

ASSESSMENT OF WOMEN, SCIENCE & TECHNOLOGY IN PANAMA

Data collection and analysis of the situation of women in the field of science & technology

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EXECUTIVE SUMMARY

Introduction

This study is part of the international project "National Assessments on Gender and Science Technology & Innovation (STI)" which includes a group of studies that measure the participation of women in the knowledge society in different countries of the world. These studies have been carried out following a common methodological framework, based on more than forty indicators, which measure both the conditions and opportunities available to men and women to participate in the knowledge society (conditions), as well as the degree of participation in the same of both (results). In addition, the analysis includes public policies, regulations and programs related to equality between men and women, and in particular, those that have an impact on the science, technology and innovation system (policy environment). This theoretical and methodological approach links environment, conditions and results and allows a deepening understanding, evaluation and measurement of the knowledge society in relation to gender equity and equality.

The National Secretariat of Science, Technology and Innovation (SENACYT) of Panama joins this important initiative with the aim of generating evidence to support progress in gender equity and equality in the STI system in the country. The main purpose of this study is to make an assessment that details and analyses the situation of women in STI in Panama, measuring and revealing the main gender inequities existing over the period 2006-2018. The questions that this study seeks to answer measure the participation of women in science in relation to men from a quantitative and qualitative approach. In order to measure gender gaps in the main indicators of participation, it seeks not only to know how many and where women are in STI, but also seeks to know how they are doing and what were the main barriers they faced to reach and how they overcame them in the positions they now occupy. In all of this, we examined the role of the public policies in STI.

Indicators of participation of women in the knowledge society show the existence of gender gaps in STI. The diagnosis presented shows that women participate less than men in the knowledge society, but also that they are significantly less numerous in certain scientific areas (linked to technology, computing, physics or mathematics, as well as in positions of decision

making or of high hierarchy and recognition in STI, an assessment that underlines the existence of horizontal segregation (scientific areas) and vertical (position).

MAIN FINDINGS

POLICY ENVIRONMENT FOR THE INTEGRATION OF WOMEN IN THE STI SYSTEM IN PANAMA

There was no national policy or strategy on women in STI in the equality plans generated by the National Institute for Women (INAMU) until the issuance of the Action Plan for Equal Opportunities for Women, 2016-2019. The previous plans of INAMU contemplated the need to promote equality in the use of ICTs and to combat the digital divide between men and women, but the participation of women in science was not considered. The main STI-promoting institution in the country, SENACYT, did not address the issue until the formulation of the National Science and Technology Plan (PENCYT) 2010-2014. The Gender Commission of SENACYT, created in 2012, elaborated the gender and STI elements in this plan, making the issue explicit and specific. However, the most recent PENCYT plan, that of 2015-2019, abandons a gender approach, rendering the problem of gender inequality in STI and the actions to be developed for equality between men and women in it invisible once again.

INDICATORS ON GENDER EQUALITY AND SOCIETY OF KNOWLEDGE

CONDITIONS FOR THE PARTICIPATION OF WOMEN IN THE KNOWLEDGE SOCIETY

There are gender and ethnic gaps in Panama in women's ability to exercise their basic rights of women, such as the right to sexual and reproductive health, to a life without violence and to political participation.

The indicators analyzed show that although women's basic health indicators are good, the main deficit of women's right to health appears in the area of sexual and reproductive health. The high rates of maternal mortality and early motherhood in Panama place the country in a low position on the gender equality aspects of the UNDP Human Development Index. The lack of integration of sexual rights and reproductive rights in the fundamental right to health has a major effect on the living conditions of women.

Although Panama ranks relatively high compared to its level of development on global indexes of equality, equity or empowerment, in some areas of social life the differences and inequalities between men and women continue to be very marked. Particularly notable is that women dedicate more than twice as much time as men to unpaid care and domestic work in their own homes and in the high levels of gender violence, even in its most serious manifestation, femicide.

In the economic dimension, we observe that women participate less in productive economic activities and suffer more from unemployment. In addition, they experience a wage gap in relation to men and are more likely to work in the informal economy than men. In terms of access to resources, women have less access to credit and are less likely to own property, land

or vehicles. In general, overall the gender gaps in the economy have diminished in the last twelve years.

Political participation is one of the most critical indicators. The gender gap is evident in the legislative, executive and judicial branches in the country, but also in the access of women to leadership positions in the private sector or in the unions.

The dimension with the most direct relationship to the participation of women in the knowledge society, education, presents a revealing panorama, with both current challenges and advances in relation to gender equity and equality. The data collected show that women are more numerous more than men at all levels of education levels (primary, secondary and tertiary), and have a literacy rate close to parity. However, despite the fact that women study more years than men and graduate at a higher rate, they have a high dropout rate for reasons closely related to gender, in particular not having good living conditions and lacking access to sexual and reproductive health. Teenage pregnancies are among the main causes of female dropouts. The absence of a clear public policy is pertinent to these issues.

The gender gap, however, shows different results in indigenous and non-indigenous areas. In indigenous areas, gender gaps are greater in all cases and even more, in some indicators where there is gender parity in non-indigenous areas, critical gaps appear in the indigenous areas. The indicators related to living conditions for women, especially those linked to sexual and reproductive health, such as maternal mortality, teenage pregnancies and sexually based violence, prevail at even more serious levels for women in indigenous areas. In general terms, gender gaps are smaller in urban areas than in rural areas of the country, but higher in all indigenous areas. In many cases, the ethnic gap, measured by calculating the difference in values shown by the indicators for women in indigenous and non-indigenous areas, turns out to be even more critical than the gender gap. Women who live in indigenous areas have greater inequalities in relation to other women in non-indigenous areas than in relation to men in indigenous areas. This occurs especially with indicators such as illiteracy, educational attainment and dropout rates.

We consider this one of the most revealing findings, not only for the subject we are dealing with, but in general to address the inequality that affects the different social groups, in particular women. This intersectional view allows a more integral way to observe how other social conditions, in this case ethnic identity and residence in indigenous areas, add to the condition of gender.

At the same time, we see that there has been progress in the recognition of women's specific rights and in the elaboration of public policies for equality between men and women in line with the international agreements ratified by Panama. It is important to recognize the achievement of the norm and the national policy of Equality of Opportunities between Men and Women, as well as the creation of the National Women's Institute (INAMU) itself, as a normative and political framework for public policies on gender and for women in the country. The difficulties encountered by the movements of women, feminists and other organizations

and social groups to advance women's rights, and in particular in relation to issues such as sexual and reproductive health and parity in politics, show how although the country is in a slow but continuous advance of the recognition of rights and freedoms for women, some issues or spaces continue to represent a challenge and meet strong resistance.

In any case, having a normative framework that recognizes the rights of women or public policies aimed at reducing the gender gap and impact on equal opportunities between men and women, does not necessarily get reflected in practice. The gender and ethnic gaps still in place show this and suggest another gap, the implementation gap.

RESULTS IN TERMS OF PARTICIPATION OF WOMEN IN THE KNOWLEDGE SOCIETY

Women encounter greater obstacles than men throughout their scientific careers and participate little in decision-making positions in the knowledge society in Panama.

In the "knowledge economy" dimension we see how women have become the majority (59 percent) of people with professional and technical positions, with a clear increasing tendency over the last twelve years. While they occupy around 40 percent of the positions of upper and middle management, and although there is an improvement trend in the last decade, important differences remain by area and level. There are more men than women in skilled jobs in the knowledge economy, with men's advantage increasing as the level of employment increases. Women are close to parity at the low level, but hold about ten percent fewer jobs at medium and high levels. The numbers of men enrolled in higher education in computer science and those with high-level computer skills are double that of women; in engineering, the numbers of men are more than double those of women. The majority of tenured university professors are men, although there seems to be a trend towards parity, particularly in public universities. However, there is a segregation by areas of knowledge, with most of the faculties of engineering, computers or technology being men, and women in the social and health sciences.

In some of the scientific fields, especially in physical sciences, mathematics and statistics, as well as computer science, engineering and the fields of industry, production, architecture and construction, the traditional division of gender is maintained, with men being the majority of graduates. This is despite the fact that women comprise 65 percent of those who graduate overall.

The majority of researchers in the country are men (more than 60 percent), which also shows a hierarchical trend: there are more men in the position of researcher than in the positions of support staff or staff of scientific and technical services.

The result of this unequal participation of men and women in science allows a graphic representation in the shape of a scissors that shows how the percentages of men and women reverse their positions as the scientific career advances. In the literature on gender and science this uneven trend in the careers of men and women is referred to as the "scissors effect".



This effect indicates that women represent the majority of students in higher education, but only about half of researchers, scientists and technologists in the country. In relation to scientific recognition, the percentages decrease, with women making up only one-third of the lead researchers of projects that receive R & D funding or recognition by the National Research System. In addition, only one-fifth of the country's patents include at least one female inventor. At the highest level, in management and decision making in science, women represent only 28 percent of the rectors and do not direct any of the high-level research centers. Equally revealing is the fact that a woman has never headed the National Secretariat of Science, Technology and Innovation (SENAYCT).

Indicators of participation of women in the knowledge society show the existence of gender gaps in STI. The assessment shows that women participate less than men in knowledge society, but also that they are significantly less numerous in scientific areas linked to technology, such as computing, physics and mathematics, as well as in positions of decision making or of high hierarchy and recognition in STI. This shows the existence of horizontal segregation (scientific areas) and vertical (position).

Officials and managers of the STI system, as well as women scientists, were consulted in the course of this study. Among them we observed a different assessment and analysis of the diagnosis presented. The managers and authorities of science in the country see women as participating more and more in all fields of science. They agree that vertical segregation has been reduced in recent years, to such a level that now women are left with only "the last 5 meters" to go. They feel that gender inequality is a problem of the past and that in the natural order of things – without any intervention – it will be overcome. This analysis explains the absence of initiatives aimed at parity or affirmative action for women in the country's scientific and academic institutions.

On their part, women scientists demand actions that correct or combat inequality in the development of their scientific careers. Among the situations that they experience as women scientists and that are not made visible, they recognize gender discrimination in the access to positions or scientific recognition due to gender stereotypes; sexist and androcentric organizational cultures in their places of work in scientific and academic institutions; and the lack of actions to reconcile family and work life, considering that gender roles in society and their homes are still in force. These are situations that all the women interviewed have experienced at some time and which they have faced with their own resources, in the absence of STI public policies with a gender perspective. Among the conditions that have facilitated their participation in science are having economic resources, coming from a majority ethnic group, and having a partner that supports their career and embraces responsible parenthood and/or supports and strengthens their personal empowerment. All these conditions express an inequality of opportunities among women themselves and may explain how some women have successful careers in science and others do not. Women scientists affirm that the cost of being or having developed a scientific career is not always visible.

MAIN CONCLUSIONS AND RECOMMENDATIONS

Within the equality plans and policies developed in Panama, although education has always appeared as one of the central issues and priority objectives in the struggle for gender equality, the same has not happened with the field of science, technology and innovation. This has not been a priority issue because the areas where inequality is produced and manifested remain largely invisible. The invisibility and lack of problematization of gender inequality in STI has conditioned its absence from the public policies developed by institutions responsible for ensuring women's rights and gender equality; in addition, the gender approach is largely absent from the agenda and policies of the institutions that are part of the science and technology system in the country.

The findings show a reduction Panama in all the basic indicators over the last twelve years, even in those where the gender gap continues to exist, some at a higher rate than others, but all maintaining a decreasing trend.

Although there has been general progress in reducing the gap between men and women in basic indicators of social welfare, other indicators that refer particularly to the rights of women to live a life free of violence, decide on matters involving their own bodies and sexuality or participate in the highest spheres of decision-making in all areas of power still persist and even deepen over time. All of these are exacerbated by ethnic gaps. All these gaps show inequalities and inequities that condition the equal participation, under equal conditions, of men and women in the knowledge society.

The indicators of STI collected in the country show multiple challenges and little progress in relation to equity and gender equality, confirming the validity of horizontal and vertical gender segregation. Horizontal segregation keeps women largely out of the STEM disciplines from early ages of their training, maintaining and deepening in their professional and scientific careers. Vertical segregation keeps women scientists out of decision-making positions.

Authorities and managers of the science system in the country, on the one hand, and women scientists, on the other, interpret the current gender diagnosis in STI differently. For the scientific authorities, much progress has been made in terms of equality between men and women, and women are poised to start occupying the highest positions in the scientific hierarchy. On their part, women scientists seek not only access to decision-making positions in science, where they are either now not present or are underrepresented but also that their scientific careers can be developed under the same conditions as those of men, without having to face barriers to their professional development by being women.

STI public policies have made very little progress in reducing these inequities. The few actions developed in this regard by scientific and academic institutions manage to alleviate some of the obstacles encountered by women in their participation in science, but in no way structurally and integrally address the gender causes that explain the inequality between men and women. Among these are especially the persistence of stereotypes and gender roles that place women in a worse condition than that of men for the development of scientific careers as well as the scarce attention paid to the needs and interests of women in particular to work-life balance -- the reconciliation between professional and family life.

As we point out the perpetuation of gender inequalities in STI, we challenge public policies and scientific institutions to act on them with an equity approach. We recognize that SENACYT, the main public institution with the mandate to organize and manage STI in the country, has shown awareness and commitment on this issue as evidenced by requesting this study to gather evidence to formulate its policies. In this sense, this study and the position of SENACYT constitute an opportunity to improve this situation.

We propose two strategic approaches to address gender inequality in STI. The first is that we must move from a women-based approach to a gender-based approach. That women participate little, less or marginally in science or that women do not have the same opportunities or have to have an "extra amount" of facilitating conditions to develop a scientific career and occupy decision-making positions in STI are issues of gender relations and perspectives and, therefore, must be addressed from this perspective. So far most of the initiatives developed in relation to this topic have had the focus of "women in science", that is, with a focus on women, without intervention in the systemic, sociocultural or institutional aspects of their lives or careers. The analysis of how many participate, where they participate and how they got there reveals a gender inequality that must be answered with guided initiatives and raised from a gender equity approach. This step will be decisive in making visible results and progress in terms of equality.

The second is that gender is insufficient. The data collected in this diagnosis show that social inequalities in participation in science go beyond gender. The social differences and inequalities in relation to access and participation in science are not only between men and women, explained by gender but also within a matrix of inequality including ethnic and socio-economic factors.

Expanding the opportunities for participation in the science of all people results in better science. This study challenges those who maintain and reproduce a science system and a gender system based on inequality, including women scientists themselves, so that they become aware and fight for their rights. We hope that the evidence collected in this study serves to reverse the current state of science, technology and innovation in the country from all possible fronts. It is fair and necessary.