National Technical University of Athens

School of Electrical and
Computer Engineering

External Gender Equality Assessment
National Technical University of Athens
School of Electrical and Computer Engineering

Executive Summary

In the context of the Horizon 2020 project, CALIPER, the School of Electrical and Computer Engineering of National Technical University of Athens (ECE - NTUA) has conducted an analysis in order to investigate the external conditions such as the legal and cultural framework and the existing national innovation ecosystems in Greece and identify where gender imbalances occur, why they are created and by which factors they are influenced.

To perform this external assessment a quadruple helix approach was adopted, by involving stakeholders belonging to the following sectors:

- Academia and Universities
- Industry and Business
- Government and Public Sector
- Civil Society

The assessment focuses on the national legal and policy framework on gender equality. Moreover, it presents data about STEM students, researchers, patent registrations, innovative start-up founders within a gender perspective. Finally, it provides a mapping of the existing collaborations of ECE - NTUA with external stakeholders.

These findings may lay the grounds for the design of the ECE – NTUA's Gender Equality Plan and its implementation and exploitation by the Institution as envisioned by the CALIPER project, as well as for the set-up of a Research and Innovation Hub by ECE - NTUA to transfer the knowledge and best practices attained during the project beyond academia.

Introduction

Methodology

The external assessment was aimed at investigating ECE - NTUA's external conditions such as the legal and cultural framework and the existing local/national innovation ecosystems and identifying where gender imbalances occur, why they are created, and by which factors they are influenced.

A quadruple helix approach was adopted, by involving stakeholders belonging to the following sectors:

- Academia and Universities
- Industry and Business
- Government and Public Sector
- Civil Society

The first step of the analysis consisted , in defining the **national legal and policy framework** and in particular:

- the existence of any specific national (and/or regional) policies on gender in Higher Education and/or Scientific Research & Innovation;
- how the frameworks define the relationship between gender equality and quality/excellence in
  - research and/or in education;
- in case there are no specific frameworks, if broader national and/or regional policies on Research, Innovation, and Higher education include any measures on gender equality.

For exploring the national (and regional) policy frameworks two methods were proposed: a desk research/policy analysis and interviews with relevant stakeholders (complementary in case the desk research did not produce enough information).

The second step of the assessment focused on the **National and Regional Innovation Ecosystems**. A **context analysis** through a dedicated desk research eventually complemented with interviews with internal stakeholders was implemented. The aim of the context analysis was to have a clear picture of the challenges faced by ECE - NTUA in its own innovation ecosystem from a gender perspective. Indeed, the analysis was related to the identification of gaps and challenges related to gender inequalities at different levels (across education, scientific research and knowledge production, transfer to market of research outputs) within innovation ecosystems.

Besides the context analysis a **mapping** was conducted in order to identify existing and potential synergies with external stakeholders, through the following methods:

- a focus group with internal stakeholders[1];
- a survey for external stakeholders;
- a Social Network Analysis (SNA).

Both the focus group and the survey had the purpose of exploring the existing collaborations with external stakeholders from a gender perspective, as well identifying actions already undertaken by stakeholders in order to overcome gender inequalities, potential synergies and risks from further collaborations on gender issues.

Focus group was expected to involve from 4 to 8 internal stakeholders, which would have helped in identifying the external stakeholders to include in the SNA. The focus group was meant to happen face-to-

---

[1] Suggested internal stakeholders to involve were: the President and/or vice president(s) research and/or innovation, professors leading researchers/coordinators of clusters or centres or subject areas with a high density of regional cooperation, the Head of administration and heads of research support office and technology transfer office, the Head of continuing professional development/continuing education office, the Head of start-up support service.

face, however, due to the Covid-19 outbreak and the limitations imposed to contrast the spread of the virus, an online alternative took place in 19th of June 2020 involving 10 internal stakeholders.

The online survey included 8 external stakeholders and consisted of around 10 questions.

Finally, the SNA was conducted by ECE - NTUA's researchers with the aim at providing a broad view of national/regional/local networking activities that took place around the Organisation through external projects or joint initiatives. It helped spotlighting gender gaps within every partner's institutions in the leadership of external interactions and identifying how frequently gender issues are taken into account in the external stakeholders' interactions. ECE - NTUA focused on collaborations on STEM, in order to narrow the analysis down.

The result of the SNA consists in visual maps spotlighting the collaborations in place with stakeholders belonging to the following categories:

- Academia & Universities
- Industry & Business
- Government & Public Sector
- Civil Society
- Schools
- Others

Per each category a map is created showing those collaborations having female leaderships (from the side of the ECE - NTUA) and those focusing and/or taking into account gender issues. KUMU[2] was used as tool in order to conduct the SNA.

---

[2] https://kumu.io/

National Technical University of Athens - School of Electrical and Computer Engineering (RPO)

The Greek national legal and policy framework

NTUA researchers carried out the analysis on the Greek national legal and policy framework mainly through a desk research, whose findings were complemented by a few inputs coming from the interviews conducted in the frame of the internal assessment.

Overall strategic gender equality policies at national level

After becoming part of the EU Member states (1981), the Greek Government started launching legislative procedures and policies to promote gender equality. This happened not only in response to the legislative reforms within the EU and the obligations stemming from the memberships of Greece but also because of the contribution of dynamic feminist and women's organisations within a general climate of euphoria and political activity which marked the 1980s[3].

A landmark in the evolution of gender equality legislation was the Family Law reform of 1983. It constituted a very advanced, for the Greek context, piece of legislation and was one of the most 'woman-friendly' ones in the EC. The new Law emphasised the social protection of the family (Davaki, 2013).

Recently, the Greek Strategy for Gender Equality 2016-2020 (GSGE)[4] was issued, based on the UN sustainable development goal (SDG) n. 5 "gender equality". The main aim of the document is to include the gender dimension in all the policies set by government bodies as well as to set specific measures to prevent, eliminate and treat gender inequalities.

Furthermore, the Law 4606/2019 on "Promoting Substantive Gender Equality, Preventing and Combating Gender-Based Violence - Provisions for Granting Citizenship -Provisions for Elections of Local Authorities-Other Provisions"[5] determines the content of Equality Plans and the private and public bodies liable to their submission.

Finally, Law 4589/2019 includes an article that foresees the establishment of Committees for Gender Equality (CGE) in all Greek universities[6]. These committees are established with the role of an advisory body in order to assist the university administration in its efforts to promote gender equality. One of the main responsibilities of the CGEs is to develop Action Plans to promote substantive equality in the educational, research and administrative structures of higher education institutions[7].

Existence of specific mechanisms to promote the under- represented gender in Higher Education and/or Scientific Research & Innovation at national or regional level

Every Greek university falls under the jurisdiction of the Ministry of National Education and Religious Affairs. All the University Rules of Procedure (Official Government Gazette, 2000) are based on Article 16 of the Constitution of Greece, which declares that "*All Greeks are entitled to free education at all levels at State educational institutions. The State shall provide financial assistance to those who are liable to it, as well as to*

---

[3] Davaki K. (2013). The policy on gender equality in Greece. DIRECTORATE-GENERALE FOR INTERNAL POLICIES, Policy Department C, Citizen's rights and constitutional affairs. Retrieved from http://www.europarl.europa.eu/RegData/etudes/note/join/2013/493028/IPOL-FEMM_NT%282013%29493028_EN.pdf

[4] GSGE - General Secretariat on Gender Equality, Ministry of Internal Affairs, 2017. National Strategy Plan on Gender Equality 2016-2020.

[5] Official Government Gazette, 2019. Law 4604/2019 FEK A 50/26-03-2019 on Promoting Substantive Gender Equality, Preventing and Combating Gender-Based Violence - Provisions for Granting Citizenship -Provisions for Elections of Local Authorities- Other Provisions

[6] Official Government Gazette, 2019ª. Law 4589/2019 FEK A' 13/29-01-2019 Synergies of the National and Kapodistrian University of Athens, Agricultural University of Athens, University of Thessaly, University of Applied Sciences of Thessaly and other provisions.

[7] Anagnostou D. Avlona R. – N., 2019. The European Union and gender equality in research and higher education: A view from Greece. Hellenic Foundation for European and Foreign Policy (ELIAMEP).

students in need of assistance or special protection, in accordance to their abilities"[8]. The aforementioned is combined with Article 4 which states that "*Greek men and women have equal rights and equal obligations*" (Hellenic Parliament, 2008). However, there are no specific mechanisms in place promoting the underrepresented gender in Higher education. Such mechanisms would be beneficiary both for promoting girls in STEM but also for promoting boys in Humanitarian sciences.

Overall, Greek women seem to perform quite well in education compared to men. In 2010 and for the age group 30-34, tertiary educational attainment was 31.4% for women (25.7% for men)[9]. However, more recent studies have switched their attention from researching whether women proceed with their education to what kind of studies they pursue. It appears that women select the less rewarding subjects of Humanities and Social Sciences, as opposed to Engineering, Science and Medicine that men chose[10]. In this direction there are some actions through KETHI (Research Centre for Gender Equality)[11] and several EU funded projects empowering women to pursue the more regarding in terms of earnings, such as Engineering, Science and Medicine.

Existence of national policies on implementation of quotas or targets for promoting the underrepresented gender in management positions and committees

Law 4386/2016 on "Regulations on research and other provisions"[12] recognizes the need to achieve greater gender balance in the composition of leadership/decision making positions and established a specific **gender quota**. In particular, the Law foresees that regarding evaluation and selection committees and advisory bodies in the field of research, technology and innovation, each gender should be represented by at least 1/3 of the committee members (i.e. at least 33% women and 33% men), "as long as the candidates have the necessary qualifications as required by each position" (Official Government Gazette, 2016).

Furthermore, the Greek Strategy for Gender Equality 2016-2020 also promotes the adoption and increase of quotas in members of advisory boards or other collective bodies[13].

Existence of national legislation promoting equality and non-discrimination in employment

There are several laws and measures in place that aim at establishing equality in employment and have a positive impact towards achieving non-discrimination. The first equal pay policy that was established in the new Constitution of 1975 declares that "All employees, regardless of their gender or other discrimination have the right to an equal pay for work of equal value"[14].

Additionally, policies on salaries are further established through laws of the Hellenic Parliament and Official Bulletins of the Ministry of Finance. Particularly, regarding permanent teaching and research staff their pay is determined according to Law 4472/2017[15] and to the Official Bulletin 2/52259/DEP/17-7-2017 (Ministry of Finance, 2017)[16]. Regarding permanent administrative staff, their salary is established according to Law 4354/2015[17] and its respective explanatory Official Bulletin 2/1015/DEP/5-1-2016 (Official Government

---

[8] Official Government Gazette, 2000. Issue No 1098/5-9-2000 Approval of the NTUA internal rules of procedure.

[9] European Commission, *Education and Training Monitor*, 2012, Luxembourg: Publications Office of the European Union

[10] Livanos, I., Pouliakas K. (2012). "Educational segregation and the gender wage gap in Greece." Journal of Economic Studies 39(5): 554-575.

[11] To know more about KETHI visit https://eige.europa.eu/gender-mainstreaming/structures/greece/research-center-gender-equality-kethi

[12] Official Government Gazette, 2016. Issue No 4386/2016 on Regulations on research and other provisions

[13] GSGE - General Secretariat on Gender Equality, Ministry of Internal Affairs, 2017. National Strategy Plan on Gender Equality 2016-2020.

[14] Giannakourou M., Soumeli E., 2002. Equality of pay between men and women in collective negotiations. Research Center for Gender Equality

[15] Official Government Gazette, 2017. Law 4472/2017 FEK A' 74/19-5-2017 on Pension provisions and amendments regarding provisions of Law 4387/2016, measures on the implementation of budgetary targets and reforms, social support measures, labour arrangements, medium term budgetary strategy plan 2018-2021 and other provisions.

[16] Ministry of Finance, 2017. Official Bulletin 2/52259/DEP/17-07-2017 Administration of guidelines on the implementation of the provisions of part ST' of the Law 4472/2017 (A' 74).

[17] Official Government Gazette, 2015. Law 4354/2015 FEK 176/A/16-12-2015 on Management of non-performing loans, salary arrangements and other urgent provisions for the implementation of fiscal and budgetary targets and structural reforms agreement.

Gazette, 2016). For all the above categories **salaries are defined regardless gender** and they are only differentiated according to educational criteria and years of work experience.

Gender sensitive budgeting is foreseen in Law 4604/2019[18]: the law states that the gender dimension must be reflected in budget planning and the accompanying activities of legal entities belonging to the General Government, where universities belong. Furthermore, the Law determines that the institutions shall send, through the Ministry of Education, to the General Secretariat for Gender Equality (GSGE), a report that includes the gender dimension.

In 2015, GSGE elaborated the first version of the "Guide of using non-sexist language in administrative documents", which was further updated to its final version in 2018[19]. According to the National Strategy Plan on Gender Equality (GSGE, 2017) various educational and training activities on the practical implementation of the above mentioned guide have already taken place, while the National Strategy further urges for the organisation of more similar activities. As these activities are being organized and implemented by E.K.D.A.A. (the *National Centre for Public Administration and Local Government)*, anyone working in the Public Administration or Local Government can attend such activities. The Guide also contains comments, instructions, recommendations, advice and specific suggestions for the use of non-sexist language, in order to promote and apply gender equality in administrative documents with the goal of informing and sensitising on the gender equality topic.

Law 3896/2010[20] states the principle of equal treatment of men and women in terms of access to employment, vocational training and development, working conditions and other relevant provisions. This also applies to **integrating the gender dimension in all aspects of academia** into the curricula of universities.

Moreover, the Greek Strategy for Gender Equality (GSGE) calls for the integration of **gender courses** in academic, research institutions, as well as in higher education military institutions and relevant teacher training institutions. The main goal is to promote gender equality, remove gender stereotypes, enhance equal access and participation in decision making centres and provide equal opportunities for hierarchy advancement (GSGE, 2017). Additionally, Law 4604/19[21] in article 17 "Promoting gender equality through education and learning" refers to higher education institutions and states that those must ensure the promotion of gender equality at all levels and processes of academic life in accordance with Law 4589/2019 which establishes **Gender Equality Committees**[22].

From interviews conducted for the internal assessment, it results that the state's policy for public administration is followed by all public Institutions, including ECE-NTUA. Particularly Laws 4009/11 and 4386/16 deal with the promotions of Faculty members, while the Official Government Gazette Issue 99/01-05-2002 sets the promotion criteria for Teaching and Research Laboratory Staff and Technical Staff.

Existing policies at national level for reducing unequal gender division of labour related to housework and family care

There are several policies in place for **parental leave** and **career breaks** that work towards gender equality. They are listed below:

- **Maternity leave** (pregnancy – postpartum): the duration for the permanent staff is 5 months, with an extension of 2 months for more than 3 children[23]. For non-permanent staff (fixed-term contracts), the maternity leave duration is of 17 weeks[24].
- **Special maternity protection benefit:** this measure follows the regular maternity leave and has a duration up to 6 months (EC, 2019).
- **Paternal leave** for working fathers (permanent and non-permanent staff), they have the right for a 2-day paternal leave within the first year of the child's birth (Karamesini et al., 2016).
  Parental leave referring to non-permanent staff, is when one of the two parents, after the maternity leave, is entitled to reduced working hours for 30 months (reduced working hours by 1 hour) or 18 months (2 less working hours in the first 12 months and 1 less hour in the remaining 6 months) following childbirth or adoption (EC, 2019). Regarding permanent staff, they are entitled to reduced working hours until the child turns 4 years old. In 1999, a revision of the civil service code gave the opportunity to permanent staff to undertake a parental leave of 9 consecutive months, instead of the reduced working hours. In 2007 a new revision offered the opportunity of a paternal leave also in case the mother is not permanent staff and cannot make use of this benefit. This revision was also extended to staff with fixed – term contracts and gave them the right for 3,75 months of consecutive parental leave (Karamesini et al., 2016).
- **Special Leave of Absence**: according to Law 4604/2019 female employees who undergo medically assisted reproduction, are granted leave of seven (7) fully paid working days, based on a medical certificate by the attending doctor and the director of the medically assisted reproduction unit (Official Government Gazette, 2019).
- **Child school care leave**: for permanent staff 4 days leave per year is predicted for the child's school care supervision. These 4 days regard one child, while for two or more children one more day is added. For non-permanent staff a 4-day leave is also predicted for each child-pupil up to 16 years old (Karamesini et al., 2016).
- **Parental leave for children with disabilities or other illnesses**: permanent staff is entitled to reduced working hours in the case of a child with disabilities, 22 days leave per year in the case of a child that needs regular treatment (i.e. blood transfusion) or a child with severe mental disabilities (Karamesini et al., 2016). Permanent and non-permanent staff (fixed term) are also entitled to various unpaid leaves.
- Concerning **career breaks**, they are allowed and established by law both for the permanent administration personnel, as well as the academic personnel. Administrative personnel can be granted an unpaid leave for up to five (5) years. Also paid leaves for educational reasons (Postgraduate studies, PhD's etc.) are foreseen. All long-term leaves need to be approved by the Stuff Council. The same stands for academic personnel, for which career breaks due to research or other reasons are also granted. Career breaks due to care related issues are not taken under consideration in the recruitment/interview phase.
- Regarding non-permanent personnel and contracted researchers, career breaks are mostly up to agreements that the employee has with their supervisor(s). Due to the nature and in some cases flexibility of their work terms, career breaks are somewhat eligible for negotiation. From the interviews conducted for the internal assessment, it resulted that career breaks are allowed for a period of up to 5 years (unpaid leave). The Official Government Gazette Issue 189/29-9-09 defines

---

[23] Karamesini M., Skompa M., Chatzivarnava E., 2016. Literature review and policies analysis regarding work-life balance. Research Center for Gender Equality, Center for Gender Studies Panteion University, Federation of Attica & Piraeus Industries, EEA Grants, General Secretariat for Research & Technology

[24] EC - European Commission, 2019. Greece – Maternity/Paternity Benefits at: https://ec.europa.eu/social/main.jsp?catId=1112&langId=el&intPageId=4561 (Accessed April 2019).

what the Teaching and Research Laboratory Staff and the Technical Staff are eligible to, in terms of leaves.

Existing framework conditions regarding childcare facilities

There are no existing framework conditions referring to childcare facilities, it is up to each organisation or company to provide such services to their employees. Some organisations have established in-house childcare facilities for their employees, others (mainly in the private sector) may provide the employees with some form of extra financial support dedicated to childcare

Employment conditions at university and research organization

There are no specific gender sensitive protocols for recruitment and hiring in university and research organizations in Greece. The promotion/tenure process and criteria are set by the Ministry of Education. The Ministry announces vacancy notices describing the full requirements of qualifications and experience needed and all eligible candidates have the right to submit their papers. Candidates are assessed regarding qualifications and experience and the gender dimension is not considered. As regards permanent researchers, their promotion criteria and procedures are established by the Presidential Decrees 117 & 118 - Official Bulletin 99/01-05-2002. The promotion criteria and processes for permanent academic personnel are established according to Laws 4009/2011 and 4386/2016.

Existence of national programs which promote the integration of gender in the content of scientific research

According to the National Strategy Plan on Gender Equality (GSGE, 2017) various educational and training activities on the practical implementation of the guide have already taken place, while the plan encourages organisations to participate in activities that boost the integration of gender in research. As these activities are being organised and implemented by E.K.D.A.A., anyone working in the Public Administration or Local Government can attend.

According to the knowledge of the respondents of the internal assessment interviews, there are no national programs integrating gender in the content of scientific research. However, at EU level the gender dimension is included in the project proposals, even though gender is not a key pillar of the research activities.

National/ policies and legal frameworks on sexual/gender harassment in the workplace

Law 3896/2010[25] addresses the issue of sexual/gender harassment in the workplace. Specifically, the law refers at providing equal opportunities and treating equally both women and men regarding matters of work and employment.

At the same time, the law allows for an independent authority and particularly the Greek Ombudsman to monitor whether the law applies. The Ombudsman examines all the cases after the first court hearing. The law allows the employee that was harassed to claim monetary compensation and demand both administrative and criminal cases in violation of the principle of equal treatment.

Moreover, the Greek Strategy for Gender Equality 2016-2020 further promotes activities regarding the information and sensitisation of the academic and research society on issues like gender inequalities, violence, harassment, sexism, and stereotypes. Additionally, the strategy refers to the establishment of an office, within the organisational structure of the Ministry of Education and of higher education institutions, for the monitoring of the application and promotion of gender equality. This Office will also have the

---

[25] Official Government Gazette, 207, Vol. I of 8 December 2010. Law 3896/2010 concerning equal opportunities and equal treatment of men and women in work.

responsibility of filing complaints in cases of gender discriminatory treatment, as well as the care for the effective dealing of sexual harassment (GSGE, 2017).
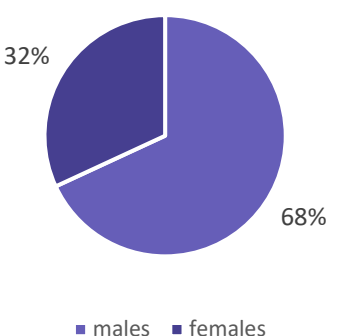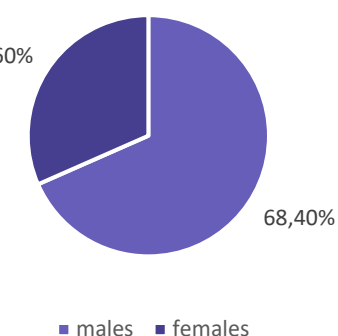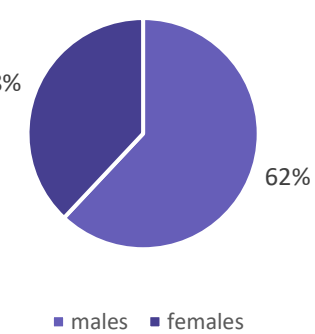
Funding opportunities for collaborative actions on gender equality at national and regional level

Gender sensitive budgeting is foreseen in Law 4604/2019 (Official Government Gazette, 2019). According to the law, the gender dimension must be reflected in budget planning and the accompanying activities of legal entities belonging to the General Government, such as NTUA. Furthermore, the Law determines that these institutions shall send a **report,** to the General Secretariat for Gender Equality (GSGE) through the Ministry of Education. This report will include data on the achievement of the institutions' objectives in terms of gender equality, as well as their plans for the coming year. Moreover, the report should be sent one month after the planning and approval of the budget. Each institution shall provide training for the staff involved in the budget and activities planning. The training is supported by GSGE, the Research Centre for Gender Equality (KETHI) and the National Centre for Public Administration and Local Government (E.K.D.D.A.). The content, methods, duration, process of training, the means of cooperation among the competent bodies as well as any other relevant issue may be determined by a decision of the Minister of Interior and Administrative Reconstruction (Official Government Gazette, 2019). Currently there are no other funding schemes available.

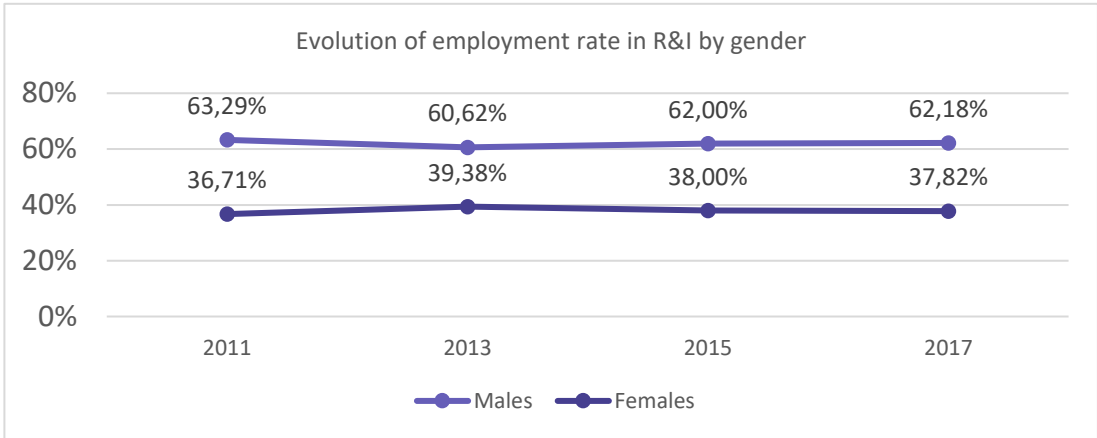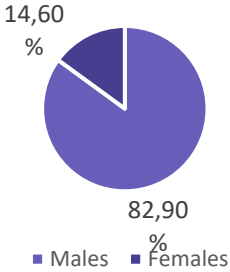## The innovation ecosystem context analysis at ECE - NTUA

The following table presents the results of the context analysis conducted by NTUA in terms of quantitative and qualitative indicators.

Area	Indicator	Results	
Talents and workforce education and acquisition	High School and Higher Education students in STEM by gender, at regional and national levels	**STEM High Schools students** (2018) [26] 32% 68% ■ males ■ females	**STEM Higher education students** (2017) 31,60% 68,40% ■ males ■ females
	Researchers in STEM by gender in R&I, at national and regional levels	**STEM researchers in 2018**[27]: 38% 62% ■ males ■ females	

[26] Hellenic Statistical Authority. ELSTAT. Statistics.gr. (2020). Retrieved from https://www.statistics.gr/en/home
[27] She figures 2018 (2019).European Commission, Retrieved from https://op.europa.eu/en/publication-detail/-/publication/9540ffa1-4478-11e9-a8ed-01aa75ed71a1

	Evolution of employment rate in R&I by gender	**Evolution of employment rate in R&I, period 2011 - 2017**[28]: Evolution of employment rate in R&I by gender 80% 63,29% 60,62% 62,00% 62,18% 60% 36,71% 39,38% 38,00% 37,82% 40% 20% 0% 2011 2013 2015 2017 —●— Males —●— Females
Leadership	Patents registrations by gender	**Patent registration teams**[29] One woman: 4.6%; All women team: 0.5%; Team with at least 60% women: 1.5%
	Founders and leaders of innovative enterprises and start-ups by gender	**Founders and leaders of start-ups by gender. Data of 2018**[30]: 14,60% 82,90% ■ Males ■ Females

Knowledge and tech production issues	Level of integration of gender as a scientific research dimension	There are no official data available on the level of integration of gender as a scientific research dimension. As a general comment, reflecting on the interviews conducted, the gender dimension is not fully integrated as a scientific research dimension. It widely depends on the broader topic. For instance, in pharmaceutical studies or medical searches gender is integrated. According to SHE Figures 2018, the percentages of publications with a sex or gender dimension in various fields (from 2013 to 2017), are the followings: natural sciences 0,84%, engineering & technology 0.21%, medical sciences 4,65%, agricultural science 2.02%, social sciences 2.66% and humanities & arts 2.62%. (She Figures 2018)[31].
	Level of consideration of the gender dimension in product/service development	The level of the gender dimension in product or service development in Greece is not clear. No relevant documents (articles, studies, books, online sources, etc.) were identified. According to the interviews conducted for the internal assessment, gender seems only taken into account when considered absolutely necessary[32]. It must be noted that the interviewees and School stakeholders do not have significant experience with product design for the general public.
Broader issues featuring the R&I 'cultures	Gender sensitiveness/family friendliness of supporting services to start up and entrepreneurship	There are several (private sector) consulting or support services for start-ups and entrepreneurship, but their attitudes towards gender and family aspects is unclear. A brief research on the websites of known incubators in Greece (http://startupnation.gr/category/incubators) shows that there is no mention of the gender or family aspects in entrepreneurship. In the 2018 She figures report, Greece stands out as having the most striking differences in favour of men in R&D in all sectors, as the proportion of men working as researchers exceeded the one of women by 13.7%. In 2018, a study carried out by Statista (2018)[33] identified the gender distribution of start-up founders in European countries. In Greece, 82.9% were male and 14.6% female. This distribution is aligned to the female to male ratio in the rest of the European countries. At the same time, Eurostat (2020)[34] reports the rate of women scientists and engineers in all EU countries. In Greece, 39% of scientists and engineers are women, which is only 2% less than the overall percentage of women scientists and engineers across Europe. In their book, Gender, Research and Innovation in Greece, Kampouri et al. (2015)[35] studied whether the professional and personal life of women and men working in research is balanced, and whether in Greece there are any studies about that. They reviewed existing studies and performed their own small-scale research through a survey and found out that the situation widely depends on the scientific institution where the respondents work. An emerging aspect is that women tend to better investigate which are their rights and possibilities in terms of work-life balance, while men seem usually not familiar with such a topic and rarely use paternity leaves.

---

[31] European Commission. (2019). She Figures 2018, p. 177, table 7.20
https://ec.europa.eu/info/publications/she-figures-2018_en
[32] It is worth to note that interviewees and School stakeholders do not have significant experience with product design for the general public.
[33] See reference n. 203
[34] Women in science and technology. Ec.europa.eu. | Eurostat (2020). Retrieved from https://ec.europa.eu/eurostat/web/products-eurostat-news/-/EDN-20200210-2
[35] Kampouri N., Papadaki K., Hatzopoulos P. (2015). Gender, Research and Innovation in Greece. Institution of technology and research. ISBN 978-618- 80725 -5-8

	Perception of existing stereotypes/bias on gender and innovation/ entrepreneurship	The European Start-up ecosystem stated that across Europe 8.5 out of 10 start-ups are founded by men[36]. The issue has not been widely explored yet, however some reasons for the absence of women in entrepreneurship have been identified. Some studies have shown that attracting investors is more difficult for female founders. What is more, looking at demographic statistics, women with tertiary education give birth on average when they are 31 years old, and this may lead to the conclusion that they chose family instead of an entrepreneurial career. Finally, another reason is connected to the features that normally a successful start-up founder should have: decisiveness, resilience, and confidence, traits that have been traditionally associated with masculinity, also due to the lack of women as role models. The European patent office[37] reports that among 8,777,596 patent applications, the 92.21% come from male applicants and 7.79% female applicants. Specifically, for Greece, Pappas et al. (2018)[38], investigated the impact of ICT on women's employability and career perspectives in managerial positions since, according to their research, women feel underrepresented in the digital era. According to them there is an increasing demand for skilled workers in ICT, however women are under-represented. This is due to the fact that despite the existence of encouraging initiatives, there are wider structural inequalities embedded in the Greek culture. Finally, Kakouris A. et al. (2017)[39] examined the "gender gap" in entrepreneurship in Greece and found out that entrepreneurial orientation between genders appeared similar, indicating that the way that females tend to start businesses does not vary from the way men do. They also found that gender differences in entrepreneurial tries can be attributed to the general concept of the role of the entrepreneur that is part of the Greek culture.

Table 1_Results of the context analysis conducted by NTUA

---

[36] Promoting Enterprise News Portal, (2016), European Commission | Ec.europa.eu. Retrieved from https://blogs.ec.europa.eu/promotingenterprise/female-entrepreneurship-when-8-5-out-of-10-startups-are-founded-by-men/

[37] European patent office (2020). EPO - Home. Epo.org. Retrieved from https://www.epo.org/
Hellenic Statistical Authority. ELSTAT. Statistics.gr. (2020). Retrieved from https://www.statistics.gr/en/home

[38] Pappas, M.A.; Drigas, A.S.; Papagerasimou, Y.; Dimitriou, H.; Katsanou, N.; Papakonstantinou, S.; Karabatzaki, Z. Female Entrepreneurship and Employability in the Digital Era: The Case of Greece. J. Open Innov. Technol. Mark. Complex. 2018, 4, 15.

[39] Kakouris, Alexandros & Apostolopoulos, Nikolaos & Dermatis, Zacharias & Komninos, Dimitrios & Liargovas, Panagiotis. (2017). Exploring the gender gap in Entrepreneurial efficacy and intention in Greece.

ECE - NTUA Mapping of external stakeholders and SNA

Results of the focus group with internal stakeholders

As far as the **focus group** is concerned the most relevant insights are reported below. The focus group was conducted online on the 19th of June 2020. In total 10 internal stakeholders participated (5 males and 5 females) among which 5 senior researchers, 2 academic and research personnel, 1 technical employee, and 2 people of the administration, all of them having strong connections with the ecosystem of the university.

After an initial brainstorming session, the group started discussing about the current **existing or prospective collaborations on broader areas** beside gender equality: participants reported that in NTUA there are various existing partnerships in place with other ICT experts or NGOs and public government bodies. Several of those have been established during previous partnerships in European funded research projects. In other cases, collaborations came from alumni of the ECE-NTUA, who established new contacts between the university and external stakeholders. Finally, the focus group participants provided information about people they had already collaborated with in the public or private sector.

The group was then asked to focus on the ways in which gender inequalities represent a **challenge** for external stakeholders. They agreed that the external stakeholders within their networks take into account the gender dimension. This is evident from their posts in social media and their newsletters about dedicated events they organise. One example concerns the case of *Cosmote*, which is one of the key telecommunication providers in Greece, an organisation which ECE_NTUA often works with and where many alumni are currently employed. In fact, Cosmote has a dedicated event empowering woman in managerial positions.

When it comes to the challenges that organisations may face, the group identified the issue of "gender washing" and pointed out that they should take gender into account not only for promoting their own institutions and "washing" their own images through dedicated campaign against gender discrimination but they should adopt gender equality within their core activities.

About the **actions** that external stakeholders put in place on gender equality, participants could not immediately recall any particular action. However, they stressed that they have a strong network and can bring the CALIPER group in contact with the relevant stakeholders.

With reference to **complementarities and synergies** with NTUA and the impact for internal istitutional change, the focus group participants believe that there are many ways to cooperate with the existing stakeholders, or reach out to new ones, when it comes to gender equality. The issue of visibility arose: they stated that organizing events aimed at empowering women in STEM with the participation of role models (i.e. professional women who have been STEM alumni in NTUA) could, on one side, really help young students to follow STEM subjects, and, on the other, raise awareness on the issue of gender equality at an institutional level. Useful activities which could be fostered are trainings, even though they reported that trainings as joint activities do not necessarily make a difference. Another joint activity which could be promoted is the involvement of STEM alumni in events at university where they can talk to students about their own experience.

No **overlapping/competitive actions** were identified.

According to participants, the only **risk** which could derive from collaboration is the so-called "gender fatigue", that may be caused if a lot of events on this topic take place and if it is given too much attention to the issue all of a sudden.

Results of the survey to external stakeholders

The survey was submitted by 8 external stakeholders, 3 private companies, 3 associations (NGOs), and 2 Universities (departments), dealing with a variety of activities/business: IT, scientific data collection and dissemination, industrial management and technology, gender studies, energy and sustainability in buildings, telecommunication, innovative communications and synergy platform, and digital marketing.

Not all external stakeholders have already a collaboration in place with ECE_NTUA (the School of Electrical and Computer Engineering). From the stakeholders that submitted the survey the **types of existing collaborations**, included:

- Programmes on energy management and ICT applications;
- Networking;
- Cooperation through internships for the School's students;
- Cooperation in H2020 projects.

External stakeholders were asked to explain how **gender inequalities challenge their own organizations**. As far as Universities are concerned, one of them reported that no gender challenges are observed due to their policy of equality in terms of gender, origin, and diversity. The other university reported that challenges mainly regard the professional development (recruitment, advancement, glass ceiling), the lower wages of public employees, the under-representation of women in specific scientific field (i.e. STEM subjects) and administrative areas (i.e. governing bodies), with no exception for work-life balance issues.

In general, both NGOs and companies reported having gender balance in terms of staff, however, two stakeholders recognised the prevalence of men in senior or higher positions. Moreover, 2 companies out of 3, claimed that there are not enough women in STEM professions, probably linked to the gender stereotypes deeply ingrained in the society which make these working environments strongly male-dominated.

One of the NGOs reported that a challenge for their organization is drawing the attention on the crucial role that the private sector can play in achieving SDG 5 (Gender Equality) as well as on the Women's Empowerment Principles (WEPs).

With reference to the **potential benefits** of addressing the gender equality challenges, faculties stressed that removing gender inequalities would improve the professional environment, guaranteeing equal participation, better science and a contribution to social justice (which could produce a spill over effects in society), as well as produce better working and living conditions and improve students education.

Companies stated that achieving gender balance in their team would help having an ideal working environment where everyone participates, acts, and interacts. In this perspective a diverse team opens new horizons in innovation, increase employees and team performance.

A relevant number of **actions and measures** were undertaken from the external stakeholders to address gender inequalities. One University declared having started informing 1st year students of their policy on equality and supporting them through mentoring programs. The other University recently established an equality committee at the university level, and a specific 'Gender Laboratory'. They activated networks with researchers and other bodies to enhance research and dissemination of information on gender issues. Also, they opened a kindergarten (in one of the two campuses of the University) and programs of activities for children.

Significant actions were also taken by two of the companies. Indeed, one of them started a group (called "women @") in which the participants, in addition to their professional roles, undertake actions on gender equality and more (Diversity, Equity, Inclusion). Such actions mainly concern trainings & networking events for women and informative actions (i.e. for International Women's Day) to the general public.

The other company's measures are summarized here:

- During the recruitment process, they ensure to have a diverse pool of candidates to fill positions, as well as a common evaluation system for all and non-discriminatory remuneration.
- They allow men and women to use the parental leave without discrimination based on gender. Already about 300 male employees of their company have used it.
- They systematically invest in actions to develop digital skills and educate young people, such as the production of a film called Robogirl, which aims to familiarize both boys and girls with STEM, and the strategic partnership with the WRO Hellas organization for educational robotics.
- Implicit bias digital training is provided for all top management.
- Since 2010, they have set the goal of women covering 30% of the decision-making positions, in middle and upper level management. In 2019 the percentage achieved was 31%.
- Women represent the 39% of the total staff and hold 30% of decision-making positions. In addition, they account for 43% of new hires in the company.

Among the participating NGOs, only one provided a list of actions, such as the organisation of some workshops like the coding workshops of the program "Girls Coding - Digital Coding: Workshops for digital coding skills " and the "Workshops for Digital Coding skills targeted to female school students in Greece". They also take part to actions in collaboration with female institutions such as EEDEGE, Women's Associations etc. Moreover, the institution has taken measures in accordance with the EU Gender Equality Index for their organization.

About **potential measures** to be adopted to tackle gender inequalities, one university would like to promote equality issues through workshops and events, as well as through modules in courses, while an NGO would like to implement new business models toward the achievement of SDG5 (gender equality).

Concerning potential **complementarities and synergie**s with NTUA in order to overcome gender inequalities, companies indicated the possibility of having more female job applicants directly from the School of ECE, as well as the opportunity of developing actions, such as talks or discussion groups in the environment of the School, with the support of executives from the company, in order to inform and raise the awareness of students on issues related to gender equality and their professional coexistence. Another possible synergy mentioned by companies is the organisation of trainings/seminars for students.

Faculties mentioned the joint organisation of workshops or events, and the activation of networking and collaboration in research and dissemination. Interdisciplinarity is indeed crucial for starting up dynamic collaborations and synergies: the integration of sociological knowledge and IT studies can help understanding and interpreting technological and engineering issues, and the challenges related to the construction and use of computers and applications.

One of the NGOs underlines the possibility of developing actions and cooperation in the field of "Women and technology", as well as of continuing actions about "Digital Coding skills" targeting female students in Greece.

They do not identify any **overlapping/competitive actions** with the ECE-NTUA ones.

Finally, **potential risks** of the cooperation were addressed. Not many risks were identified, the ones reported were mainly related to external conditions, like the institution readiness to major unforeseen events, such as health-related threats (i.e. recent pandemic), security, natural disasters, funding difficulties and ongoing changes in the institutional development framework of organizations. A company mentioned the risk of the inappropriate use of their logo. The other stakeholders did not identify any risks from the cooperation.

Results of the SNA

The data for the SNA were collected through a two-step process. During the first step, information was gathered from the interviews during the internal analysis. In particular, academics and representatives of the top and medium level management of the School were interviewed and asked about existing collaborations. Collaborations were investigated also with the Head of the Career and Liaison office, the Professional Practice Office, as well as other established structures directly connected with ECE-NTUA. The information gathered during the first step led to the second step consisting of a desk-based research.

During the desk-based research, the research team conducted a study on the online available information at the ECE Research Laboratories, regarding the research projects they participate in, their stakeholders etc. The same process took place at the ICCS (Institute of Communication and Computer Systems), as well as at the Professional Practice Office. According to the projects identified, all stakeholders in Greece were listed and recorded in the SNA file.

All the partnerships listed in the SNA are crucial for the School of Electrical and Computer Engineering (ECE-NTUA) for its activities as a leading research and academic institution. Some of the partnerships are solid and represent an integral part of the School's operations. The four most crucial collaborations are:

- with the National Technical University of Athens, as an umbrella organisation for all engineering schools and includes University-level decision-making bodies;
- with the NTUA professional practice office, which is the link between NTUA and the market;
- with the career liaison office offering guidance and consultation to students of all levels;
- with the ICCS as there is a strong collaboration in terms of research and knowledge transfer.

Overall, **89 external stakeholders** were included in the mapping. The most frequent collaborations are with "industry & business" stakeholders (49 out of 89 stakeholders, representing the 55%). The rest of the collaborations are almost equally split among "academia & universities" stakeholders (16, representing the 18%), "civil society" stakeholders (15, representing the 17%), and "government & public sector" stakeholders (9, representing the 10%).

About the **intensity** of collaborations, many of them (40 out of 97, representing the 41%) are "solid". This can be explained by considering that ECE is one of the oldest and most active engineering universities in Greece with a strong network. 34 (representing 35%) are "frequent" collaborations. This means that even though those collaborations happen often, either they are not yet based on a solid ground or they are not continuously in place. Among «solid» collaborations, 21 are with "industry & business" stakeholders, 10 with "civil society" stakeholders, 6 with "academia & universities" stakeholders and 3 with "government & public sector".

23 collaborations (representing the 24%) are "one time" and most of them are new collaborations.

Concerning the **topic** of the collaborations most of the "solid" collaborations (23 out of 40) are about "transfer to market", while 7 are about "raising awareness", 6 about "scientific research", 3 about "education" and 1 about "science communication".

In total, **40 collaborations are led by (only) 6 women** (45%). Two of them are the Heads of the Career and Liaison office and of the Professional Practice Office, which are both female and in charge of several connections. In particular, 32 of such collaborations (80%) are with "industry & business" stakeholders, while 6 are with the civil society (15%), 1 with "academia & universities" stakeholders (2,5%) and "government & public sector" stakeholders (2,5%). Therefore, women lead the majority of collaborations with the industry and business sector, while they are a minority in the remaining categories, this seems to point at a gender gap to be further explored at the academic staff level. It should be noticed that these data do not reflect the real number of female researchers involved in collaborations (not as leaders), which are more.

It is worth to mention that there are several female researchers leading projects at the School level, however this is not being reflected in the current SNA. Indeed, a professor (usually male) is normally indicated as the "project coordinator", while the project itself is typically managed by a senior researcher or a group of researchers, many of which are women.

Concerning the number of collaborations **taking into account or focusing on gender issues**, only 11 (out of 97) focus on gender issues, while 9 take into account gender. Among those collaborations, 6 of them are with "civil society" stakeholders, 5 with "industry & business" stakeholders and only 1 with a university.

Within the research activities of the School the gender aspect is generally overlooked. However, among specific actions focusing and/or taking into account gender, there are mainly the ones led by the Career and Liaison Office, which is also in charge of empowering the female presence in STEM. These actions concern activities such as:

- Dissemination and raising awareness activities, synergies with organizations or companies that advocate women in STEM (e.g. career liaison office);
- Co-organization of workshops and seminars on (gender) equality issues (e.g. career liaison office);
- Scholarships and internships for female students (various organizations, both private and public, that provide intern scholarships for female students in STEM communicate with the career and liaison office which further disseminates them to the interested parties);
- Research and joint research activities (e.g. collaboration and communication with University of Crete).

It is important to note that the collaborations reported in the SNA are not all the existing collaborations of the ECE. Indeed, some research laboratories/teams could not provide the information required since they do not have such information available. In other cases, laboratories/teams did not have updated information to provide, meaning that some more recent projects may have not been reported. Also, no centralised repository of the existing collaborations/stakeholders exists, meaning that information has to be collected by each laboratory/team. All these factors made it difficult to get access to the required data, also considering COVID-19 restrictions at the time of the external assessment.

The following pictures represent the results of the SNA conducted by NTUA according to the kind of stakeholders. Therefore, 4 different maps are displayed, one for each category of stakeholders: "academia & university", "industry & business", "government & public sector" and "civil society".

Per each map it is possible to identify the different departments[40] of NTUA involved in the collaborations with the different external stakeholders (the nodes with a small green circle), the collaborations having female leaderships (the yellow nodes) and the collaborations focusing or considering gender (the connections in red).

---

[40] The School of Electrical and Computer Engineering, the Institute of Communication and Computer Systems, the Professional Practice Office, the Career and Liaison office.
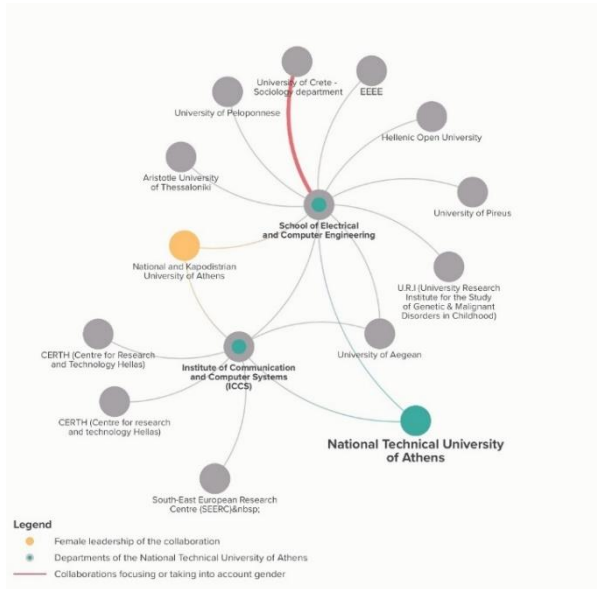
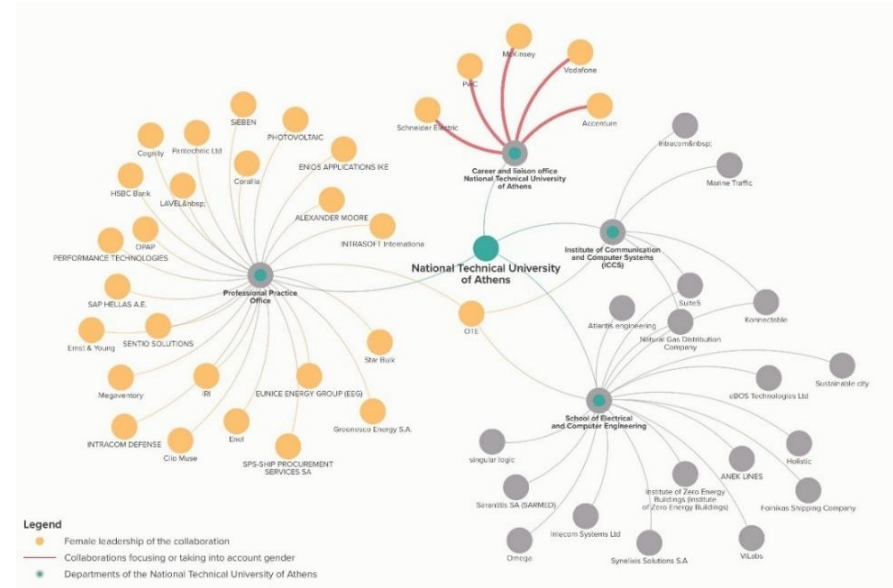Figure 1_ECE-NTUA collaborations with "Academia & universities" stakeholders

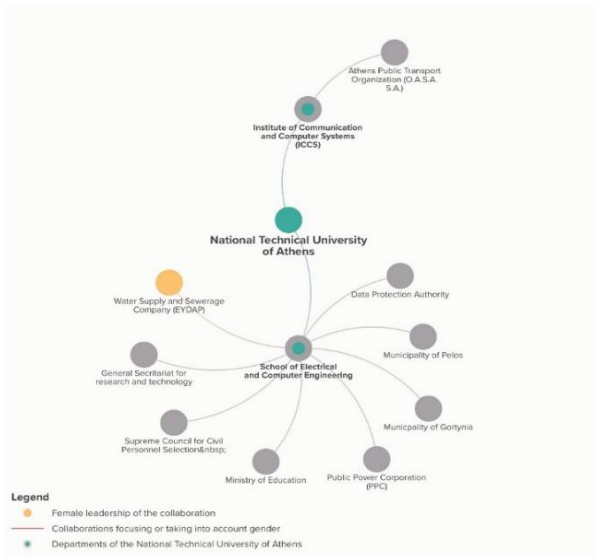Figure 2_ECE-NTUA collaborations with "Industry & business" stakeholders

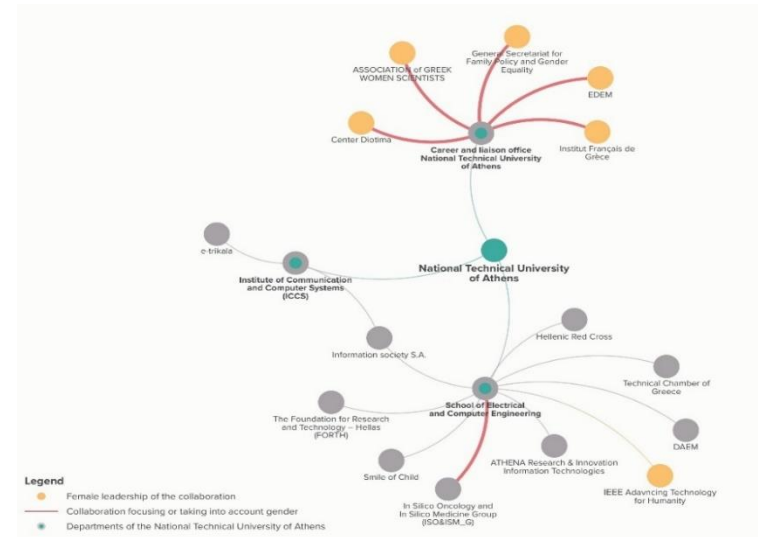Figure 3_ECE-NTUA collaborations with "Government & public sector" stakeholders

Figure 4_ECE-NTUA collaborations with "Civil society" stakeholders

Final remarks on the external assessment of ECE - NTUA

The equality between men and women is stated in the Greek Constitution. After becoming part of the EU Member states (1981), the Greek Government started launching legislative procedures and policies to promote gender equality, like the Family Law reform of 1983 and the more recent Greek Strategy for Gender Equality 2016-2020 (GSGE) and Law 4606/2019 providing the content of Equality Plans as well as provisions related to **gender sensitive budgeting**. With Law 4589/2019 instead the establishment of a Committee for Gender Equality in each university was foreseen. The law also states that **higher education institutions must ensure the promotion of gender equality at all levels and processes of academic life**. However, **no specific mechanisms for promoting the underrepresented gender in Higher education are in place yet**.

Gender quotas in decision-making bodies are established by the law 4386/2016, which explicitly foresees for evaluation and selection committees and advisory bodies in the field of research, technology and innovation, that **each gender should be represented by at least 1/3 of the committee members**.

Dedicated provisions are set for promoting equality and non-discrimination in employment (i.e. salaries policies, access to employment, vocational training and working conditions). Several policies also exist concerning parental leave and career breaks, while no framework conditions about childcare facilities are in place.

The issue of sexual/gender harassment in the workplace is addressed by a dedicated law[41], however the Greek Strategy for Gender Equality 2016-2020 further promotes **activities regarding the information and sensitisation of the academic and research society on issues like gender inequalities, violence, harassment, sexism, and stereotypes**.

Data about STEM High School and Higher Education students show that l**ess than 1/3 of STEM students are female**. The share of female STEM researchers is a bit more positive (38%), while the evolution of the employment rate in R&D from 2011 to 2017, does not show any relevant progress in the mentioned period, since the female share only increased of about 1% (from 36.71% to 37.82%). Lacking is also the presence of women in patent registration teams. Also on the side of founder and leaders of start-ups, the percentage of women is very low (14.60%). Studies explain the gender gap in entrepreneurship as a result of the Greek culture related to the role of women.

The level of integration of gender as a scientific research dimension is not monitored and no documents were identified exploring the integration of gender in product or service development.

Concerning the analysis of the collaborations in place with external stakeholders, according to the focus group and the survey results, NTUA has various partnerships in place with universities, ICT companies, NGOs and public government bodies. **Gender inequalities are only partially perceived by the stakeholders** involved in the survey, some of them, indeed, reported not facing this kind of challenges. Others explained that challenges are mainly related to the female professional development (and thus affecting the recruitment and advancement processes), the lower wages of public employees, the under-representation of women in specific scientific field (i.e. STEM subjects) as well as in higher positions. Many benefits from solving gender inequalities were identified: improving the professional environment, guaranteeing equal participation, better science and contributing to social justice, as well as producing better working and living conditions. About actions already put in place, worth to mention are the establishment of equality committees and "gender laboratories", the inclusion of quotas in decision making bodies, and the adoption of specific measures for fostering work-life balance (i.e. the start of a kindergarten in an university campus,

---

[41] Law 3896/2010, Official Government Gazette, 207, Vol. I of 8 December 2010. Law 3896/2010 concerning equal opportunities and equal treatment of men and women in work.

improvement of the parental leave). Concerning complementarities and synergies with NTUA, raise awareness activities such as workshops, talks, trainings, seminars were mentioned.

89 stakeholders were included in the SNA, most of them belonging to the "industry & business" sector. Almost the 50% of the collaborations have a female leadership, even though they refer to only 6 women, who oversee the majority of collaborations with the industry sector. 11 collaborations focus on gender issues, most of them with "civil society" stakeholders.