



Leadership and Women in STEM

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**@Empowering Women in STEM is essential for achieving the
UNSDGs, CSW65 NGOCSW/NY Forum online, 20 March 2021**

Outline - 15 mins

1. About INWES and why INWES (including some figures on participation rates in general)
 - About
 - History and ICWES
 - The gaps in participation
 - UN Quotes
2. Gender and the SDGs (where women as LEADERS are mentioned explicitly, and where they are affected or can affect)
3. Leadership, gender and innovation
4. Close off with some thoughts on activities (INWES activities and leading to suggestions for collaboration)
 - Advocacy
 - Knowledge Share – how to get women in position of leadership
 - Women in STEM networks – leading change
 - Members and their activities

Key messages

Without women, we cannot achieve the SDGs...

But not just women “helping” or “informing” but women leading.

There are big gender gaps in leadership and evidence shows this leads to gaps in solutions.

How do we close gaps?



International Network of Women Engineers & Scientists

INWES is a global network of organizations of women in Science, Technology, Engineering and Mathematics (STEM), and official NGO partner to UNESCO and UN ECOSOC, observer status with UNFCCC, and collaboration with CSW & UN Women.

Over 50 organizational members
plus individual members,
representing over 250,000 women
from 62 countries worldwide



***"To build a better future worldwide through full and effective participation of
women and girls in all aspects of STEM"***

www.INWES.org



Objectives of the International Network of Women Engineers & Scientists

1. To **strengthen** the capacity of individuals and organisations related to women in STEM worldwide through the exchange of information, networking and advocacy activities
2. To **increase** the presence of women in mainstream STEM worldwide
3. To **be a responsible voice** and influence on scientific issues for the benefit of society and the environment
4. To **expand opportunities for education** through INWES or their members' entities and resources
5. To **encourage the establishment of new regional and local networks** and associations, strengthening the global network of women in STEM worldwide.



International Conferences for Women Engineers & Scientists (ICWES)

- Since 1964, the ICWES Continuing Committee had been successfully organizing an international conference every 3 - 4 years
- ICWES is a key activity for INWES, which was established, with the encouragement and a grant from UNESCO, in 2002



ICWES1, New York USA, 1964



Next 2021: ICWES18, UK !



Activities and Programs

- Offer networking events
- Manage Regional Networks to support new women in STEM groups
- Provide a voice, such as at UN Women, UNESCO and UNFCCC and other international conferences
- Establish relationships with funding organizations to support travel for women in STEM to international conferences
- Disseminate information, activities, projects: INWES newsletter, website, social media
- Create a portal for all for information on women in STEM
- Share best practices for all: from school, to work, **to leadership**
- **Collaborate**



United Nations -Towards 2030

SUSTAINABLE
DEVELOPMENT
GOALS

 INWES operates here



SPIRITUAL



ECOLOGICAL



PEOPLE

State of women in leadership in STEM

What is “leadership”?

Snapshots of women leaders in STEM

The impact of gender diverse leadership

Women and STEM

Women currently make up **less than 30%** of science researchers worldwide.

- United Nations

Women have been significantly underrepresented in engineering fields, typically making up **only 10 – 20%** of the engineering work force.

-UNESCO

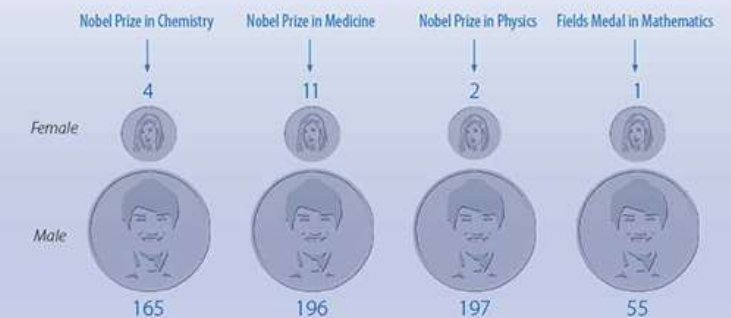
Women are persistently underrepresented in science, technology, engineering and mathematics (STEM), which can have long-term effects not only on gender equality but also on economic development

-World Economic Forum (2017)

The global gender pay gap is 63%. Roles in STEM sectors (construction, science, technology, engineering, etc) are male-dominated and with higher salaries.

- World Economic Forum, UN Women, various

Only **a tiny proportion of women** are awarded with the most prestigious prizes in STEM fields



Source: Nobelprize.org, 2014; IMU, 2014

Women and Leadership

Almost 90% of men&women globally are biased against women. - UNDP, 2020

Today, for every 100 men in leadership positions globally, there are just 37 women.
- McKinsey, 2020



Women comprise 39% of the workforce globally, but only 27% of managerial positions.

-United Nations, 2019

Women make up 70% of the global health and care workforce, but occupy just 25% of decision-making roles.

-World Health Organisation

“The 2030 Agenda is clear: there can be no sustainable development without gender equality.”

- United Nations



Yet, only **30%** of leaders
in the global health sector
are women.

SOURCE | Global Health 50/50 2020 report.
Power, privilege and priorities

 COVID-19
RESPONSE 

Women STEM leaders for the UN SDGs

Does having women as leaders make a difference?

Types of leadership

Diversity for innovation

What is Leadership?

“STEM Leaders” have:

- Reached the top of an organisation, with a STEM background or focus
- Achieved technical expertise
- Been recognised as influencers
- Enabled change



Types of leadership:

- “dominance” versus “prestige”.
 - autocratic and democratic, directive and participative, competition and cooperation
 - Biological & cultural evolution?
- Competencies of leaders &SDGs
 1. long-term thinking,
 2. innovation,
 3. collaboration,
 4. transparency,
 5. environmental management,
 6. social inclusiveness.

Women and Innovation

- Evidence shows that increasing gender diversity in STEM may lead to more effective problem-solving and improved innovations (Hong, Lu, Scott, 2004).
- Boston Consulting Group surveys 2016 & 2018:
 - “No ifs, no buts” – diverse companies are more innovative, innovative companies are more diverse
 - But gender diversity has to go beyond “tokenism”: inclusion is “crucial”
 - Survey of 1700 companies in 8 countries, confirmed innovation revenues rise with diversity (in 6 areas)
- Harvard Business School study to 2019:
 - Where gender diversity is accepted (inclusion), productivity (including innovation) increases



Innovation and Women as Leaders

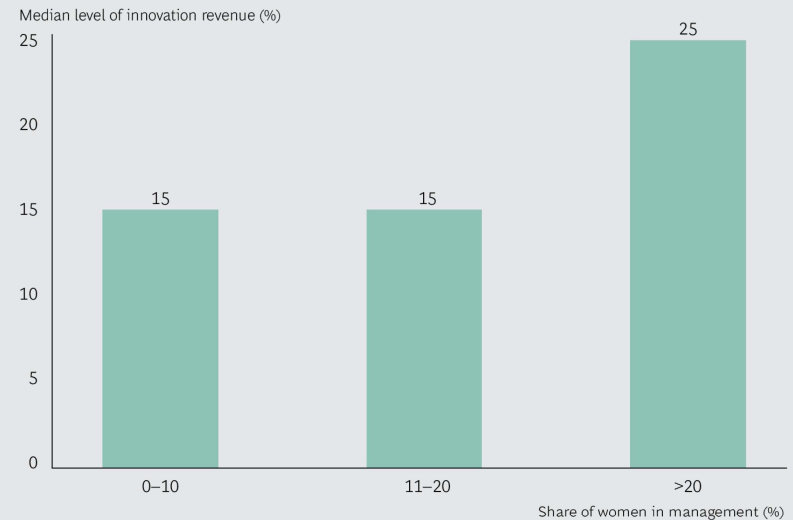
- “Innovation performance only increased significantly when the workforce included a nontrivial % of women (more than 20%) in management positions. “

EXHIBIT 5 | Innovation Increases as the Proportion of Female Managers Rises



Source: 2016 survey of 171 German, Swiss, and Austrian companies by BCG and Technical University of Munich.
 Note: Innovation revenue = the percentage of revenue from new products or services in the most recent three-year period.

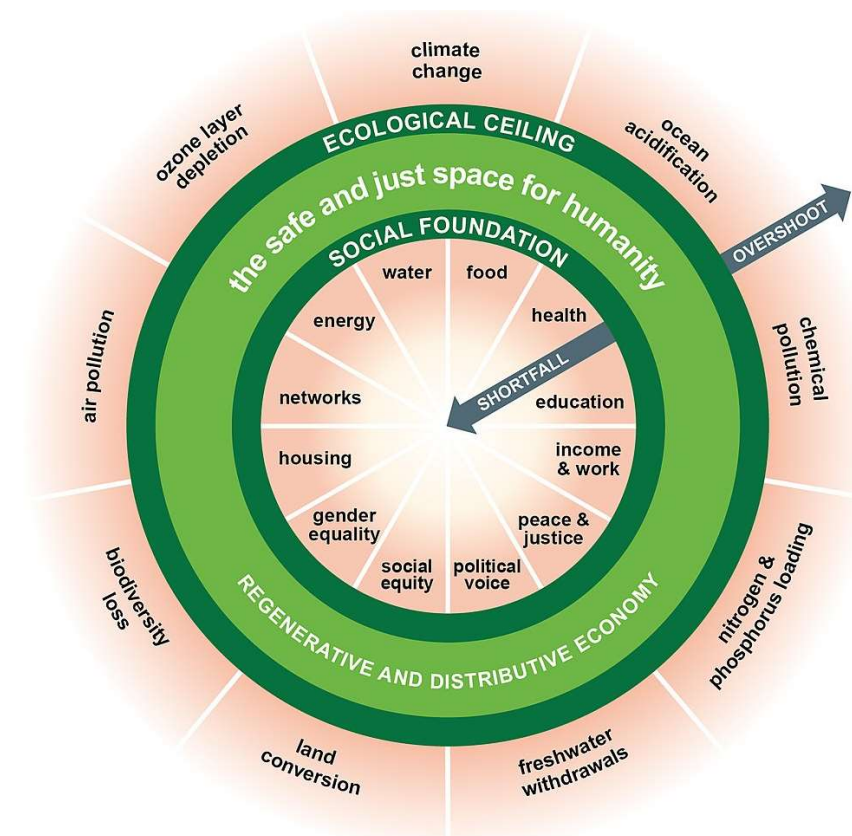
EXHIBIT 6 | Innovation Jumps Once the Proportion of Female Managers Rises Above 20%



Source: 2016 BCG survey.
 Note: Innovation revenue = the percentage of revenue from new products or services in the most recent three-year period. In this analysis, the sample size in the three categories varies from 28 to 34.

Women achieving UN Goals

- Women in senior positions in municipal waste management programmes is linked to higher recycling rates
- Leaders in sustainable economics:
 - Ellen Macarthur and the Circular Economy
 - Kate Raworth and Doughnut Economics





Women STEM Leaders do make a difference

- TO DO

How to increase the number of women in STEM leaders?

Fix the pipeline...

Fix the women...

Fix STEM Leadership

Fix the pipeline...

- Inspire girls and young women...
 - Change perceptions of engineering & science...
 - ...and of women as leaders
-
- Fix the ladder
 - Be aware of barriers



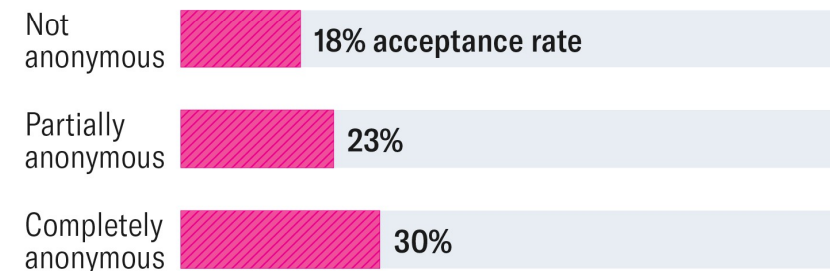
Fix the women

- Women need to lean in...
- Women should be more confident...
- They should negotiate more...
- They should put themselves forward...
- ... Or perhaps we need to fix the men and the sysSTEM?



How Anonymizing Applications Helps Women in Science

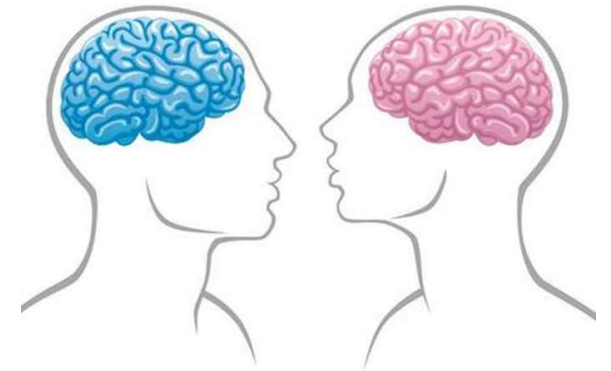
When gender-identifying information was removed from applications for research time at the Hubble Space Telescope, women's proposals were significantly more likely to be accepted.



Note: On average, women represented 23% of submitted applications.
Source: Stefanie K. Johnson and Jessica F. Kirk

Fix STEM leadership

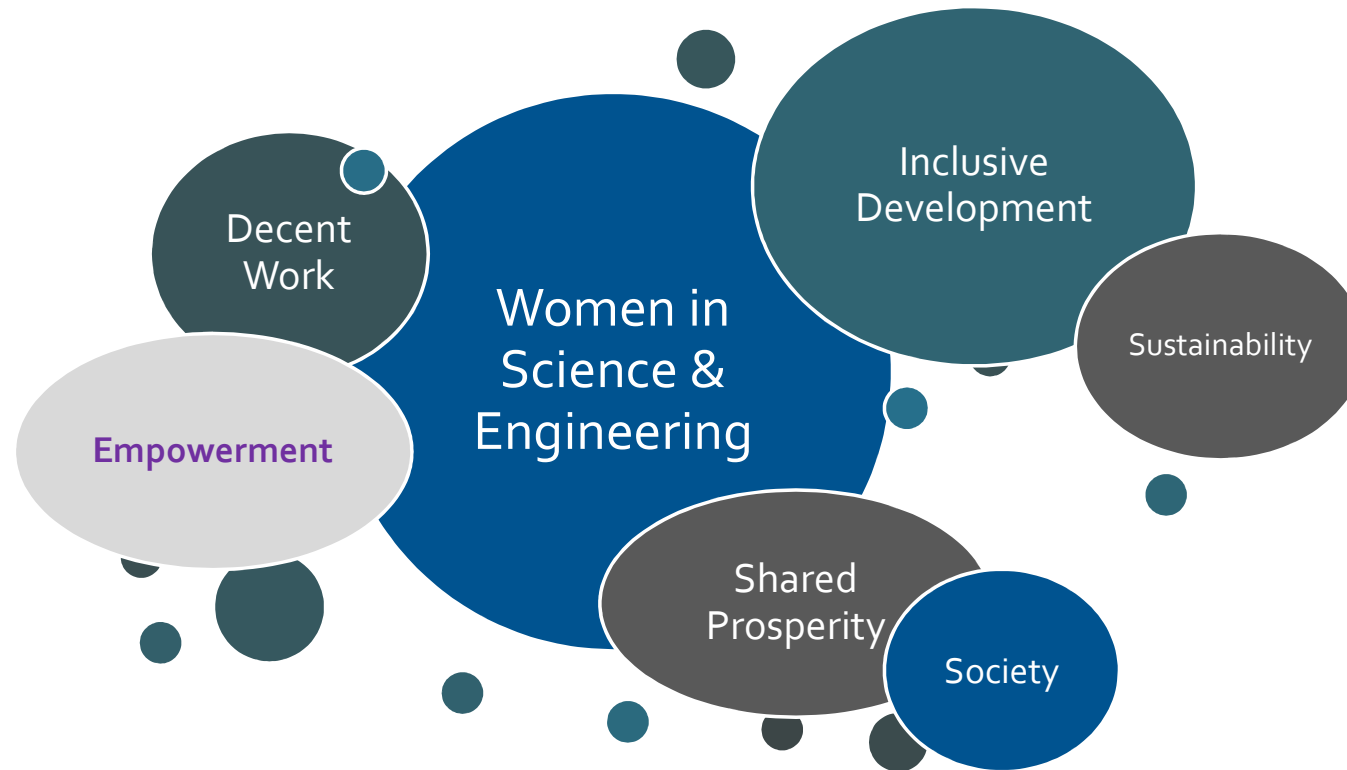
- Evaluating leadership
 - Cooperation and competition
 - The problem of shifting criteria and expectations in education, recruitment and promotion in STEM
- Beliefs about “women’s” role in the workplace
- Multiple paths to leadership
- “Diversity of thought” and diversity of leadership



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INWES/WFEO/ISC Collaboration



School ... College & training ... Work ... Retention & return ... **Leadership**



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