluation becomes essential to address the dynamism of the policy, which requires, to a large extent, research that will contribute to the design and implementation of an emerging type of intervention. We hope that this work will contribute to the future of Argentine and transnational policy and, why not, to the closing of gender gaps in the world of work.

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