WORKSHOP

IMPLEMENTING GENDER EQUALITY PLANS (GEP) AT UNIVERSITIES OF SCIENCE AND TECHNOLOGY

POLITECNICO DI TORINO, SALONE D'ONORE DEL CASTELLO DEL VALENTINO 29TH MARCH 2019

Role of Leadership in Promoting Gender Equality at Universities of Science and Technology

EUROPEAN WOMEN RECTORS ASSOCIATION

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Torino, 29th of March 2019

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STEM for All

"I think studies in STEM should be more attractive than ever for all young people, as our planet has a series of very tangible scientific and engineering problems, that need very tangible solutions that will contribute to bettering the life of our species and others alike on this planet."

Sağlamer, G., 2018, STEM FOR ALL, WOMEN IN SCIENCE *Recommendations to improve #HorizonEU through a gender perspective*" held on 25 Sept 2018 at European Parliement, Brussels.

Decline in STEM

Starting from the beginning of the third millenium decline in STEM areas has become an important issue on the agenda of EU.

One variable under our control is “interest” in STEM among the youth

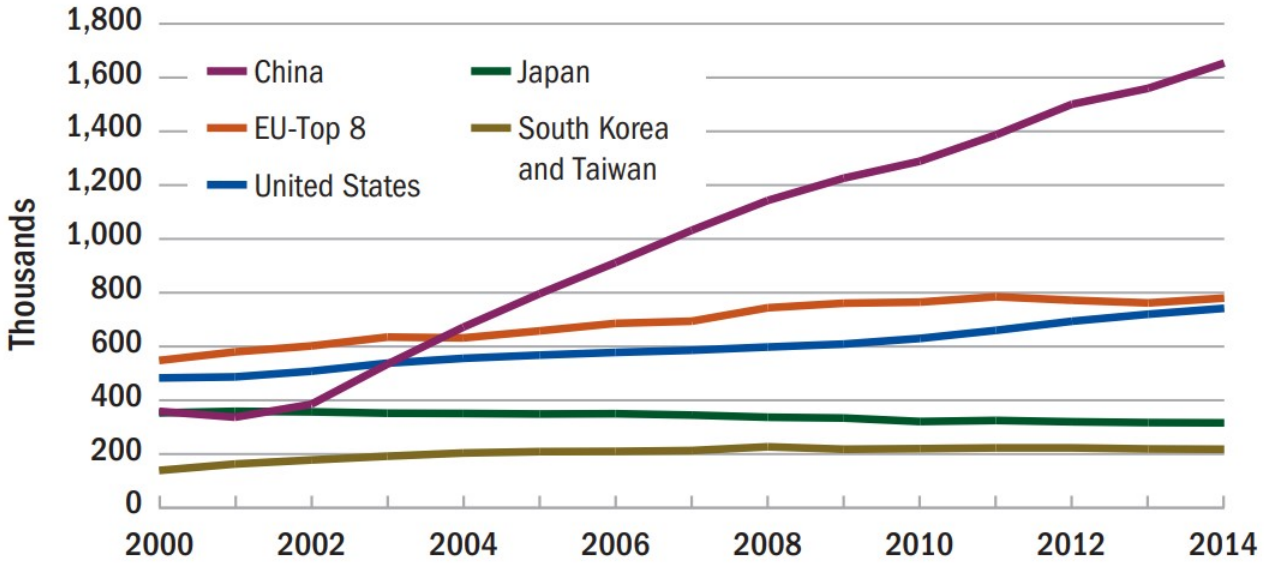
What are the reasons for the decline in interest?

- The Curriculum is difficult
- The curriculum is densely packed and inflexible
- Other paths to good jobs are easier
- Engineers treated as commodities by employers
- Traditional entry level jobs are being offshored
- Media reports indicate instability

Wayne C.Johnson, Russel C Jones, 2006.,”Declining Interest in Engineering Studies at a Time of Increased Business Need”p244

Bachelor's Degree Awards?

Bachelor's degree awards in S&E fields, by selected region, country, or economy: 2000–14



NOTE: EU-Top 8 is the eight European Union countries with the most bachelor's degree awards in 2014: UK, Germany, France, Poland, Italy, Spain, Romania, and the Netherlands.
Indicators 2018: **First University Degrees in S&E Fields, Chapter 2.**

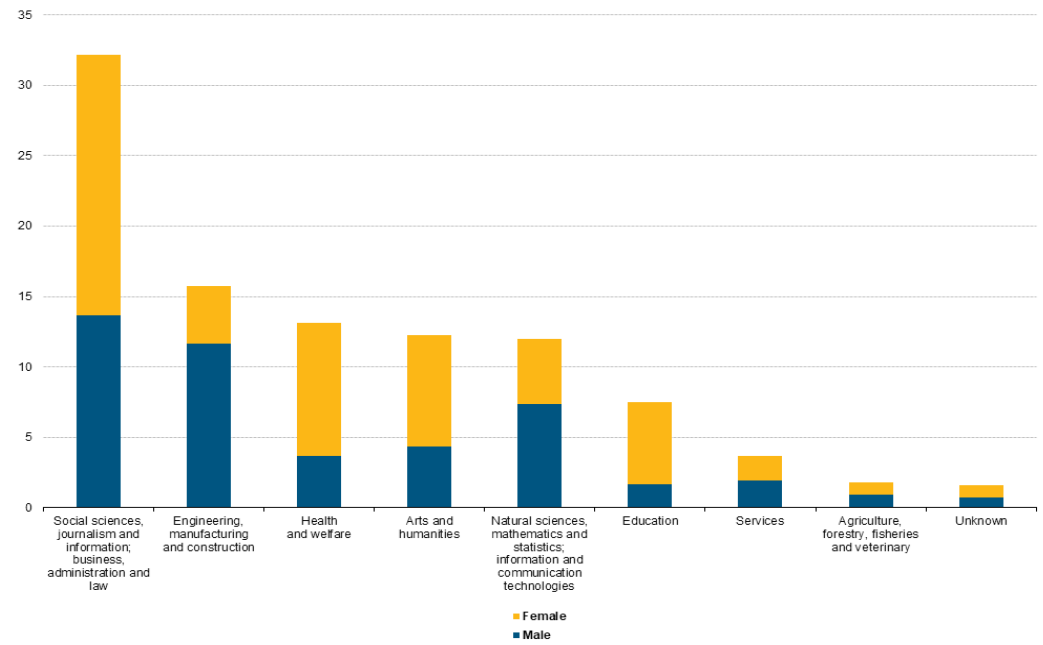
Rapid Rise of China's STEM Workforce Charted by National Science Board Report
Publication date: 31 January 2018, Number: 10
https://www.aip.org/sites/default/files/aipcorp/images/fyi/articles_SEI.jpg

WOMEN IN STEM-EU

There is a lack of interest in STEM for all among the youth in EU

But we have also additional problems for attracting girls' interest for STEM

It is obvious that we are trying to solve a twofold problem



Note: includes data for Ireland, Greece and Italy for 2014.
Source: Eurostat (online data code: educ_uoe_enrt03)

EUROSTAT Statistics 2015 , File:Distribution of tertiary education students by field and sex, EU-28, 2015 (%) YB17.png

Knowledge Center listed the following facts;

- **Women Are Scarce in Scientific Research and Development**

  Averaged across regions, women accounted for less than a third (28.8%) of those employed in scientific research and development (R&D) across the world in 2014.

- **Women Are Less Likely to Enter, More Likely to Leave STEM Careers**

  Women who start out in business roles in tech-intensive industries leave for other industries at high rates—53% of women, compared to 31% of men.

- **Leave rates for women in science, engineering, and technology (SET) peak about 10 years into their careers.**

Women in STEM

- **Work experiences impact women's decisions to leave.** Isolation, hostile male-dominated work environments, ineffective executive feedback, and a lack of effective sponsors are factors pushing women to leave SET jobs.

  Almost one-third of women in the United States (32%) and China (30%) intend to leave their SET jobs within a year. The intention to leave within a year is slightly less common for SET women in Brazil (22%) and India (20%).

- **STEM Fields Have Fewer Women on Boards Than Other Industries**

  Globally, women made up on 12.2% of women on boards in the information technology industry in 2015. This is lower than some other industries, such as: Consumer staples: 17.4% Financials: 16.9%

- **Women with technology experience may have an advantage in the boardroom.** In 2016, women on corporate boards (16%) were almost twice as likely as their male counterparts (9%) to have professional technology experience among 518 *Forbes* Global 2000 companies.

Knowledge Center
https://www.catalyst.org/knowledge/women-science-technology-engineering-and-mathematics-stem
Women In Science, Technology, Engineering, And Mathematics (STEM)
Topics: Women in Leadership, Gender, Race, and Ethnicity
Industry: STEM (Science, Technology, Engineering, Math)
Date: January 3, 2018
Data and sources for Global, Australia, Canada, Europe, India, Japan, and the United States.

Gender Policies in EU

Gender Equality is one of the fundamental principles of EU and EU has been promoting it as a core activity since 1957

EU Treaties:

Treaty of Rome (1957) : equal pay for equal work

Treaty of Amsterdam (1997) : eliminate inequality and promote equality between women and men in all areas of activity

Treaty of Lisbon (2007/2009) : bringing the obligation to eliminate inequalities and and ensuring/promoting equality between men and women also Introduces gender equality as a determining factor for potential candidates for the accession to the EU

Gender Equality in HE&R

Women's careers in science and university

G. whereas academic careers for women remain markedly characterised by **strong vertical segregation, with only a very low proportion of women occupying the highest academic posts;** whereas according to the 2012 She Figures women account for only 10 % of university rectors;

European Parliament resolution of 9 September 2015 on women's careers in science and universities, and glass ceilings encountered (2014/2251(INI))

Gender Equality in HE&R

Glass Ceiling

"…low presence of women in the highest academic and decision-making positions in scientific institutions and universities, which indicates the existence of a glass ceiling, that is, invisible barriers based on prejudices which stand in the way of women accessing positions of responsibility;"

European Parliament resolution of 9 September 2015 on women's careers in science and universities, and glass ceilings encountered (2014/2251(INI))

"THE GENDER CHALLENGE IN RESEARCH FUNDING: Assessing the European National Scenes", 2009 EC,DG for Research,Science, Economy and Society EUR23721EN

Gender Equality in HE&R

K. whereas statistics consistently show that girls become disengaged from STEM subjects at school and are less likely to pursue a science-related degree at university; whereas there is no one single explanation for the low levels of women in STEM and reasons include:

- lack of knowledge about STEM careers on the part of teachers in schools,
- **a lack of female role models,**
- a high number of precarious short- term contracts, unconscious bias on interview panels,
- women being less likely than men to put themselves forward for senior positions,
- a tendency for women to be steered into teaching and pastoral roles rather than research and academia;

European Parliament resolution of 9 September 2015 on women's careers in science and universities, and glass ceilings encountered (2014/2251(INI))

Gender Equality in HE&R

Gender equality in academic positions

59 % of university graduates in the EU-28 are women

But…….
Full professor are only forming

……..18% SHE FIGURES 2012
……..21% SHE FİGURES 2015
……. 24% SHE FIGURES 2018

Gender Equality in HE&R

Positive measures

Cultural and institutional barriers have to be removed

"negative prejudices and conscious or unconscious stereotypes build on attitudes and standards which are continually reproduced, and that institutional changes can help remove them"

European Parliament resolution of 9 September 2015 on women's careers in science and universities, and glass ceilings encountered (2014/2251(INI))

Vertical Segregation STEM

Representation of women at academic levels (A,B,C grades)

At EU level, women start with a much higher percentage of representation than men at undergraduate level but this percentage decreases at PhD level and ends up at around 48% (2018)

- C 46.4% B 40.5% A 23.7% (2018)
- C 45% B 37% A 21% (2015) (EU27 SHE Figures 2015, pg.127Fig. 6.1).

In science and engineering women's representation is even lower than other fields:

- C 33 % B 24% A 13% (2015)
- C 35 %. B 28% A 15%. (2018) (SHE Figures 2015,pg 128, Fig.6.2).

Women heads of higher education institutions (PhD)

- 2009 13%
- 2015 20%

These are being examples of a "leaky pipeline".

Vertical Segregation in STEM

- **EU28 PhD graduates 47% (F)**
  - **42% in sciences**
  - **28% in engineering.**

- **Research Funding (SHE Figures 2015, Annex 7.1)**
  - **Number of Applications (Female researchers) 35.5%**
  - **Number of Beneficiaries (Female researchers 30%**

- **Gender Dimension in Research (**SHE Figures 2015, pg 178)
- **From 2010 to 2013**
  - **EU28 Growth rate : 14%**
  - **World wide Growth rate : 8.5%**

Setting the Scene in Higher Education

Horizontal and vertical segregation impact negatively on women's academic careers

Inequality is even more drastic at decision making levels

Asymmetric distribution of research funding still persists among female and male researchers in many funding systems

Excellence initiatives of various kind have not benefited male and female academics equally

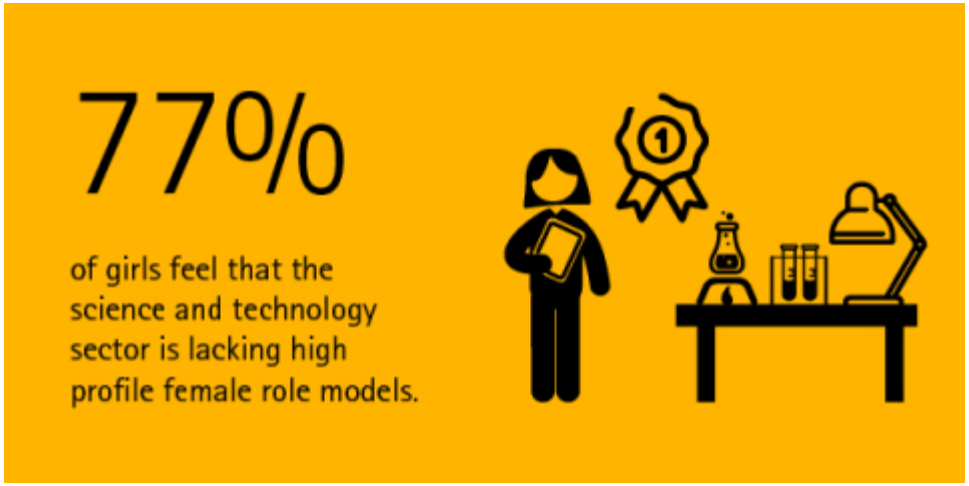
Academic promotions still present specific difficulties rising from lack of transparency in promotion processes, work and life balance issues etc.

What Are the Facts…Are there Solutios?

- What are the barriers keeping girls and young women to access the scientific and engineering education?
- How to encourage them to pursue a scientific career?
- How to retain women in STEM careers?

Lack of Role Models

«Lack of female role models» is listed by EP (2015) as one of the reasons that prevents girls to become engaged with STEM disciplines.



Business Wire – Research among 12-Year-Old Girls in the UK and Ireland

https://www.businesswire.com/news/home/20150917005029/en/Accenture-Finds-12-Year-Old-Girls-UK-Ireland-STEM

Gender differences in STEM education

- ***«Gender differences in STEM education participation at the expense of girls are already visible in early childhood care and education (ECCE) and become more visible at higher levels of education.***
- ***Girls appear to lose interest in STEM subjects with age, and lower levels of participation are already seen in advanced studies at secondary level.***
- ***By higher education, women represent only 35% of all students enrolled in STEM-related fields of study» (UNESCO,2017).***

http://unesdoc.unesco.org/images/0025/002534/253479e.pdf, CRACKİNG THE CODE: GİRLS AND WOMEN'S EDUCATİON İN STEM, 2017.

STEM and Image of "Masculinity"

«Girls are often brought up to believe that STEM are 'masculine' topics and that female ability in this field is innately inferior to that of males. This can undermine girls' confidence, interest and willingness to engage in STEM subjects.» (UNESCO, 2017)

Role models play important roles on the preferences of the young generations.

Therefore, integrating more Role Models into the teaching materials will encourage girls that they are as capable as boys in STEM subjects.

How can Role Models Help Young Girls?

Learning about role-models will allow them to feel that women and men are treated equally in STEM.

Role Models will break-down the Stereotypes, build self-confidence and motivate young girls

Role Models will encourage girls to get engaged with more STEM activities in real life.

Role Models can help girls to remove the Boundaries in their Dreams !!!

Gender Equality in Higher Education

Barriers to women's low representation in academia and in STEM disciplines:

- Lack of Transparency in recruitment/promotion processes
- Unequal Access to research funding
- The Gap between Work - Life
- Limited Networking and Visibility Opportunities
- Challenges for Gender neutral awards
- Limited Mobility opportunities
- Unconcious Bias
- Resistance

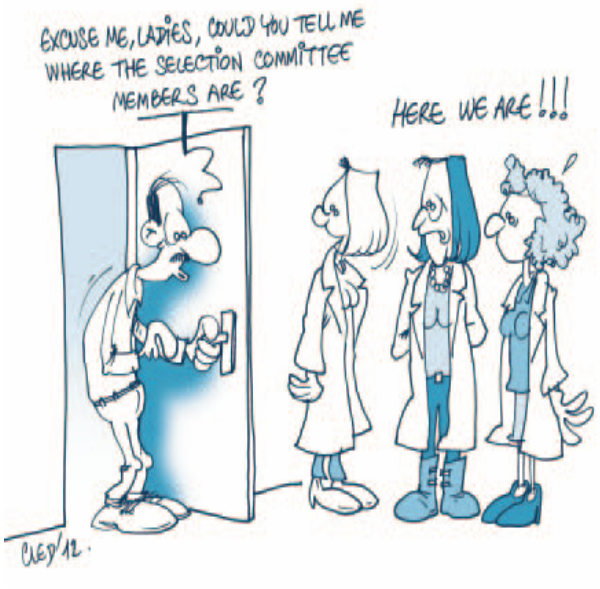
These barriers should be removed
HOW?
We need change!

Dimensions to Challenges of Gender Equality

We need Structural/Institutional Change

Pierre Kroll

We need Cultural change.



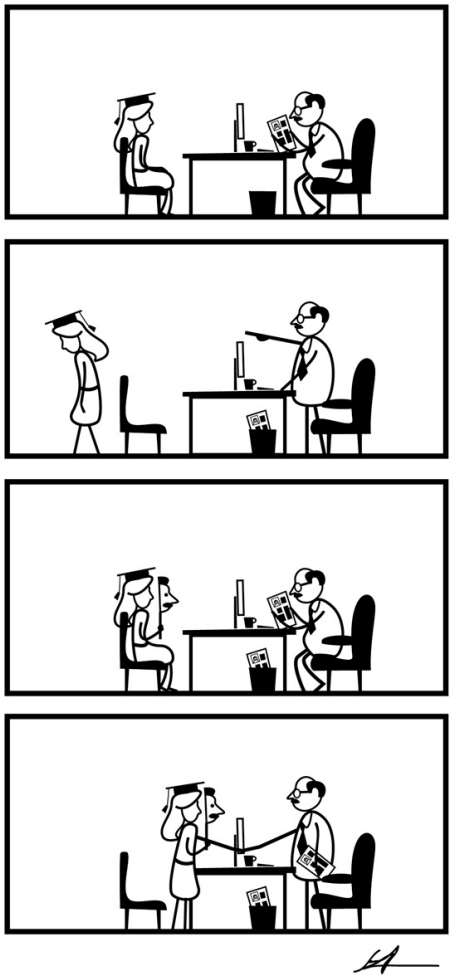
THE GENDER CHALLENGE IN RESEARCH FUNDING: Assessing the European National Scenes", 2009 EC,DG for Research,Science, Economy and Society EUR23721EN

We Need Individual Change

The third dimension certainly involves the encouragement and empowerment of women academics and researchers.

Removal of the barriers may not be successful to increase the female participation at decision making levels as long as reluctance mostly due to **"learned helplessness"** stays unsolved.

We need to promote individual change by the empowerment and encouragement of women.



Samuel Akinfenwa Onwusa, Spain

Need For Change

Change can be defined as
doing something new or differently.

By itself, Change is neither inherently good nor bad.
Any change will make people different from what they were before. Unfortunately, not every change process leads to the expected results.

“There are multiple reasons for potential failure;

- **unexpected changes in the external conditions,**
- **a lack of commitment in implementation,**
- **resistance of people**
- **a lack of resources.” (Recklies, 2014)**

Let me give you some short definitions of “resistance”

Change-Resistance

Resistance is viewed as being a natural and inevitable part of the change process and as something that exists within the individual.

- ***Resistance occurs because it threatens the status quo or increases the fear of and anxiety about real or imagined consequences.*** **(Spector, 1989, Morris & Raben, 1995)**
- ***People can resist change because they don't have confidence it will work, or they don't believe the resources are available to implement the change successfully.*** **(Hultman, 2014)**
- ***To sum up, "Any change in people's lives implies a natural reaction, considering that the changes mean that the individuals leave the comfort zone in which they live for a new and unknown reality."*** *(Gonçalves & Gonçalves, 2012)*

How to design Succesful Strategies

- It is observed that male academics may feel uncomfortable to come across a policy, which is addressed towards women only.
- Even using the word of “gender” could result with resistances coming from the key movers.
- Consequently, a workplace with equal opportunities should be introduced as a major priority rather than specifically promoting gender equality.
- This approach could be a practical way of making a persuasive case where gender is included as one of the major priority areas together with other equality and diversity policies

How to design successful strategies

The words “opportunity” and “diversity” have positive meanings connoting dynamism and entrepreneurship (Liff and Cameron, 1997).

Focussing on the idea of opportunities and running a gender sensitive agenda under a project would initiate a certain rhetoric, which would persuade individuals that it is the benefit for all.

Roleof Leadership/Diverse-Inclusive workplace

Emphasizing the need of women's empowerment or career advancement may not directly attract the leaders.

Defining gender as one of the major priority areas in the organization definitely needs the **support of the management / leadership team.**

One of the possible ways of convincing the leaders of the organization might **to introduce gender equality as key action/strategy to lead the decision makers** to reveal and use talents women/men for the success of the entire institution.

Role of leadership in Structural Changes for Gender Equality

Leaders of higher education institutions play crucial role in all change processes along with their leadership teams.

Leaders can play even a “Change Agent “ role at top level while integrating all the efforts coming from bottom up decisions

We need leaders (men and women) who are ready to take the initiative for gender equality to create capacity for change in their institutions.

Istanbul Technical University Case

ITU Case: Proportion of Female Academics %

	94-95	99-00	04-05	09-10	14-15	17-18
Professor	16	20	29	32	37	39
Assoc.Prof	31	35	36	42	45	42
Assist.Prof.	28	38	46	39	40	38
Res. Assist.	20	35	37	45	47	45
Total	28	31	37	39	42	41

Female Students: 34% Total, 38% Master, 42% PhD

CESAER(2015) Prof. 20.03%, Assoc. Prof. 23.76%, Assist. Prof. 30.68%

ITU Experience

Actions taken for improving gender balance in ITU (1996-2004)
First female rector, two cycles:

- Setting a role model
- Improvement in work-life balance
  - In campus housing
  - Nursery-Primary and high schools in campuses
  - Flexible working hours
  - Providing fund for mobility
- More women in recruitment and promotion committees
- Achieving transparency in recruitment and promotion processes
- Encouraging women academics for promotions
- Inviting more women advisors than men and increasing the visibility of women academics at top management
- Appointing 3 women vice rectors in 8 years
- Appointing more women deans and directors for graduate schools

ITU has had extensive reforms on teaching-learning, research, service to society and administrative structures in the same period

EWORA-Background

As leaders/leadership team play important role in all change processes we decided to establish

European Women Rectors Association (EWORA)

It is a Full-fledged
International
Non-Profit association
Established in Brussels under Belgian Law
in December in 2015

- **to promote the role of women in leadership positions in the academic sector**
- **to advocate gender equality in higher education and research at European and international scales.**

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The founding Board Members of EWORA are
Carmen Fenoll, Kristín Ingólfsdóttir, Helena Nazare, Ursula Nelles, Gulsun Saglamer (President), Christina Ullenius, Krista Varantola.
www.ewora.org

EWORA-Vision and Mission

Vision:

EWORA promotes gender equality in higher education and research with special reference to leadership.

Mission:

- EWORA is established to develop strategies for increasing women at decision making levels in higher education and research.
- EWORA is committed to provide opportunity for women rectors to share their experiences to improve the situation of women academics and to remove the barriers for horizontal and vertical segregation in academia.

EWORA-Goals

Goals:

- EWORA aims to develop strategies and policies that will:
  - encourage women academics to target leadership positions;
  - create opportunities for increasing women's representation in higher education&research;
  - be proposed to decision makers at institutional, national and European levels
- to ensure a balanced participation of women and men in academic leadership;
- to establish a new Europe-wide network to transfer and spread knowledge and experience among women leaders in academia;
- to observe, evaluate and analyse the gender differences in academia in different cultures at European levels;
- to conduct research on gender equality in academia at European and international levels
- to become more effective and efficient for achieving substantial change across the world.

Conclusion

We are committed to address gender-based structural inequality, with regard to academic leadership and we invite you to join us by

- Raising awareness
- Providing opportunities
- Encouraging and empowering women academics &researchers

for leadership positions.

Conclusions

Informing all stakeholders about the gender disaggregated data for creating awareness;

convincing leadership to give priority to achieving gender balance and to take the actions for making the necessary changes

could be listed as some of the essential steps developing gender equality as one of the major priority areas in the institution.

Let's make it happen

Encourage and Empower Women Scientists and Engineers

EWORA invites you to Discover HERstory ! And ...

Create opportunities for New Ones in STEM

Maria Sibylla Merian (1647 – 1717) Biologist, discovered that butterflies came from caterpillars via a metamorphosis

Maria Sklodowska 1867-1934) Marie Curie became the first woman to win a Nobel Prize and the only woman to win the award in two different fields (physics and chemistry).

Jocelyn Bell Burnell (1943-) Astrophysicist, discovered pulsars

Lisa Meitner (1878-1968) Physicist Discovered Nuclear Fission

Rosalind Franklin (1920 - 1958) Chemist, Discovered the structure of DNA

Grace Hopper (1906-1992) Computer Scientist, invented the first compiler for a computer language

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THANK YOU

&

“Education is education. We should learn everything and then choose which path to follow." Education is neither Eastern nor Western, it is human.”

— Malala Yousafzai, youngest **winner** of the **Nobel Peace Prize**