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Gender, science and technology

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Observer paper

submitted by:

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I thank you for your invitation to be observer of the Expert Group meeting, as President of the French Women Engineers association (Femmes Ingénieurs) and founder President of the Standing Committee on “Women in Engineering” (WiE) of the World Federation of Engineering Organizations (WFEO),

For now about two decades, the increasing number of gender studies, program on girls’ access to Science and Technology and on the place of the women in these areas, provide us with a good understanding of the subtle mechanisms and also of the hidden which prevent women to have their place in science and technology.

To date, many local and global programs from private and public institutions as well NGOs and associations are dealing on this matter: the access of girls, the participation of women in science and technology and the usage of technology by them.

Femmes Ingenieurs can testify too with its experiences, its works and practices.

A few words on the double mission of Femmes Ingénieurs www.femmes-ingenieurs.org:

With a large network of partners in France and worldwide, the association of women engineers is focused on

- a. The promotion of scientific women in the working place ;
- b. The promotion of engineering careers for youth, boys and girls, in the educational world ;

* The views expressed in this paper are those of the author and do not necessarily represent those of the United Nations.

The situation in France of the women engineers in science and technology is pretty well-known, based on periodic analysis of the engineers population in France (broken down by gender) carried out over the last fifteen years by Femmes Ingénieurs.

Few occupations have this kind of factual knowledge of their own profession, stretching back several years.

I could add that we lack the worldwide figures of women engineers per country, so **how can we count in the eyes of the society if we do not count ourselves!?** See the first recommendation below.

Historically, in France, the occupation of engineer was traditionally non-feminine, and training courses only started to open up to women in the 1970s, just a few decades ago!

The feminization of the engineering schools could be greater : whatever they themselves may think, girls are as good at science as boys : in the 2006 scientific baccalauréat, 49 % of the girls, compared to 42 % of the boys, achieved better than “pass” grades. But women make up only 27 % of the students in the engineering schools, and the statistics of Femmes Ingénieurs show a flattening-out of this proportion in the last five to six years, after strong growth in the 1980s and 1990s.

As regards the specialization chosen at engineering school, new trends to environment, quality for instance can be observed although the majority continues to opt for biological science and chemistry.

The knowledge Femmes Ingénieurs have gained through its inquiries enables us to ask : **is this great interest of young women for biology from real attraction, a passion for the subject, or from a lack of transparency and visibility, of other engineering specializations ?** Femmes Ingenieurs, with its partners has submitted a position paper to the French Ministry of higher Education and Research for a mandatory training on "equity and equality" framework into the educator higher education for teachers and professors of secondary school. See the second recommendation below

Very few women enter in the Information and Communication Technologies curricula and then position, and we observe that less and less women are specialising in electronic and telecommunications (7,8% in 2009). On the other hand, the ICT industry seeks desperately men and women to develop their innovative process and services and products; let's call it "The ICT paradox". How can the knowledge society without women contribute to the world innovation? Based on our extensive meeting with enterprises and also with educators and youth, we would like to emphasize the need of **putting the shed on the ICT professions which are not legible and not visible, on their rapid evolution, and on the absolute demand for innovation, even in the biological area !** This is why Femmes Ingénieurs develops, mainly in the frame of the European Commission "Cyberellas" program with the action " Shadowing program", programs with ICT companies to enlarge the girls' and women's comprehension of professions in the sector and to discover opportunities for different interests.

The feminization of the engineering professions stops where the obstacles linked to practices within career paths start to come into play. In terms of the choice of sectors of activity, they leave the sector of computing, the internet and multimedia, for reasons which appear to be related to a working environment that seems to them to be more constraining. Femmes Ingenieurs is an active actor amongst junior to alert them and amongst enterprises who deploy a gender diversity policy in France.

It is interesting to note that in France, overall, 87 % of women engineers work more than 90 % of full-time, and with a minority exceeding 10 hours overtime a week.

The feminization of the engineering professions also stops where responsibilities begin.

While young women engineers occupy posts similar to those of their male counterparts, fewer of them start their careers with executive status. Although their functional and operational competences are recognized, major operational responsibilities and access to higher levels in the hierarchy seem to be distinctly more limited for women. Our Femmes Ingénieurs statistics show that this situation is not changing, despite the increase in the number of women engineers in the last twenty years. The glass ceiling is still in place for years, even in our context of laws, and governmental initiatives. Referring to the salaries figures, the discrepancies do exist also in favor of men.

In 2008, in the questionnaire-survey to the engineers population, a series of questions dealt with the perception of the opening-up of the engineering profession to women: more than 30 % of women and also men have no opinion on greater participation of women in the profession, and are even surprised by or react in other ways to these questions in their commentaries. In any case, 40 % of them do not know whether it is under way!

Furthermore, more than 60 % of the engineers who answered the questionnaire do not know whether their employer draws up a “report on the comparative situations of men and women”, the instrument of a policy of professional equality, and/or has set up specific provisions to assist women’s careers.

How can our engineers, who are so curious in their jobs, at the cutting edge of innovation, be so unaware of their own profession and the place of women engineers within it?

This questions the ability of professional people in Science and Technology to promote their own profession and their reality in the youth sphere and in the society, and not only in France.

The World Federation of Engineering Organizations, whose new President is Mrs Maria Prieto-Laffargue, the first woman in this position, works also on those points, although the situation in countries of the WFEO members is varied.

Our greatest wish, as an association active on the ground and recognized at several levels – secondary education, higher education, institutions and the world of work – is that this Expert group meeting will lead to constructive dialogue with concrete recommendations for the Commission on the Status of Women in its deliberations.

Our proposed recommendations below to the Expert Group and DAW target actions for young women, for their educators and parents about future vocational and life projects, and also the identification of opportunities for positive action by institutional decision-makers and managers.

Recommendation 1: “count ourselves in order to count” in the eyes of society!

- by providing an international norm to normalize figures and to classify human resources in engineering, science fields and grades
- by promoting and monitoring normative and standard-setting instruments for counting the participation of women and men in projects related to engineering, scientific matters

- by promoting and monitoring normative and standard instrument for checking the number of the women who will benefit from the projects or programs

Recommendation 2: “help the educators and parents for a better awareness of their influence in terms of the choice for the youth orientation and of the gender dimension in Science and Technology”

- Assist and fund local programs aiming at the discovery of the professions in Science , Technology with the industries, and their employees,
- Provide educators and parents with an accurate knowledge on professions and opportunities (open mindset on prejudices) by meeting with the practitioners and the do-ers,
- Providing new materials for teaching materials and curricula, with practitioners’ advice

Recommendation 3: “to attract girls in Science and Technology even those who are willing to opt for future activities in care (medicine for instance) as technology is nowadays a means for it”

- Highlighting the benefit to consider the women aspects of all the scientific and technological aspects (the "do-er" and the beneficiaries).
- Reinforce the focus on women’s access and participation in S&T education and in innovation processes, products and services
- Provide incentives resources to the national and international programs and projects which act in the gender mainstreaming approach.

Recommendation 4: “facilitate the loyalty of women in Science and Technology sector and of enterprises to avoid ramp-off”

- Scale up the initiatives of awareness of the women’s place in Science and Technology subjects and all the opportunities for the future civil society, with all potential contributors, business and stakeholders.
- Provide incentives facilities in trading for public and private companies who deploys and assess the management of their gender policy with a work life balance axis.