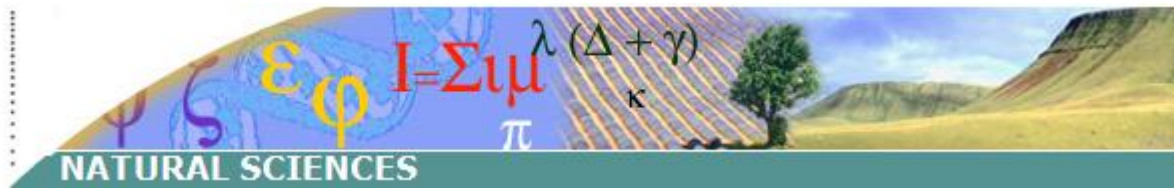**The Natural Sciences Sector**
UNESCO

The Need for Quality Engineering Education to achieve -the Sustainable Development Goals

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Natural Sciences Sector

31 July 2020

United Nations Educational,
Scientific and Cultural Organization

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UNESCO at the Heart of the SDGs

Building peace in the minds of men and women through Education, the Sciences Culture CI - 75 years

In the context of pressing planetary and socio-economic challenges, sustainable and innovative solutions require an **efficient, transparent and vibrant scientific and engineering community** not only stemming from scientists and engineers but from the whole of **society and leaving no one behind**.

SUSTAINABLE DEVELOPMENT GOALS

Renewable Energies
for people's basic needs

Building the future
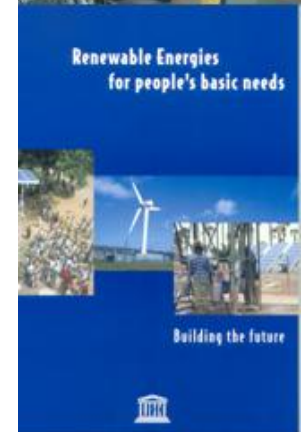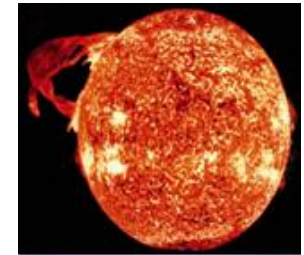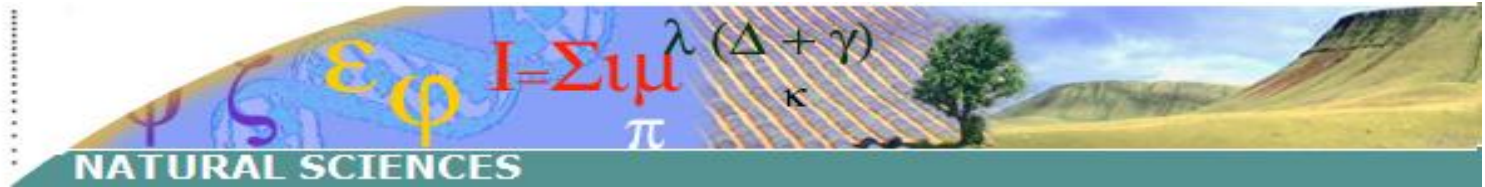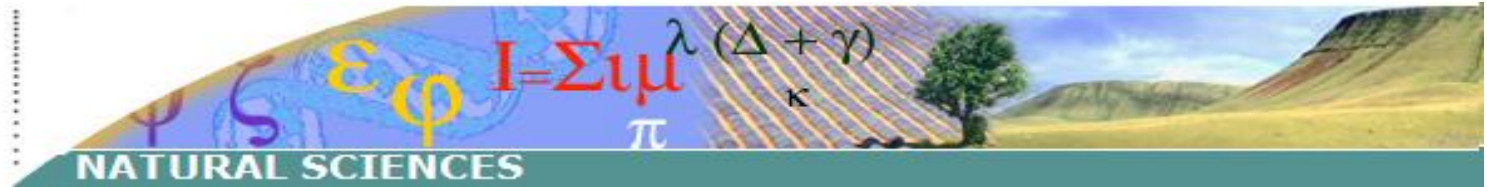
Towards UNESCO recommendation to bridge the SETI knowledge Gap

Need for data, information, knowledge, technologies

Need for evidence based decisions and policies

Need for global STI standards and governance

Need to close the STI gaps

Need to **Open Science and Engineering to Society**

Food for thought? Bridge the Gender Gap

- Women and girls continued to be excluded from participating fully in science.
- According to a study conducted in 14 countries, the probability for female students of graduating with a Bachelor's degree, Master's degree and Doctor's degree in science-related field are 18%, 8% and 2% respectively,
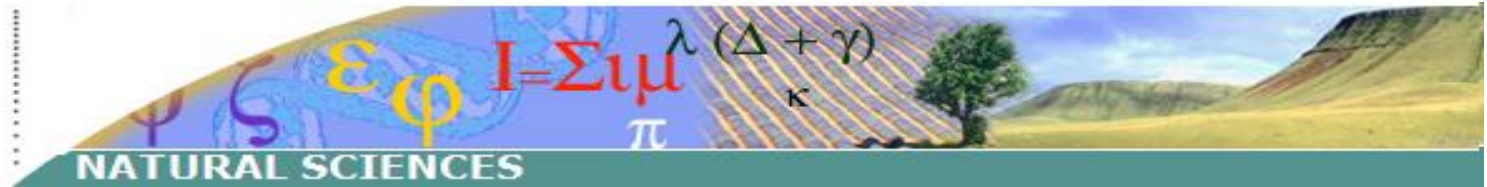- while the percentages of male students are 37%, 18% and 6%.

Share of Women in Research

Figure 3.1: **The leaky pipeline: share of women in higher education and research, 2013 (%)**
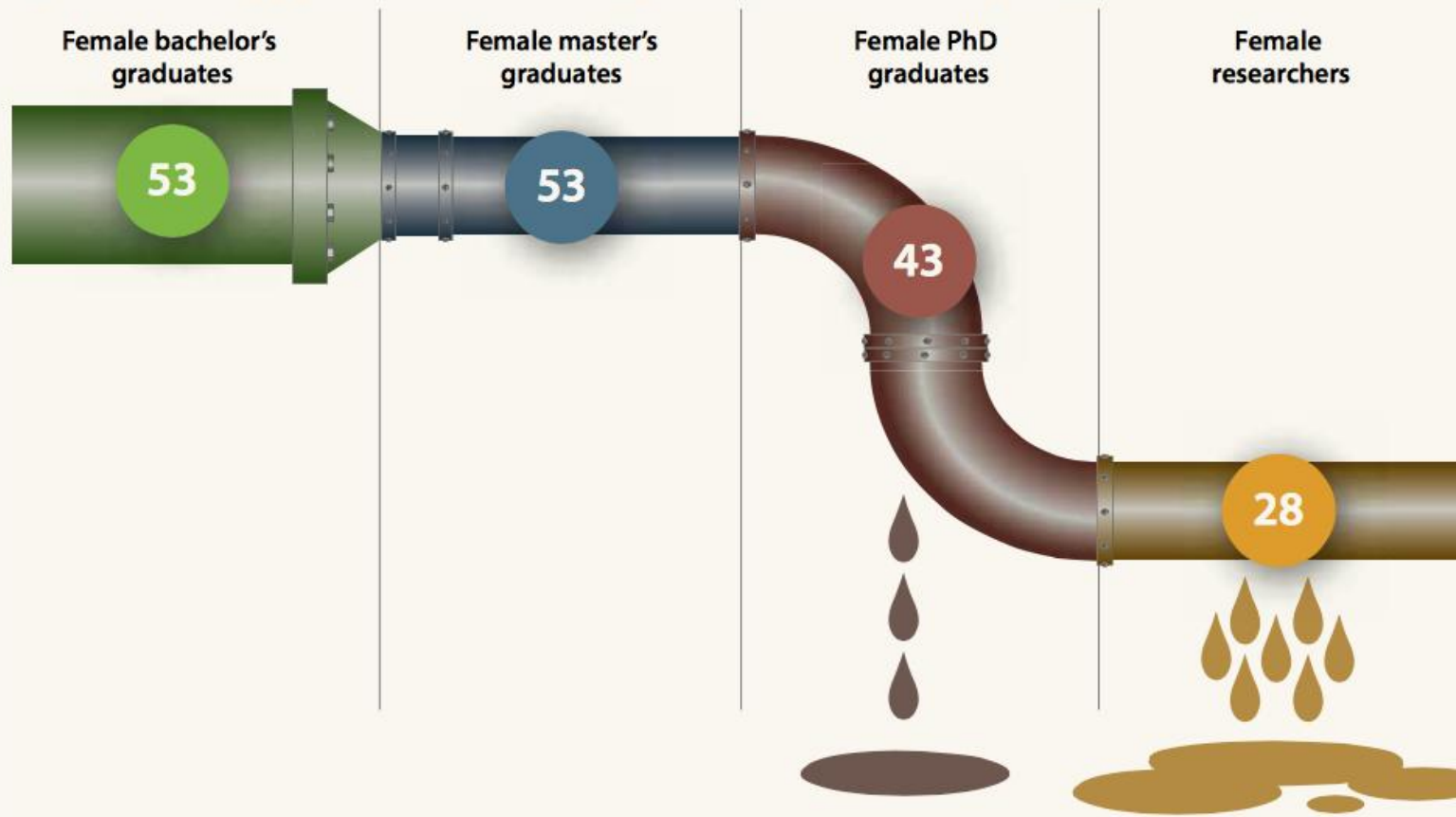
Source: UNESCO Institute for Statistics estimates based on data from its database, July 2015

Women in Research

- – Women now account for 53% of the world's bachelor's and master's graduates and 43% of PhDs but just [28% of researchers](#).
- – There are also great disparities from one region to another.
  - – Southeast Europe - women researchers have obtained parit and,
  - – On the verge of doing so in Central Asia and Latin America and the Caribbean - 44%
  - – In the European Union, on the other hand, just one in three (33%) researchers is a woman,
  - – In the Arab States - 37%
  - – Women are also better represented in sub-Saharan Africa (30%)
  - – than in South Asia (17%)
- – More women graduates in the life sciences > 50%.
- – However, in North America and much of Europe, few women graduate in physics, mathematics and computer science but, in other regions, the proportion of women may come close to parity in physics and mathematics.

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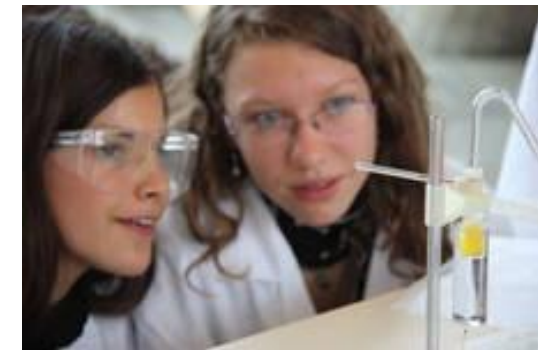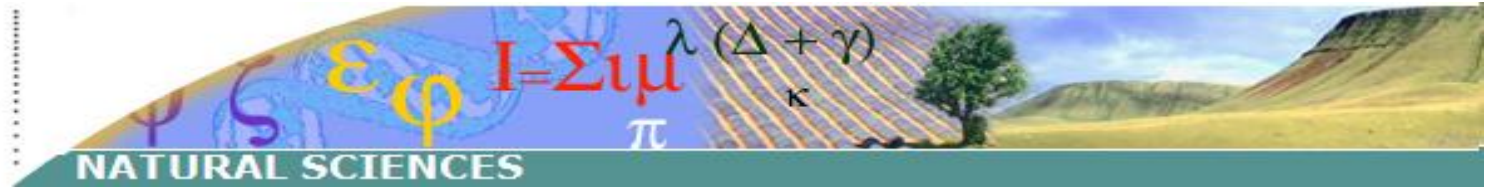
UNESCO-L'Oreal Partnership

Since 1998,

- L'Oréal-UNESCO Awards have recognised more than **87 laureates from 30 countries,**
  - exceptional women who have made great advances in scientific research.
  - **Two of them have gone on to receive the Nobel Prize.**
- International Fellowships have been granted to more than 2,170 women in 110 countries
- A manifesto for women in science was launched in Paris on 24 March 2016, The manifesto draws attention to the need to ensure gender parity in science http://www.forwomeninscience.com/en/manifesto) - > 90 000 signatures
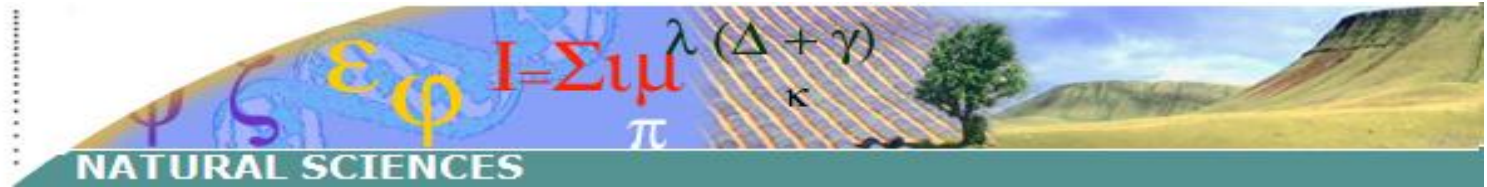
UNESCO and Girls in STEM Education

- *Global priorities of Gender Equality and Africa*
- *Challenges*
  - Decrease in interest among youth in studying STEM – not just a gender problem
  - STEM is stereotyped as a male-dominated field, especially "hard sciences" like maths, physics, engineering
  - Need to change mind-sets, communities and gender-role stereotypes about girls and women
  - Need for strong women role-models in STEM that encourage young women to take up a scientific career
  - Women in scientific careers – raising a family while doing research is a large challenge
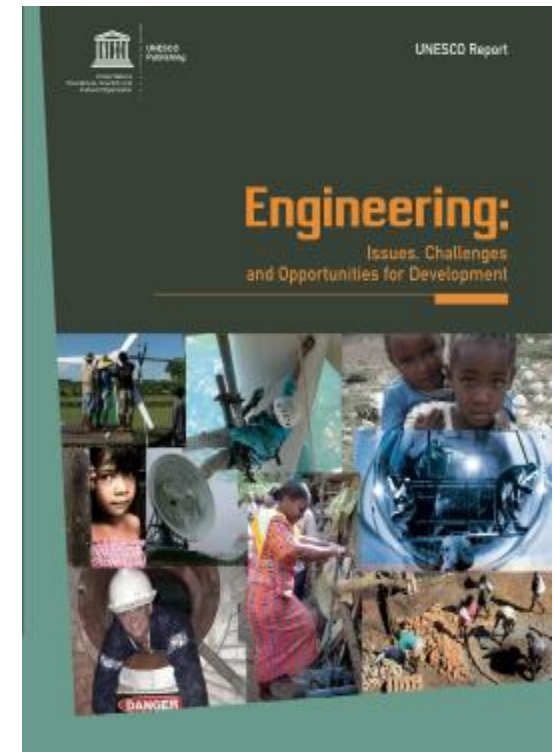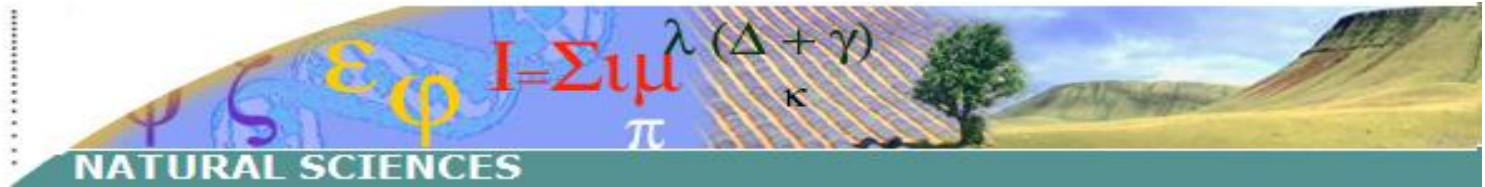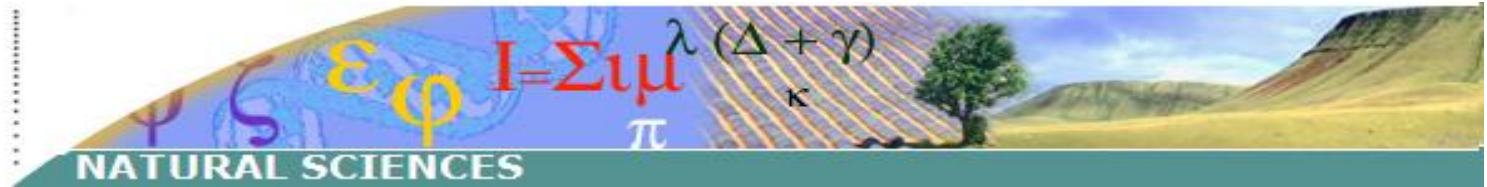
Girls in Science and Engineering

- Around 18% of women in engineering (30% in Science)

- In EU – avg of 16.6% (Latvia 29%, UK 8.5%)

- In USA – avg 20%

- SA has around 12% of women in engineering (Kenya = 10%)

- Strong Role Models (Goodwill Ambassador's, UNESCO-L'Oreal Women in Science)

- Engineering stereotypes change

Women in Engineering

- Women are consistently underrepresented in engineering.
    - Europe and North America are generally low: 19% in Canada, Germany and the USA and
    - 22% in Finland,
    - but there are some bright spots: 50% of engineering graduates are women in Cyprus and 38% in Denmark.
- Regional exceptions: share of women graduating as engineers has risen in sub-Saharan Africa, for instance, in the Arab States and in parts of Asia.
    - > 3/10 engineers are women in Viet Nam (31%), Malaysia (39%) and Brunei Darussalam (42%).
- Of the seven Arab countries reporting data, four observe a steady percentage or an increase;
    - the highest scores come from the United Arab Emirates and Palestine (31% each), Algeria (31%) and Oman, with an astonishing 53%.

Renewable Energies for people's basic needs

Building the future
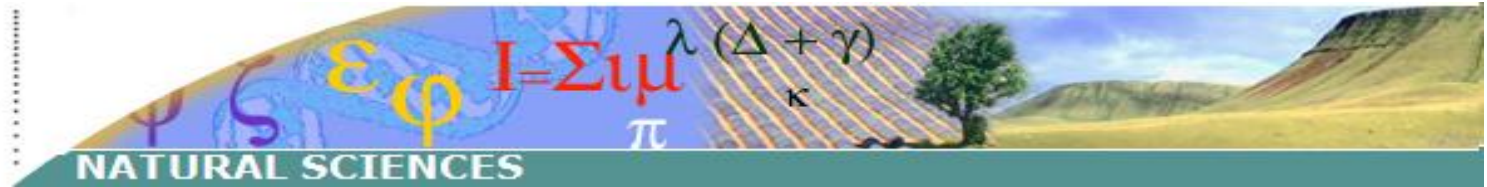
Women in Computer Science

- Computer science shows a steady decrease in female graduates since 2000 - especially high-income countries.

    - Exceptions in Europe include Denmark, where female graduates increased from 15% to 24% between 2000 and 2012, and Germany, which saw an increase from 10% to 17%. These are still very low levels.

- The situation in LAC is worrying: in all countries reporting data, the share of women graduates in computer science has dropped by between 2 and 13 percentage points since 2000

- There are exceptions. Turkey, the % women graduating in computer science rose from a relatively high 29% to 33%.

- India - image of engineering changed

# International Day for Women and Girls in Science

- **11 February 2016 -** first International Day for Women and Girls in Science.

- To support and promote the access of women and girls and their participation in science, technology, engineering and mathematics education, training and research activities at all levels;

- **Million Girls in STEM campaign -** partnering with WomEng, launch of the campaign at the CSW in UN NY on 13 March 2017.

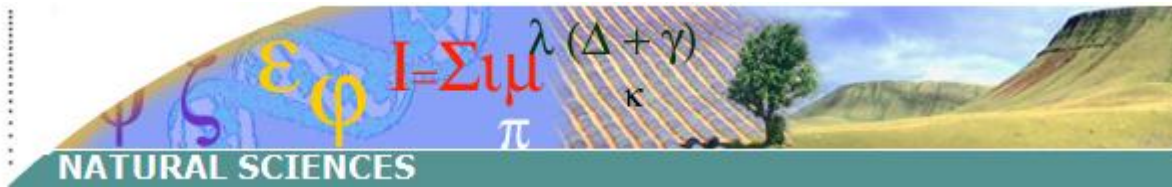# Getting more Women & Girls into ICTs and STEM

- We empower young women with knowledge and information about Engineering and Science so that they can make informed

  decisions in their chosen path of study and careers.

- We ensure that there is no gender bias in technology and devices for girls and boys especially when they are younger.

- We should strive to make access to technology accessible to girls and young women.

- It is imperative that girls and young women have role models and mentors in the technology fields - women engineers with whom

  girls can identify and relate to.

- Develop policies to ensure access and use of STEM Education tools and ICTs for girls and women while protecting them online.
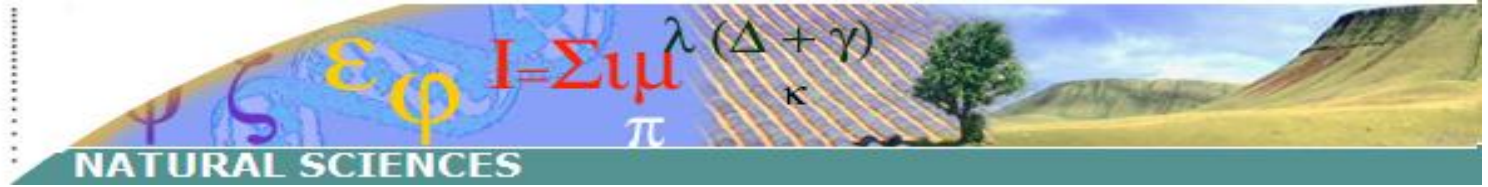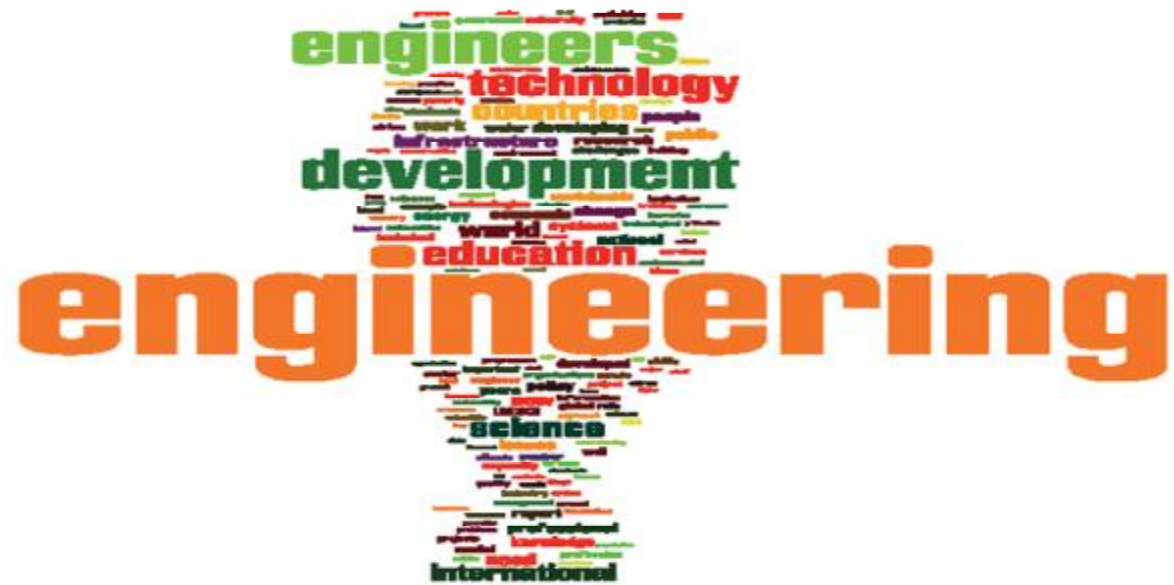
Join the
Science and
Engineering
partnership!

$$I = \Sigma \iota \mu^\lambda {}^{(\Delta + \gamma)}$$

Thank you!