Concept note of Gender STI framework

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AC	Associated Countries
ERA	European Research Area
EU	European Union
MoU	Memorandum of Understanding
MS	Member States
R&D&I	Research, Development and Innovation
SFIC	Strategic Forum for International Scientific and Technological Cooperation
STEM	Science Technology Engineering and Mathematics
STI	Science Technology and Innovation
SWG GRI	Standing Work Group in Research and Innovation

1 INTRODUCTION

The goal of this deliverable is to build a shared understanding on how to approach the gender perspective in dialogues with third countries in the area of STI (Science, Technology and Innovation) in order to deep the knowledge of the current implementation of the Council conclusions of 1 December 2015, which invited the EC and MS to consider the gender perspective in dialogues with third countries.

The policy context of gender equality for international cooperation in STI has "promoted" policies and initiatives regarding the integration of gender perspective. Already existing initiatives like the EC Strategic Engagement for Gender Equality and the priority of the European Research Area (ERA) shape and boost the gender equality in bilateral and multilateral agreements with third countries.

The special constellation of the project of a broad partnership of 10 countries from America, Africa and Asia with European partners provide a unique position for Gender STI to influence policy change to advance in the integration and promotion of gender equality in STI dialogues with third countries. Therefore, we address:

- formal bilateral and multilateral STI agreements between MS and AC and the selected countries,
- bilateral and multilateral STI implementation activities,
- dissemination and promotion of gender equality in international dialogues and cooperation.

The Gender STI is built on the work done by European research area related groups like the Standing Working Group on Gender in Research and Innovation (SWG GRI) and the Strategic Forum for International Scientific and Technological Cooperation (SFIC). Along with the ERA working groups on gender and international cooperation, Gender STI will also build on the work done by EU funded projects like GENDERACTION and GENDER-NET Plus.

The state of the art was elaborated to develop an analytical framework which required, for instance an intensive gender analysis. Furthermore, the state of the art of research (collected data, available findings) and policy dialogue of gender STI strengthened common understanding. These findings of policy dialogues and collected data of the current situation of women in STI fields shape the analytical framework. The shared understanding of the current state of gender in STI fields gives the gender STI partners a common vision, which correspond to the principles and differences of the individual partners. This serves the STI agreements investigation process, helps to design the survey on gender equality and, by extension, also the conceptual and thematic backgrounds. The closely interlinked activities of the project demonstrate that all work packages are aligned to follow this framework. In some of the activities, like "comparative analysis and benchmarking on gender equality in STI dialogues", the framework provides firmer guidelines than in others.

The outcome of the state of the art and the study of policy dialogues create a concept note, which serves as a basis for subsequent analysis. The summary of the current status of gender equality in STI and policy context of gender equality for international cooperation in STI are important components of the concept note. In addition, a framework of the Gender STI investigation is given. These dimensions provide the best preconditions to work together in bilateral and multilateral dialogues with third countries and to know what inequalities we are facing in restrictive gender in STI fields. The common understanding for the future approach to investigate gender STI is shaped here.

2 STATE OF THE ART OF GENDER STI

In order to determine the state of the art of gender in STI fields and policy dialogues with third countries, a preliminary gender analysis was carried out according to (*European Institute for Gender Equality*, 2020a). Gender analysis is the study about differences (participation rate, conditions, visibility) between women and men in their assigned gender roles. The results of the gender analysis were obtained from the following steps:

1. collecting available data on women and men in the fields of STI in the countries covered in Gender STI,
2. identifying gender differences and inequalities based on the collected data,
3. approaching the gender STI policy dialogue with third countries, and
4. informing project partners - build a common understanding for future investigations.

2.1 Collecting available data

First, data were collected in relation to gender and STI fields. The importance of this data collection is that there must be a reference to gender and also the reference to Science Technology and Innovation. The STI fields were Science, Technology, Engineering and Mathematics (STEM) areas to ensure comparability of the data. These would be among others: Natural sciences, mathematics and statistics, Information and Communication Technologies, and Engineering, manufacturing and construction.

Gender: the data collected were for women and men.

STI fields: collected data refers to STEM (Science, Technology, Engineering and Mathematics).
These include the areas: Natural sciences, mathematics and statistics, Information and Communication Technologies, and Engineering, manufacturing and construction.

To get an overview of differences between women and men in STI fields, data was gathered for each country, namely 10 third countries and 6 EU countries that form a core reference group for this study. These dimensions refer to the distribution of women and men:

- In employment
- in education (university) in STI fields,
- of PhD graduates in STI fields,
- in human resources in STI, and
- in lead positions (independent of the professional field).

Human resources in STI: refers to scientists and engineers or individuals employed in Science and Technology.

Due to the limited data available, the research has been adjusted accordingly. Especially the non-EU partners have supported the wide-ranging research in their national language, to reach out for the most current and best available data.

The collected data relates to the EU and, if available, to the non-EU partners: Argentina, Brazil, Canada, Chile, China, India, Mexico, South Africa, South Korea and USA.

First, data were collected on the population in 2019 of men and women in each country from Eurostat (2020). For the non - EU countries we used the World Bank Data from 2020. The next step was to determine the number of employed men and women, also for 2019 based on Eurostat (2020), whereas for the non - EU countries we have obtained the data from the World Bank Data (2020). Thus, one can tell if there are differences in employment based on the population. This supports the evaluation of the further collected data.

In the second step, not only gender plays a decisive role, but the aspect of STI fields comes into play. For data collection, STI fields were considered similar to STEM (Science, Technology, Engineering and Mathematics) areas. Since we rely on comparable data for as many countries as possible from the project partners, these build data on a solid basis.

The collected data for the STI fields was divided into three levels based on gender division:

2. in education (university) (*OECD.Stat*, 2021)
3. in PhD graduates (*European Institute for Gender Equality*, 2020b), and
3. human resources (*European Institute for Gender Equality*, 2020c) and (*European Institute for Gender Equality*, 2020d).

In addition, data were obtained on women and men in lead positions. Here there was insufficient data on the STI fields (STEM related) in relation to gender, so these were generally determined independently of the professional field. Through identifying inequalities or inequalities for women in STI fields on the basis of these gathered data, the Gender STI can build a common understanding for the state of the art.

In addition, based on current circumstances, data already available on Covid-19 was collected in relation to gender. This should give an impression about the current situation for gender equality. Does Covid-19 affect the genders differently in their professional fields, and especially in STI fields.

The data was collected after extensive research on various database websites. Among others, the websites of the European Institute for Gender Equality (2020), OECD.Stat, (2020), European Commission (2020), World Bank Open Data (2020) and UNESCO Data, (2020) were used.

For the non-EU partners, comparable data from the aforementioned sources was less available and data was provided by each partner, if available. Consequently, the partner organisations of Argentina, Brazil, Canada, Chile, China, India, Mexico, South Africa, South Korea and the USA gathered by themselves equivalent country data. This coverage should make it possible to obtain an almost worldwide overview of the state of the art for the inequalities between women and men in STI. Sufficient availability of data is one of the components of the framework, which helps to provide a basis for further investigations.

2.2 Identifying

The data was collected for six EU countries, in specific for Spain, Finland, Portugal, Austria, France and Italy and for the ten non-EU partners (Argentina, Brazil, Canada, Chile, China, India, Mexico, South Africa, South Korea and the USA) of the project.

First, the number of women and men in the respective countries in 2019 was determined. The key question here was what is the distribution of women and men living in the respective country.

In 2019, the population of the EU 28 states consisted of 51% women. In Spain, Finland and Austria the population consisted of just under 51% women, in Italy slightly over 51%. In turn, in France 51.7% of the inhabitants were female and in Portugal even 52.8% (*Eurostat Data Browser*, 2021a).

The following values could be determined for the non-EU partners. Argentina's and Mexico's population consisted of just over 51% women, Chile's, South Africa's, Canada's, USA's and Brazil's population consisted of more than 50%, South Korea's of 49.9% women, China's of 48.7% and India's of 48% women (*The World Bank Data*, 2021).

Second question that interested us was the employment of women or men, namely are more women or more men in employment? First, we addressed the work situation between women or men in general, and next, we looked at the situation in relation to the STI fields.

Despite the existence of equal distribution of men and women among the countries for which data were collected, there is none in which more women are employed than men.

Table 1 shows the percentage of women and men.

Table 1: Gender bias in employment rate (*Eurostat Data Browser*, 2021b)

Countries	Employment 2019 women	Employment 2019 men
EU 28	68.2%	79.6%
Spain	62.1%	74.0%
Finland	75.8%	78.5%
Portugal	72.7%	79.9%
Austria	72.4%	81.2%
France	68.1%	75.2%
Italy	53.8%	73.4%
Argentina	59.0%	80.0%
Chile	59.0%	79.0%
South Africa	54.0%	66.0%
Canada	75.0%	82.0%
USA	67.0%	78.0%
Mexico	48.0%	82.0%
Brazil	61.0%	80.0%
India	22.0%	80.0%
South Korea	51.0%	71.0%
China	68.0%	82.0%

In Table 1, Eurostat Data Browser was used for the European countries data. These data refer to the year 2019 and the percentage of employed women and men aged 20-64 in relation to the total population. For the ten third countries, the World Bank Data was used. This refers to the employed percentage between the ages of 15 and 64 for 2019.

In the European area, women are employed 11.4 percentage points less than men on average. However, there are strong differences in the individual countries, as is shown by the comparison of the six partner countries of the project. Finland performs best with a difference of only 2.7 percentage points, while Italy has 19.4 percentage points fewer women in employment. However, this is independent of the professional field. The average of the population in the EU is distributed almost 50/50, with the tendency that there are more women than men in the population. Therefore, it can be clearly stated that fewer women than men are actually employed, and that inequality can be found here.

However, Canada, the USA and South Africa are close to the European average. India stands out strongly, with 58 percentage points fewer women than men in employment. This means that only 22% of women are employed, while for men the employment rate is 80%. Mexico and China also have starkly striking inequality. Brazil, Chile, Argentina and South Korea have a difference of about 20 percentage points. Only three of the non-EU partners are within the range of the European average; the other seven show clearly greater differences in employment status. As mentioned earlier, these countries also have a nearly 50/50 population distribution.

There are very clear differences in the various countries, but one fact is always the same in all countries: on average, fewer women than men are employed.

In order to gain understanding of **gender in STI,** data related to gender and STI fields were researched to assess the current state of the art. In order to obtain a suitable overview, this research was carried out in three stages. First, we determined how many women and men are in tertiary education in the areas of STI. Then, the percentage of PhD graduates in STI was determined, and lastly, we looked at percentage of women in the human resources in STI fields. Specifically two areas were considered here:

1. Human resources in Science and Technology, and
2. Human resources among scientists and engineers.

Table 2: Gender bias in STI fields for EU
(*OECD.Stat*, 2021) and (*European Institute for Gender Equality*, 2021a)

Countries	in Education 2018 women	in Education 2018 men	with PhD 2018 women	with PhD 2018 men
EU 28	-	-	0.01%	0.01%
Spain	11.47%	36.30%	0.06%	0.07%
Finland	12.88%	50.89%	0.04%	0.07%
Portugal	17.91%	41.82%	0.04%	0.04%
Austria	9.55%	28.08%	0.03%	0.06%
France	14.30%	39.73%	0.03%	0.06%
Italy	16.38%	35.17%	0.02%	0.03%

The column "in Education 2018 women" and "in Education 2018 men" of Table 2 reflects the percentage of women and men in a tertiary education who chose an STI field for the year 2018. The following fields of study were considered for STI:

- Natural sciences, mathematics and statistics,
- Information and Communication Technologies, and
- Engineering, manufacturing and construction.

Figure 1 shows of Table 2 the different distribution of women and men in tertiary education in the European countries.

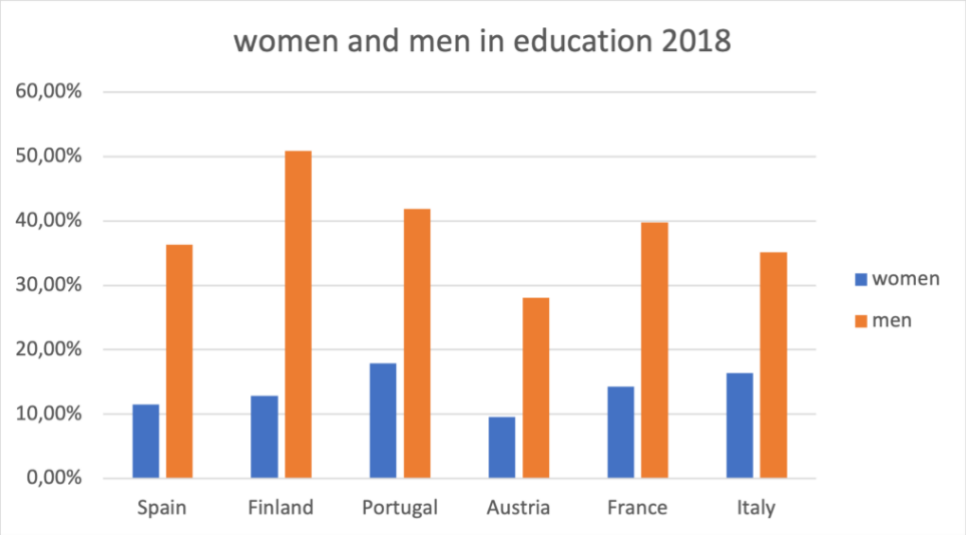

Figure 1: Women and men in Education 2018

Column "with PhD 2018 women" and "with PhD 2018 men" represent graduates at the doctoral level in science, mathematics, computing, engineering, manufacturing and construction for the year 2018, of the population aged 25-34.

Figure 2 shows the distribution of women and men with a PhD in 2018 of Table 2.

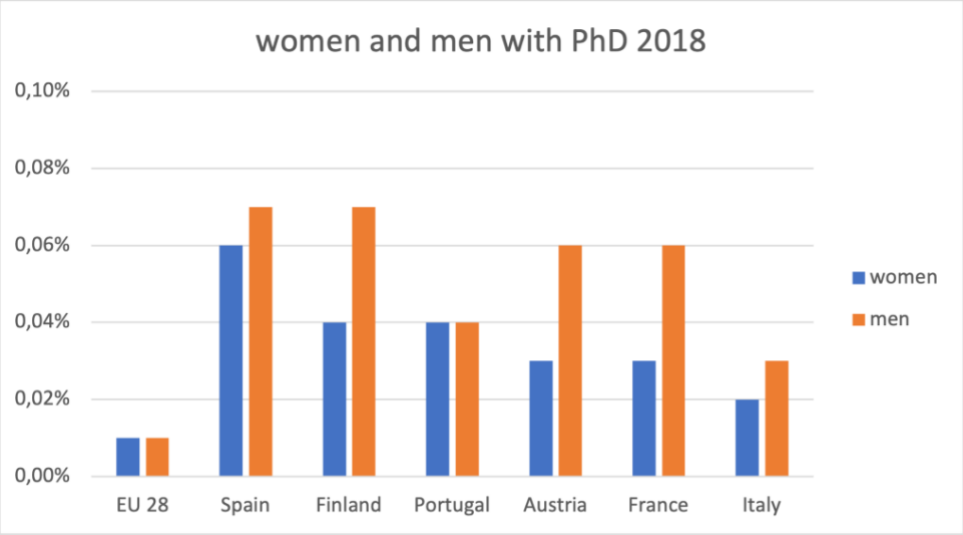

Figure 2: Women and men with PhD 2018

Table 3: Gender bias in STI fields for Human Resources in the EU (*European Institute for Gender Equality*, 2021b) and (*European Institute for Gender Equality*, 2021c)

Countries	Human Resources 2019 (% women)	
	Science & Technology	Scientists & Engineers
EU 28	51.99%	41.65%
Spain	50.68%	50.39%
Finland	52.93%	70.6%
Portugal	53.3%	48.22%
Austria	52.67%	46.65%
France	31.39%	41.86%
Italy	47.19%	34.51%

Table 3 reflects the percentage of women aged 15 to 74 for 2019 who are employed in the fields of Science & Technology and Scientists & Engineers.

Of all those who chose tertiary education, the decision to enter the STI field in Finland is highest among males, at 50.89%. Whereas only 12.88% of women in Finland chose this field. One could say that 38.01 percentage points more women should choose a STI field to obtain equality. This inequality persists in Finland for PhD graduates. It is therefore all the more interesting that Finland is the best performer in the human resources category. In human resources in Science & Technology 52.9 % of employees are women, and overall there are 70.6% women working as scientists or engineers.

However, this is not the European standard, as on average only 41.65% of scientists and engineers are female. Thus, there are many countries for which the differences between women and men in STI fields are higher. Spain is also well above the EU average for human resources at 50.39%, followed by Portugal, Austria and France. These countries are just above the EU average. Thus, some countries have strong inequalities between women and men scientists and engineers. One example is Italy, where only 34.51% of scientists and engineers are female.

Regardless of the future career field, there are clear differences between women and men in their choice of education.

In summary, there is a gender gap for education in the countries of Finland (difference of 38.01 percentage points), France (difference of 25.43 percentage points), Spain (difference of 24.83 percentage points), Portugal (difference of 23.91 percentage points), Italy (difference of 18.79 percentage points) and Austria (difference of 18.53 percentage points). Finland has the largest gap, with significantly fewer women than men opting for technical tertiary education. The gap is smallest in Austria, where it must be mentioned, however, that few people are interested in education for the STI fields. This can be seen in Table 2.

In order to get a more accurate picture of the current status, a research of the data on the ten non-EU partners of the project was conducted. The availability of this data is sometimes very limited, which is in itself an indication of attention to gender aspects in STI, so each

partner has tried to search more data themselves. Table 4 shows the data used for the evaluation of the state of the art of gender in STI.

Table 4: Gender bias in STI fields, 10 countries
(*OECD.Stat*, 2021), (*UNESCO*, 2021a) and (*UNESCO*, 2021b)

Countries	in Education 2018 women	in Education 2018 men	with PhD 2018 or 2017 women	with PhD 2018 or 2017 men	Human Resources Researcher (% women)
Argentina	33%*	67%*	0.03%	0.03%	54.10%
Chile	6.88%	39.47%	0.01%	0.02%	34.40%
South Africa	-	-	0.03%	0.04%	44.90%
Canada	12.14%	36.77%	-	-	-
USA	11.33%	29.87%	-	-	-
Mexico	14.97%	38.66%	-	-	33.00%**
Brazil	10.69%	29.97%	-	-	-
India	27.80%	38.02%	-	-	-
South Korea	14.31%	45.06%	0.07%	0.1%	20.40%
China	-	-	-	-	-
*from BID-Argentina **of 2013					

Table 4 shows data for the third country partners. Due to the difficulty of accessing the data, only part of the table is filled. Column "in Education 2018 women" and "in Education 2018 men" are from the same source as the EU data that makes the values comparable with each other. They indicate the percentage of women and men, respectively, who chose higher education in the field of STI. The values are very similar to the six EU Countries (Table 2).

Figure 3 shows the different distribution of women and men in tertiary education in third country partners in 2018 of Table 4.

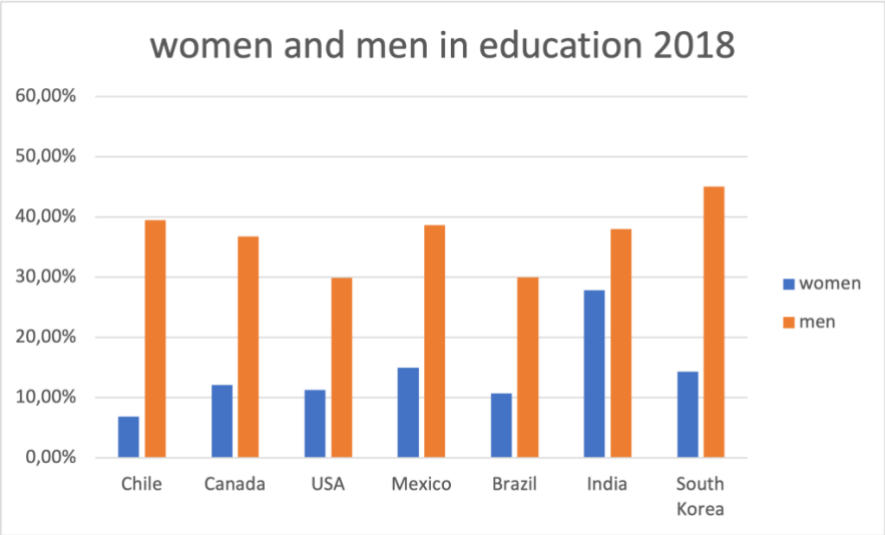

Figure 3: Education, 10 countries

The proportion of men interested in the STI field as a higher education is similar to that of the six EU countries. Differences can be seen among women, with Chile having an even lower proportion of women 6.88% and India a much higher proportion of women 27.8% opting for higher education in STI.

Nonetheless, from the data collected, the highest value of female percentage 27.8% (namely in India, Table 4) is smaller than the lowest male percentage 28.98 % (namely in Austria, Table 2). This gap shows a clear inequality between women and men. Far fewer women than men are professionally qualified for an STI field.

Columns "with PhD 2018 or 2017 women" and "with PhD 2018 or 2017 men" show the proportion of women and men who are in training in the depth comparable to a PhD (*UNESCO*, 2021a). Again, there are always fewer women than men in this field. Argentina, Chile, South Africa and South Korea are above the EU average. South Korea stands out, with as many as 0.13% of men in a PhD. The proportion of women is also particularly high here, although fewer women than men were in tertiary education at the beginning. Apparently, those women who pursue this training are also more likely to stick with it.

The Human resources column reflects the proportion of women in the area of research (*UNESCO*, 2021b). The values refer to 2017 and 2018 and for Mexico to 2013. Argentina has a very high share of women in research (54.1%) while South Africa is in line with the European average as far as the data can be compared. Chile, Mexico and especially South Korea show a very clear gap between women and men in the area of research.

However, due to lacking data no world-wide statement can be made, therefore some additional data from United Nations were consulted. Based on the UN data, the proportion of female researchers is less than 30% world-wide (*United Nations*, 2021).

Third step in assessing the state of the art was to study **women in leadership positions**. For this step, it was necessary to skip the restriction of STI fields due to the unavailability of data. Table 5 presents the percentage of women in a lead position in 2019 in the European countries.

Table 5: Lead Positions (independent of professional field) held by women in the EU (*Eurostat*, 2021)

Countries	Lead positions by women in 2019
EU 28	28.8%
Spain	26.4%
Finland	34.2%
Portugal	24.6%
Austria	31.3%
France	45.2%
Italy	36.1%

In the EU 28 countries, 28.8% of leadership positions are held by women. France stands out particularly in business field (see Table 5), with 45.2% of female leaders.

Table 6: Managerial positions held by women, 10 countries (*UN WOMEN*, 2021)

Countries	Managerial positions by women 2019
Argentina	32.6%
Chile	27.3%
South Africa	30.5%
Canada	35.5%
USA	40.7%
Mexico	36.1%
Brazil	39.6%
India	13.7%
South Korea	14.5%
China	-

Table 6 shows the managerial positions for the non-EU partners.

For the 10 partner countries, the USA performs best with 40.7%, this may not surpass France in the proportion of female leadership positions, but clearly the EU average. Argentina, Chile and South Africa are around the EU average of 28.8%, and South Korea and India score very poorly at 14.5% and 13.7%, respectively.

As the statistics shows, there are clear inequalities in the distribution of women and men in leadership positions, both inside and outside the EU.

Given that world has been affected by extraordinary circumstances of Covid-19 in 2020, it is interesting to include aspects related to pandemic to the Gender STI study. It is clear that women have suffered the most from the conditions. Due to lock downs as well as school closures, families are forced to care for their children while working. For instance, the field of Computer Science and Mathematics saw a rather small decrease of 10%. Other fields where, for example, laboratories or devices were needed that were not available at

home office suffered greater losses. The researchers suffered a greater decline with children aged 0-5 years. Here there were even losses of about 17% of the research time (*Nature Human Behaviour*, 2021).

To summarize the most important points, we face a clear inequality between women and men in STI. Given that the population is almost evenly distributed, there are only 41.65% female scientists in the EU average. Furthermore, less than 30% of researchers worldwide are female, and only 30% of female students choose a STEM related field (*United Nations*, 2021). These results show us that work is to be done in narrowing inequalities in STI fields. Understanding of the national contexts helps us in further investigations in the Gender STI, for instance on which contents the international STI cooperation dialogues with third countries should be applied, and which areas to address in designing policy dialogues between the EU and third countries.

2.3 Approaching the gender perspective in STI dialogues with third countries

The gender dimension is an integral part of the Gender STI research and innovation action and is explicitly taken into account in the project's content. The overall aim is however to address policy dialogue of international STI cooperation, in particular a dialogue between EU member states (& associated countries) and third countries. In this project, we approach this dialogue from the perspective of involved 10 third countries (see Figure 4). By this we mean that study focuses on the STI dialogues from these 10 partner countries to EU member states and associated countries.

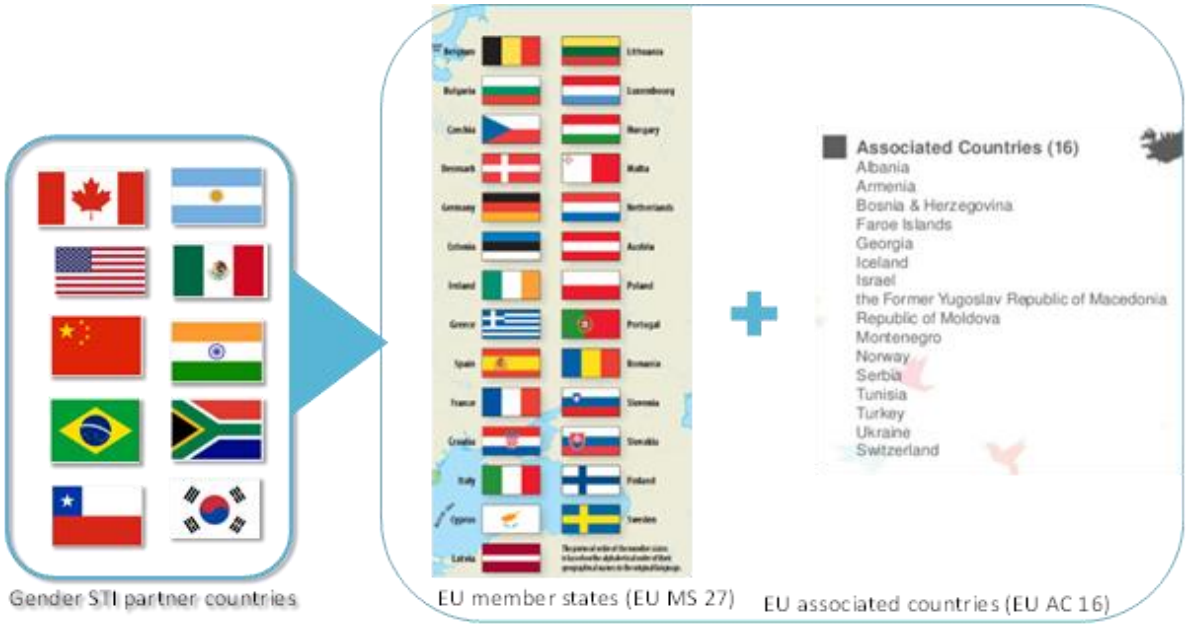

Figure 4: Gender STI country focus

To ensure co-creation and integration of project partners and external stakeholders, we follow a design thinking methodology throughout different work packages. Gender STI communication and dissemination plan will consider the publication of gender-related findings of the research, in addition to the promotion of gender equality in bilateral and multilateral agreements in STI across multiple channels to reach Gender STI community, i.e. institutions, researchers, NGOs, agencies, associations, individuals and organizations that advocate for gender equality in STI and in international cooperation.

3 GENDER STI COMMUNITY

The scope of Gender STI is wide as the project includes altogether 18 partners from 16 countries. Stakeholders are also many given the nature of gender equality as cross-cutting theme in various areas of STI, therefore a STI community reaches from governmental to grass-root levels of national civic organisations and individual opinion leaders. For this reason, in parallel to global dialogue with STI stakeholders, national dialogues are highly important. In this project, we have divided the extensive gender STI community in three areas to ease stakeholder identification and inclusion. Because of national differences in institutional structures, the relevant actors vary from country to country; therefore, it is not meaningful to create a comprehensive list of individual stakeholders but to pinpoint to relevant actor groups (Figure 5).

Figure 5: Gender STI community

The 18 Gender STI consortium partners form the core group of the Gender STI community. Consortium partners are the main actors in collecting, developing and implementing information of gender in international STI dialogues. A second tier of community consists of various STI-related national actors of 16 partner countries, and at EU level. These actors serve as important informants of gender in STI, and include for example government actors, such as ministries (education, social and health, science and technology, economy, etc.), and research funding proving agencies. Scientific and research actors, such as universities, other education institutions and research organisations, are key informants too but also collaborators in the Gender STI community. Furthermore, various national gender-related associations and agencies are good channels to reach national stakeholders. To reach a global scope, similar to national level stakeholder groups at global level are to be engaged in the gender STI dialogue. These global stakeholders are in turn important channels for awareness raising and dissemination.

In specific, Gender STI aims to improve the gender inclusion in international STI cooperation policy dialogue through three main activities (Figure 6):

1. Mapping of gender in STI agreements (bilateral and multilateral agreements between 10 third countries and EU MS (& AC).

2. Understanding of gender in the wider STI community, including also innovation activities and research, development and innovation (R&D&I) decision making.
3. Enhancing the inclusion of gender in STI by co-creating solutions and good practices through stakeholders' engagement into international STI dialogues.

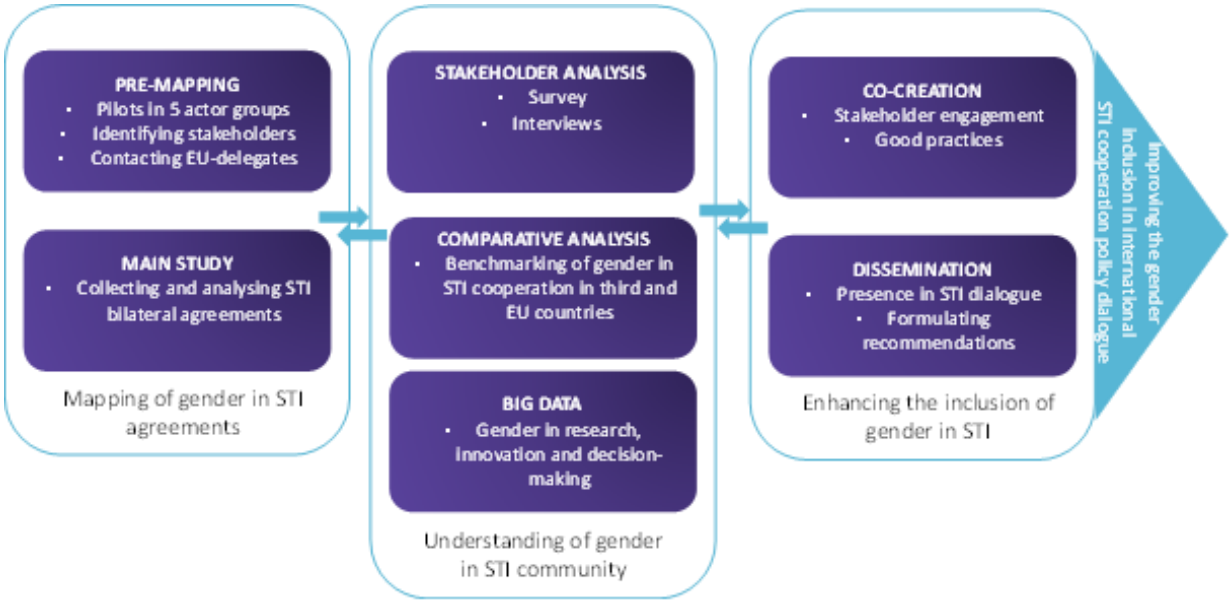

Figure 6: A methodology to improve gender inclusion in international STI cooperation policy dialogue

Mapping of gender equality in STI dialogue between EU member countries (and AC) and third countries starts with a pre-mapping exercise that is divided into two streams of investigation:

1) mapping of multilateral agreements between EU and third countries, in which the initial source of information are EU-delegation offices in 10 third countries. These offices are hoped to provide access to not only multilateral but also bilateral agreements given that the mandates of the delegation include for example monitoring the implementation of the agreements between the EU and country "X" and participation in the implementation of the cooperation programs of the European Union.

2) pilot mapping of bilateral agreements between EU and third countries. Due to unavailability of a direct access to bilateral agreements, the Gender STI project implements a pilot exercise to identify agreements. We run pilots in 5 actor groups in 10 countries (see Table 7).

Table 7: Pilot examples

Countries covered	Actor	Type of agreements
Finland India	Ministries of Foreign Affairs and other government level organizations	• Bilateral STI agreements • MoUs
France South Africa	RTOs	• Bilateral STI agreements • MoUs
Chile Austria	Universities	• Bilateral STI agreements • MoUs
Argentina Portugal	NGOs	• Bilateral STI agreements • Explore if MoUs are available
Brazil Spain	Science and innovation funding organizations	• Bilateral STI agreements • Explore if MoUs are available

Based on the knowledge gained from the pilots, we are able to identify the main actors and areas to be surveyed and the STI fields where the agreements are signed, and eventually revise the guidelines for data collection of the main study. The pilot studies provide important information for subsequent activities of Gender STI project, such as identification of informants and key actors for the on-line survey, and interviews.

4 THE MAIN CONCEPTS OF GENDER STI FRAMEWORK

The research of the data as well as the project's internal exchange showed that the understanding of the STI fields is quite different in different countries. This unclear definition of STI has made the data analysis difficult, and the focus was placed on fewer sources that were comparable. Therefore, in the course of the research, some specific areas like STEM (Science, Technology, Engineering and Mathematics), Natural sciences, mathematics and statistics, Information and Communication Technologies, and Engineering, manufacturing and construction were assigned to the term STI. In addition, it was clear that limitations in data collection and comparison exits in the scope of the project.

The framework of Gender STI project follows the following concepts:

Gender:

The term gender describes the appearance, activities and responsibilities connected being male, female or diverse in a given society (March et al, 1999). Due to insufficient data, the gender STI refers to female and male. The research shows that inequalities exist between the female and male gender in STI fields. Gender STI addresses the gender equality in STI in bilateral and multilateral dialogues.

International cooperation:

By international cooperation we mean cooperation between the EU28 member states (and 16 associated countries) and selected third countries, Argentina, Brazil, Canada, Chile, China, India, Mexico, South Africa, South Korea and the USA. Following this definition of cooperation, we exclude international cooperation between the third countries only from the study.

Science, Technology and Innovation (STI):

Defining the term STI presented us with a particular challenge. The range of STI is broad, therefore offers many opportunities and directions for in-depth study. In this task, the focus was on collecting data on gender equality and gender inequality.

Thus, for this task Science, Technology and Innovation was set for the area of an education on **Science, Technology, Engineering and Mathematics (STEM)** related subjects.

For human resources, we based our analysis on the professional fields: **Science & Technology, Scientists & Engineers** and **Researchers.**

Multilateral STI agreement is an agreement between multiple parties in the area of international cooperation of STI.

Bilateral STI agreement is an agreement between two parties in the area of international cooperation of STI.

Memorandum of Understanding (MoU) is an agreement between two or more parties outlined in a formal document. MoU is not legally binding but signals the willingness of the parties to move forward with a contract.

5 SUMMARY

Data were collected for the EU 28, the six EU partners, and the ten non-EU partners when available.

The population in these countries distributed almost 50/50. The tendency is uniform, except for three countries (South Korea, China, and India), that more than 50% of the population is female.

The first notable difference is that fewer women than men are employed, regardless of the occupational field.

There are clear gender gaps in the area of education. Fewer women than men choose to study STI. Across the EU, only 41.65% of scientists & engineers are female.

The percentage of women in management positions varies among the 16 countries involved in Gender STI from 13.7% to 45.2%. Women are underrepresented in the positions where decisions are made. However, this is again in general and not related to the STI fields. However, due to lower numbers of female human resources, it can be concluded that there will also be fewer women in lead positions in the STI fields.

Clear differences between women and men are evident. The decrease in research activity by women because of Covid-19 further reinforces this effect.

The evaluation of collected data helps us to assess the actual gender perspective in STI fields. Thus, a common understanding of the state of the art was established. This shared understanding is the most important step to act as one union in the Gender STI project. It provides a good basis for the further proceedings in the Gender STI investigation.

There are fewer well-educated women in the STI, fewer working in the field, and fewer in leadership positions. This knowledge lays a foundation for common understanding in the Gender STI project.

The gender dimension is an integral part of the Gender STI research and innovation action. Nevertheless, the overall aim is to address policy dialogue of international STI cooperation. In specific a dialogue between EU MS (&AC) and third countries. Gender STI approaches this dialogue from the perspective of involved 10 third countries.

Gender STI communication and dissemination plan will consider the publication of gender-related findings of the research, in addition to the promotion of gender equality in bilateral and multilateral agreements in STI across multiple channels to reach Gender STI community.

The 18 Gender STI consortium partners form the core group of the Gender STI community. Consortium partners are the main actors in collecting, developing and implementing information of gender in international STI dialogues. A second tier of community consists of various STI-related national actors of 16 partner countries, and at EU level.

Gender STI aims to improve the gender inclusion in international STI cooperation policy dialogue through three main activities:

- mapping of gender in STI agreements (bilateral and multilateral agreements between 10 third countries and EU MS (& AC),
- understanding of gender in the wider STI community,
- enhancing the inclusion of gender in STI by co-creating solutions and good practices through stakeholders' engagement into international STI dialogues.

Gender STI starts with a pre-mapping exercise that is divided into two streams of investigation: mapping of multilateral agreements between EU and third countries and pilot mapping of bilateral agreements between EU and third countries.

The pilots should help to identify the main actors and areas to be surveyed and the STI fields where the agreements are signed, and eventually revise the data guidelines collection of the main study.

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