

International conference "Gender Mainstreaming in STEM and Global Change Sciences", Brno, 14 – 15 October 2015

## Gender in STEM

Gotelind Alber  
Sustainable Energy & Climate Policy  
Berlin, Germany

# European Research and Innovation policy

## Gender equality goals

- ▶ Equal participation and opportunities for women and men in research careers
- ▶ Gender balance in decision-making
- ▶ Integration of the gender dimension in research content (biological as well as social and cultural aspects)

Why? - Rationale for gender equality in science:

- ▶ Better performance
- ▶ Gender equality and women's rights

## Gender in Horizon 2020

- ▶ **Fostering gender balance in research teams, in order to address the gaps in the participation of women in projects**
- ▶ **Ensuring gender balance in decision-making, in order to reach the Commission's target of 40% of the underrepresented sex in panels and groups (50% for advisory Groups)**
- ▶ **Integrating gender/sex analysis in research and innovation content, to improve scientific quality and societal relevance**



# Resources

## EU funded

- ▶ GenderSTE: awareness-raising events across Europe  
<http://www.genderste.eu>
- ▶ GenPORT: online community of practice for gender equality and excellence in science, technology or innovation  
<http://www.genderportal.eu>

## Other, i.a.

- ▶ ECTW (European Centre for Women and Technology)  
<http://www.ecwt.eu>
- ▶ WiTEC (European Association for Women in Science, Engineering and Technology)  
<http://www.witec-eu.net>

## Some achievements

- ▶ Substantial improvement of women's level of education during last decades
- ▶ 46 per cent of PhD graduates are women (EU, 2010)
- ▶ Growth rate of female PhD graduates systematically higher than that of men in all fields of science in 2002 - 2010
- ▶ However, progress was slowing down
- ▶ The boss is still male: Though slowly increasing, only 20 per cent women in top positions
- ▶ Gender gap also in research funding, in particular in the private sector
- ▶ Problem of gender segregation persisting

# Proportion of women researchers in the Higher Education Sector, 2005 and 2012 (per cent)

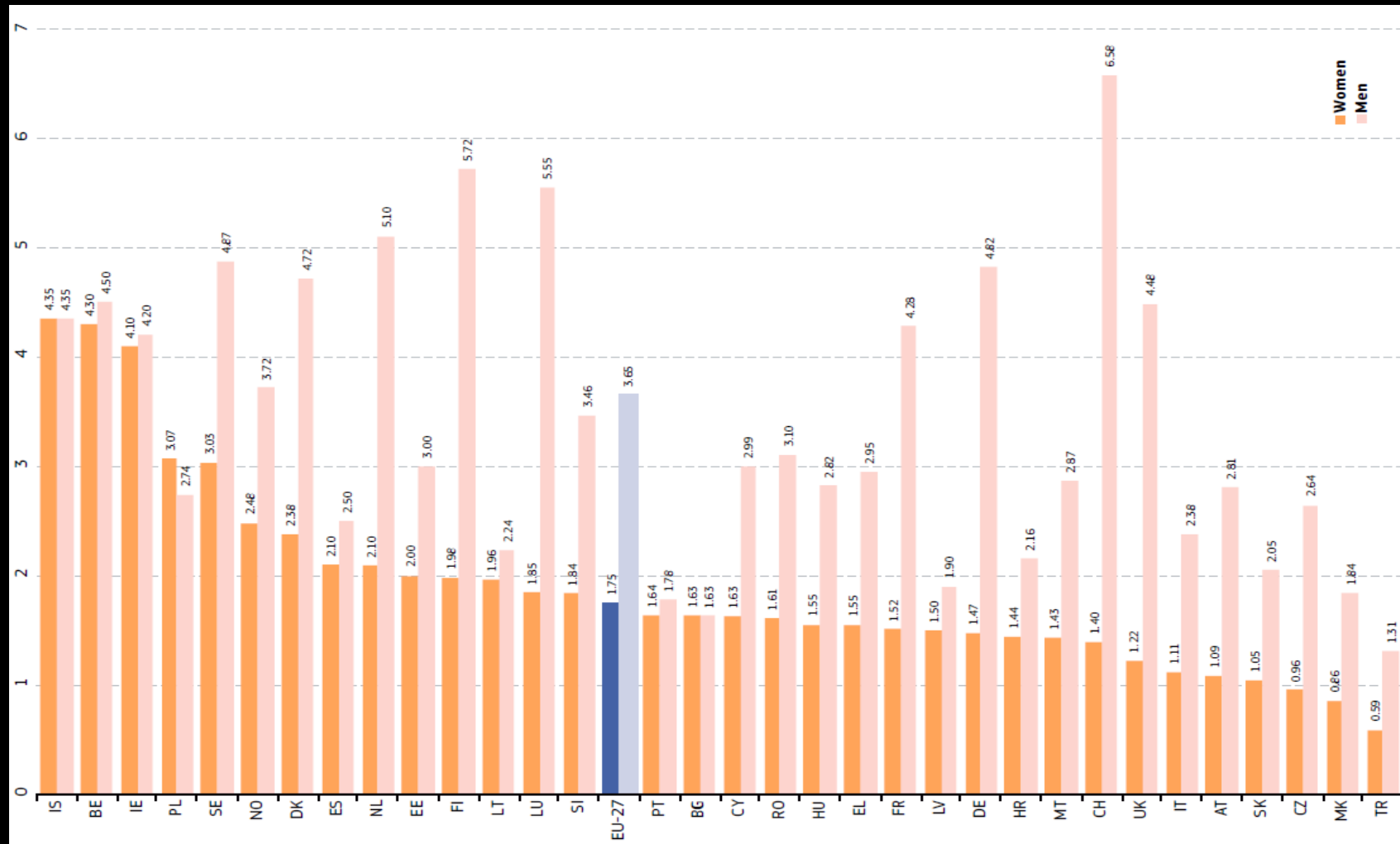
- ▶ Lowest proportion in engineering and technology, and natural sciences
- ▶ Some progress in medical and agricultural sciences
- ▶ But little change in the fields of science with lowest proportion of women

= more men than women  
 = parity between men and women (defined mathematically at 50%-50%)  
 = more women than men

European Commission: SHE FIGURES 2015. Gender in Research and Innovation. Statistics and Indicators. Leaflet 2015

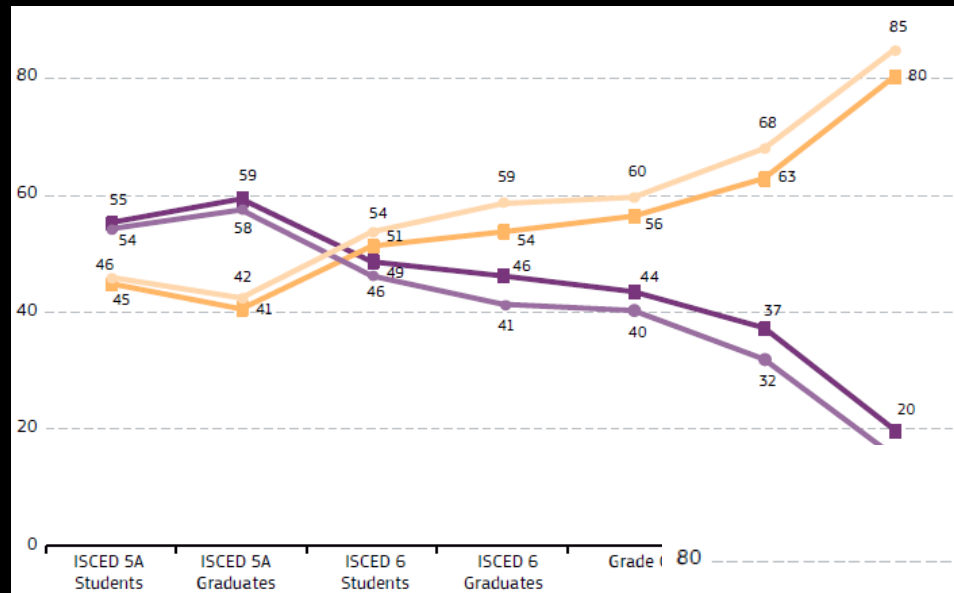
	Natural sciences		Engineering & technology		Medical sciences		Agricultural sciences		Social sciences		Humanities	
	2005	2012	2005	2012	2005	2012	2005	2012	2005	2012	2005	2012
BE	30	33	19	21	47	53	40	47	43	49	42	45
BG	54	47	26	33	53	51	34	33	43	52	47	54
CZ	32	29	21	21	44	48	36	36	39	42	37	42
DK	26	33	16	24	41	49	50	51	32	42	45	43
DE	23	28	14	19	39	48	39	49	34	36	36	50
EE	38	40	24	31	57	58	42	46	55	58	59	62
IE	31	34	21	21	57	61	38	47	45	49	44	51
ES	38	41	34	37	40	43	38	39	39	42	39	42
HR	41	44	31	36	55	58	41	46	45	55	52	58
IT	36	42	21	26	30	36	32	39	36	42	49	52
CY	30	34	18	31	0 (0/7)	56	:	:	38	40	48	47
LV	39	43	21	36	59	64	51	54	60	64	70	68
LT	41	45	27	35	54	61	47	53	61	65	62	65
LU	26	24	18	16	12	23	:	:	34	58	35	53
HU	27	27	18	22	44	46	33	38	41	45	45	44
MT	17	26	9	13	30	46	20 (1/5)	27 (3/11)	34	40	28	23
NL	26	41	21	41	39	41	34	41	38	41	42	41
AT	26	29	18	22	40	46	49	56	44	49	46	52
PL	39	39	23	25	53	55	47	49	47	47	45	47
PT	48	51	33	31	54	56	50	55	53	54	51	50
RO	36	51	34	41	57	57	43	42	45	50	33	49
SI	29	30	18	24	50	52	52	53	38	46	47	51
SK	38	46	32	32	55	56	44	42	53	52	48	48
FI	33	33	30	25	57	67	58	55	53	57	54	57
SE	35	36	22	25	61	59	56	47	:	:	:	:
UK	31	44	19	40	51	50	33	60	41	39	47	38
NO	26	33	19	26	49	56	43	47	42	48	43	47

# Proportion of scientists and engineers in the total labour force, 2010 (per cent)



European Commission: SHE FIGURES 2012. Gender in Research and Innovation. Statistics and Indicators

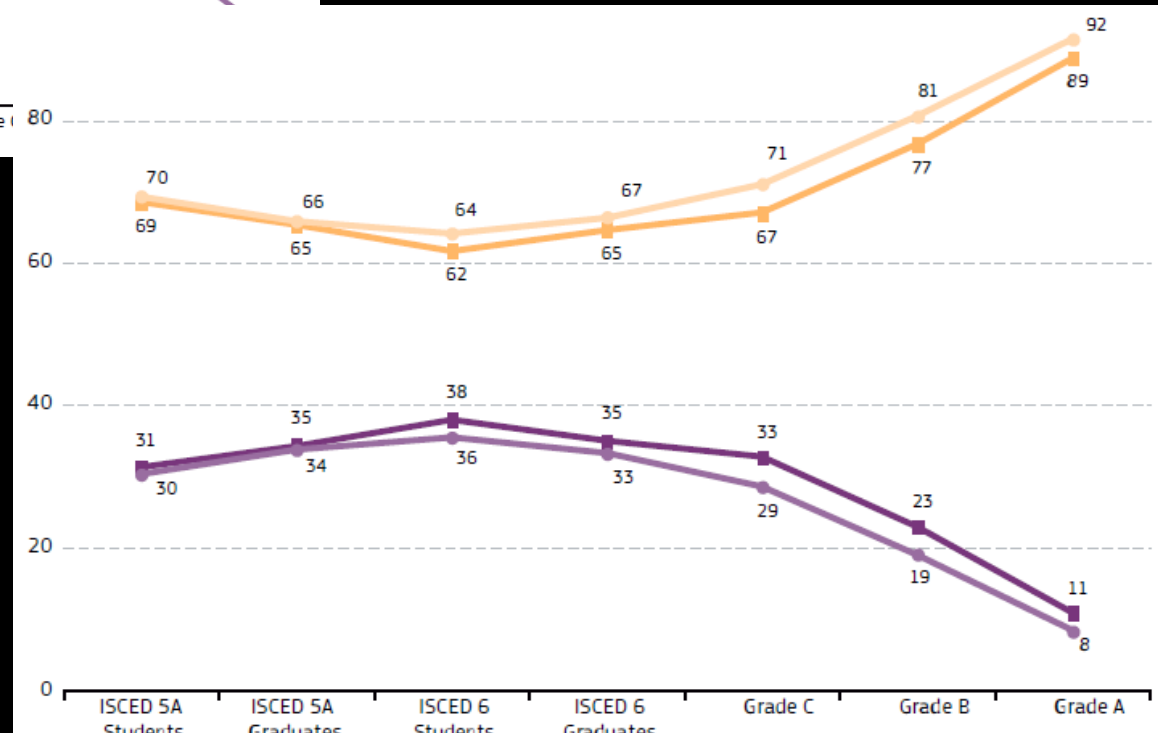
# Academic careers: Scissors don't cross in STEM



Science and engineering

■ Women 2010    ■ Men 2010  
 ■ Women 2002    ■ Men 2002

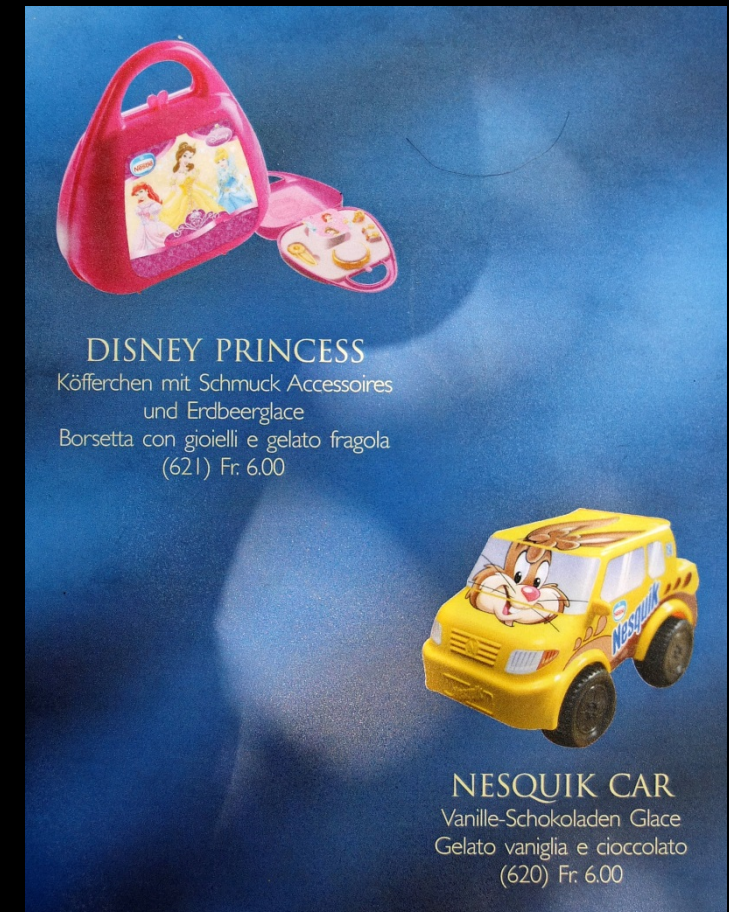
European Commission: SHE FIGURES 2012. Gender in Research and Innovation. Statistics and Indicators





# Underlying reasons for gender segregation

- ▶ Stereotypes and gendered images, already in children's books and school manuals
- ▶ Gendered attitudes of teachers
- ▶ Resulting roles and identities
- ▶ Preferences and attitudes  
e.g. lower expectations of women that science and innovation will have positive impacts



## Less social and professional support for women

- ▶ Family care
- ▶ Teaching and organisational workload
- ▶ Access to networks and mentoring
- ▶ Gendered advice and guidance
- ▶ Lack of role models for girls and women



# Unconscious bias

- ▶ Interruptions while speaking
- ▶ Invitations as speakers, members of committees and expert groups
- ▶ Quotations of scientific work by peers
- ▶ Recruitment and career opportunities, in particular by male dominated committees

<http://gap.hks.harvard.edu/science-faculty%E2%80%99s-subtle-gender-biases-favor-male-students>

<http://curt-rice.com/2011/11/19/spanish-professors-are-sexist/>

The Language of Performance Evaluations. Gender-Based Shifts in Content and Consistency of Judgment

<http://spp.sagepub.com/content/3/2/186.short>

<http://www.voxeu.org/article/does-gender-matter-academic-promotion-evidence-randomised-natural-experiment>



# Bias towards masculinity in educational institutions and at the work place

- ▶ Structures and norms  
e.g. hierarchies
- ▶ Priorities and approaches
- ▶ Atmosphere and communication  
e.g. bossiness and tech-talk



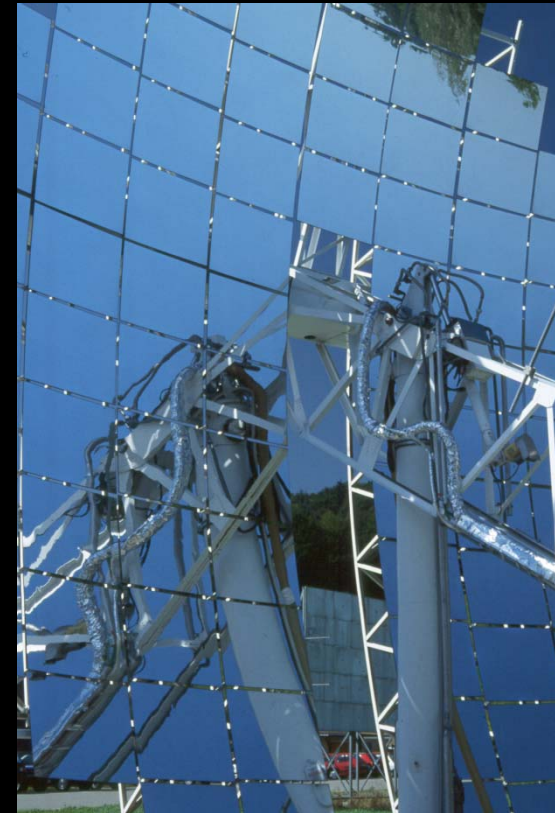
# Gender dimensions of research content

- ▶ Scientific history as linear process
- ▶ Patricarchal structures
- ▶ Objectivity and neutrality?
- ▶ Research questions and priorities
- ▶ Research methods
- ▶ Interpretation of data

Example for a research question:

Which technologies will solve the problem?

With this question, will you find changes of behaviour, structures, infrastructures and institutions that may contribute to solving the problem?





**Research content: Climate change as an example**

## Gender in the recent IPCC AR5 reports – results of a word count

Word frequency of	gender	women	men
<b>WG I</b> <b>(Physical Science Basis)</b>	-	-	-
<b>WG II</b> <b>(Impacts, Adaptation, and Vulnerability)</b>	<b>321</b>	<b>215</b>	<b>48</b>
<b>WG III</b> <b>(Mitigation)</b>	<b>36</b>	<b>31</b>	<b>2</b>

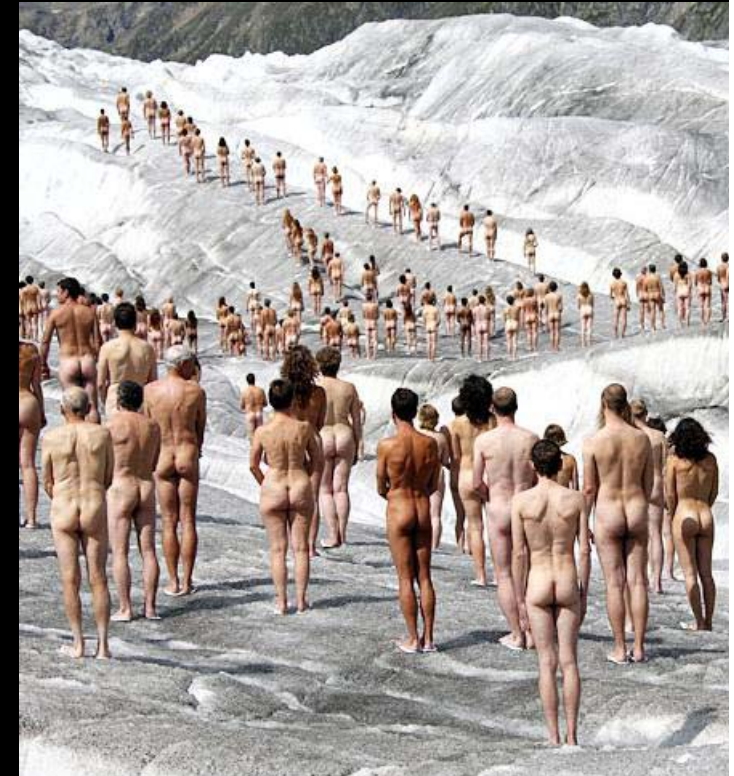
Intergovernmental Panel on Climate Change. (2013). Climate Change 2013: The Physical Science Basis. Working Group I contribution to the fifth assessment report of the Intergovernmental Panel on Climate Change

Intergovernmental Panel on Climate Change. (2014). Climate Change 2014: Impacts, adaptation, and vulnerability. Working Group II contribution to the fifth assessment report of the Intergovernmental Panel on Climate Change

Intergovernmental Panel on Climate Change. (2014). Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change

## Relevant factors for gender dimensions

- ▶ Gender power relations
- ▶ Underrepresentation of women
- ▶ Educational and professional segregation
- ▶ Differences in income and assets
- ▶ Care economy, livelihoods
- ▶ Unpaid labour, informal economy
- ▶ Gendered cultural constraints
- ▶ Legal discrimination of women





## Social and gender aspects of climate change

- ▶ **Responsibility:**  
Carbon footprint depending on income, gender, age, consumption patterns
- ▶ **Impacts: Vulnerability**  
depending on exposure, sensitivity, coping capacity
- ▶ **Attitudes and preferences**
- ▶ **Access to climate relevant resources and services**
- ▶ **Capacities to respond to climate change**
- ▶ **Socio-economic impacts of policies**



## Gender dimensions of vulnerability and adaptation

- ▶ Women often more vulnerable and less able to cope due to biological and social factors
- ▶ More fatalities among women during, and higher risks after disasters due to lack of information, mobility constraints etc.
- ▶ Increased work burden for family care and care for the sick
- ▶ Greater health impacts
- ▶ Lack of resources to cope due to income gap, subsistence agriculture, informal jobs
- ▶ Different responses to stress



# Gender dimensions of mitigation of climate change

- ▶ Underrepresentation of women in the energy and transport sectors, even in the renewable energy industry
- ▶ Different concerns, attitudes and preferences, e.g. towards risks, technologies, transport options, lifestyle changes
- ▶ Specific needs in terms of energy and mobility services, i.a. due to care work
- ▶ Specific capacities to respond to climate change
- ▶ Effects of policy responses, e.g. greater impact of economic policy instruments on women due to pay gap, risk of energy poverty



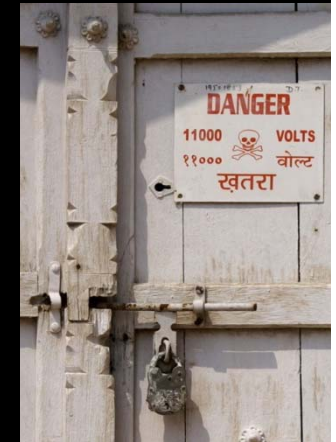
# Segregation of climate change research

## Current mainstream climate change research:

- ▶ Focus on science & technology plus economy
- ▶ Male dominated, often blind for social and gender dimensions
- ▶ Focus on technical solutions and one-fits-all-mechanisms

## Current gender aware research on climate change:

- ▶ Social sciences & humanities
- ▶ Often very theoretical
- ▶ Focus on impacts, vulnerability and resilience building
- ▶ Concentration on case studies, only anecdotal evidence



## Recommendations for research

- ▶ **Transdisciplinary, participatory and people-centred**
- ▶ **Gender awareness and gender competence of researchers plus involvement of specific gender experts**
- ▶ **Intersectional approach as integral part of research**
- ▶ **Gender disaggregated data incl. further disaggregation (e.g. Eurobarometer: EU wide aggregation is levelling out gender differences)**
- ▶ **Examination of underlying causes**
- ▶ **Value and address care economy, broader care concepts**
- ▶ **Methodologies & tools to detect and address gender differentials, e.g. Gender Impact Assessment (GIA)**
- ▶ **Address root causes: androcentrism, segregation of care**

**Thank you for your attention!**

**Gotelind Alber**

**Sustainable Energy and Climate Policy**

**[www.gotelind-alber.eu](http://www.gotelind-alber.eu)**

**GenderCC-Women for Climate Justice**

**[www.gendercc.net](http://www.gendercc.net)**