

Gender dimensions in environmental sciences and the role of women associations

Cristina Mangia^{1,4}, Mariangela Ravaoli^{2,4} and Giuliana Rubbia^{3,4}

CNR Istituto di Scienze dell'Atmosfera e del Clima, Lecce, Italy

CNR Istituto di Scienze Marine, Bologna, Italy

INGV Istituto Nazionale di Geofisica e Vulcanologia, Roma, Italy

Associazione Donne e Scienza, Roma, Italy

c.mangia@isac.cnr.it



Aims and methods

- improve awareness and knowledge about gender dimension in environmental research
- put the basis for further concrete actions
- share and integrate our experiences while promoting debates and synergies



- start from our work in different research performing organizations
- embracing climate changes, ecology and biodiversity, pollution and health, earth sciences
- dissemination and networking through women scientists associations



The 2030 Agenda with the 17 Sustainable Development Goals (SDGs)

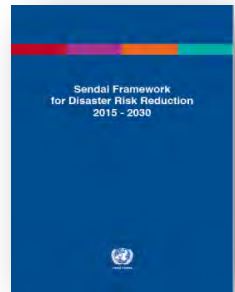
It expresses a clear judgment on the unsustainability of the current development model, not only on the environmental level, but also on the economic and social one. In this way the idea that sustainability is only an environmental issue is definitively overcome and an integrated view of the different dimensions of development is affirmed.



SDG 5: Providing women and girls with equal access to education, health care, decent work, and representation in political and economic decision-making processes will fuel sustainable economies and benefit societies and humanity at large.

Even today, discrimination against women is being pursued: **eradicating all forms of violence against women in the private and public sphere, just as their sexual exploitation is fundamental.**

Sendai Framework for Disaster Risk Reduction 2015-2030



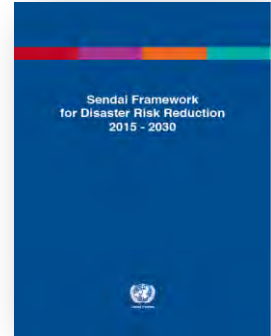
- Lesson learned, gaps identified and future challenges:
“There has to be a **broader and more people-centred preventive approach** to disaster risk.”
- Guiding principles ...(d) “A **gender**, age, disability and cultural perspective **should be integrated** in all policies and practices, and **women** and youth leadership should be promoted. Special attention should be paid to the improvement of organized voluntary work of **citizens** ...”

<http://www.unisdr.org/we/inform/publications/43291>

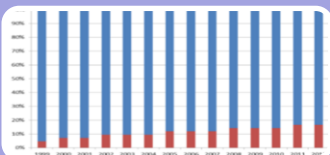
Priority 4 Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction

to achieve this it is important:

“To invest in, develop, maintain and strengthen people-centred multi-hazard, multisectoral forecasting and early warning systems, disaster risk and emergency communications mechanisms, social technologies and hazard-monitoring telecommunications systems; develop such systems through **a participatory process; tailor them to the needs of users, including social and cultural requirements, in particular gender; ...**”



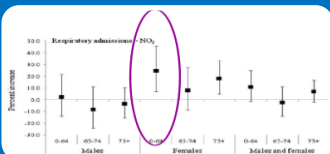
Results: multiple gender dimensions exist



gender of research staff



gender differences in the environmental impact assessment



gender analysis in the interpretation of scientific results



gender dimension at epistemological level



women presence in environmental organizations

Gender dimensions: gender of researchers - the figures

	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
FR	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%)	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	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
MC	33 (3/9)	56 (14/25)	32	34	62	66	28	44	38	48	64	54
RS	51	49	31	34	56	48	45	57	50	48	50	57
TR	41	43	30	32	44	47	27	30	37	41	41	43

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

Evolution of the proportion (%) of women researchers in the Higher Education Sector, by field of science, 2005-2012

Source: She Figures 2015
data.europa.eu/euodp/data/dataset/she-figures-2015-gender-in-research-and-innovation

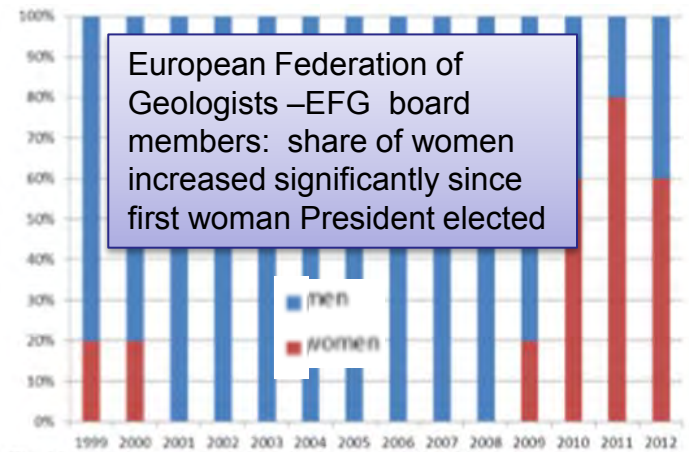


Fig 7: Women participation in the EFG Board

Source: Fernandez-Fuentes, 2013 In Pichezzi & Vita Eds. Women in leading positions in geology
http://www.isprambiente.gov.it/files/pubblicazioni/atti/Atti_IlruolofemminilenelleScienzedellaTerra_def.pdf

Women researchers in the LTER network



LTER –ITALY
24 sites for
ecological research
handled by HEIs
and PROs of Italy

Ravaoli et al. 2014
doi 10.14600-1/43/978-
88-98822-08-9



- High presence of women
- High quality research and communication skills
- New relationships among research, environment and society

Gender dimensions: gender in impact assessment

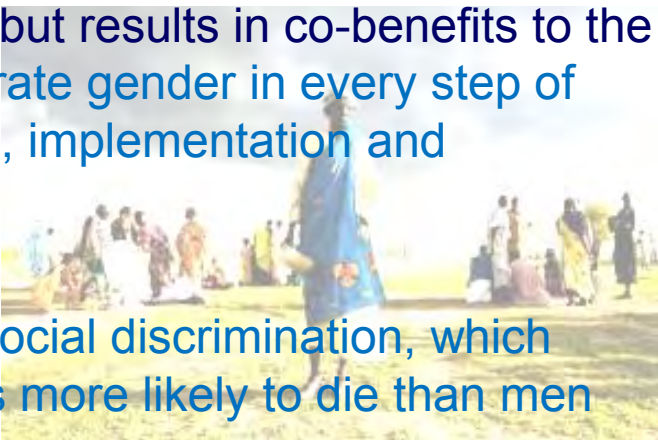
GENDER GAPS AROUND THE WORLD	CLIMATE CHANGE IMPACTS	IMPACTS EXACERBATE GENDER INEQUITIES
POVERTY OVER 50% OF THE 1.5 BILLION PEOPLE LIVING ON \$1 A DAY OR LESS ARE WOMEN (SOURCE: UNFPA)	CROP FAILURE 	Women experience increased agricultural work and overall household food production burden
WATER ON AVERAGE WOMEN AND CHILDREN SPEND 8 OR MORE HOURS PER DAY COLLECTING WATER (SOURCE: UN WOMEN)	FUEL SHORTAGE 	Many women in developing countries can spend between 2-9 hours a day collecting fuel and fodder, and performing cooking chores
GOVERNANCE GLOBALLY, WOMEN ARE 16.7% OF GOVERNMENT MINISTERS; 19.5% OF PARLIAMENTARIANS; AND 9% HEADS OF STATE (SOURCE: IPU)	WATER SCARCITY 	Increased burden on women walking further distances to access safe water, impacts the education and economic stability
FOOD WOMEN PRODUCE OVER 60% OF FOOD IN SOME COUNTRIES (SOURCE: FAO)	NATURAL DISASTER 	Women have a higher incidence of mortality in natural disasters ; women can suffer from an increased threat of sexual violence
LITERACY TWO THIRDS OF THE 774 MILLION ILLITERATE ADULTS WORLDWIDE ARE WOMEN (SOURCE: UNSTATS)	DISEASE 	As caregivers women often experience an increased burden for caring for young, sick and elderly as well as lack of access to health care facilities
LAND WOMEN OWN JUST 2% OF THE WORLD'S LAND (SOURCE: UN WOMEN)	DISPLACEMENT 	Forced migration could exacerbate women's vulnerability
	CONFLICT 	While men are more likely to be killed or injured in fighting, women suffer greatly from other consequences of conflict, such as rape, violence, anxiety and depression

COPYRIGHT (2012) - WOMEN'S ENVIRONMENT AND DEVELOPMENT ORGANIZATION (WEDO)

Source: wedo.org Women's Environment & Development Organization

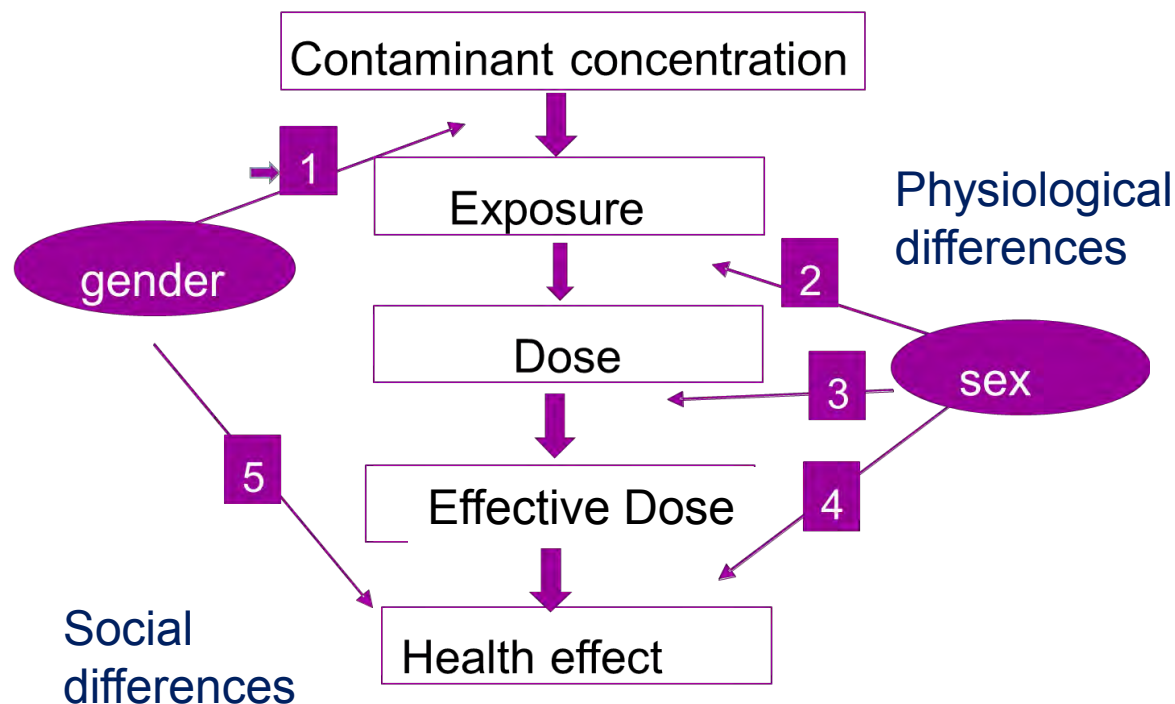
Women and climate changes

European Parliament on women and climate change (2011/2197(INI))

- whereas women represent approximately 50 % of the world's population and whereas they still have relatively more responsibility for everyday consumption choices, childcare and household activities; ...
 - Recognising that climate change exacerbates gender discrimination in addition to its other catastrophic effects, emphasises that averting dangerous climate change must be the highest priority of the EU both in domestic and external policy;
 - Calls on the Commission and the Council, in order to ensure that climate action does not increase gender inequalities but results in co-benefits to the situation of women, to mainstream and integrate gender in every step of climate policies, from conception to financing, implementation and evaluation;
- 
- ❖ because women are subject to cultural and social discrimination, which means that women and children are 14 times more likely to die than men
 - ❖ because they have less access to sources of income and represent about 70% of the world's poor

Gender dimensions: gender analysis in the interpretation of scientific results

How sex and gender play roles in the relationship between environment and health (1)



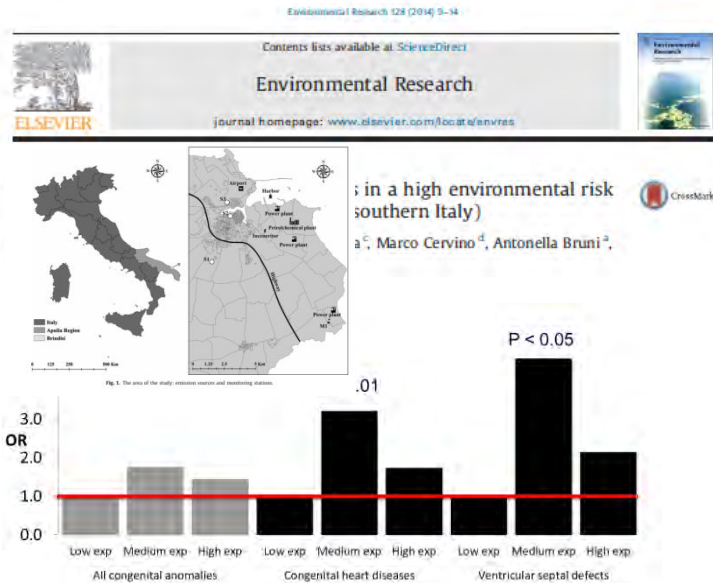
modifications are attributable to

- socially derived gendered exposures
- sex-linked physiological differences
- or to some interplay thereof?

Clougherty, 2010 "A growing role for gender analysis in air pollution epidemiology."
Environmental health perspectives 118.2

Gender dimensions: gender analysis in the interpretation of scientific results

Sex and gender roles in the relationship between environment and health (2)



Exposure to air pollutants and risk of Congenital Anomalies

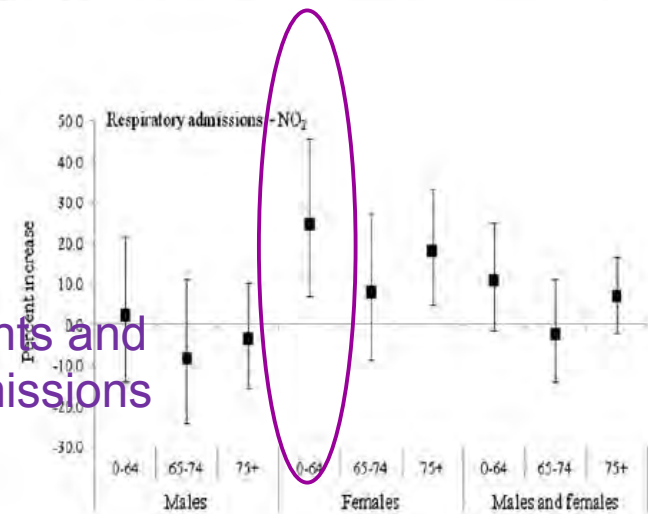
Environ Res. 2014 Jan;
128:9–14. doi:
10.1016/j.envres.2013.11.002

International Journal of Environmental Health Research, 2013
Vol. 23, No. 5, 446–460, <http://dx.doi.org/10.1080/09603123.2012.755154>



Acute effects of urban and industrial pollution in a government-designated “Environmental risk area”: the case of Brindisi, Italy

Emilio Antonio Luca Gianicolo^{a*}, Antonella Bruni^b, Cristina Mangia^c, Marco Cervino^d and Maria Angela Vigotti^e



Exposure to air pollutants and increased hospital admissions

[Int J Environ Health Res. 2013;23\(5\):446–60. doi:](http://dx.doi.org/10.1080/09603123.2012.755154)
10.1080/09603123.2012.755154.

Gender analysis: differences in exposure

Taranto, Italy: a case study

Kitchen pollution:
Indoor>outdoor

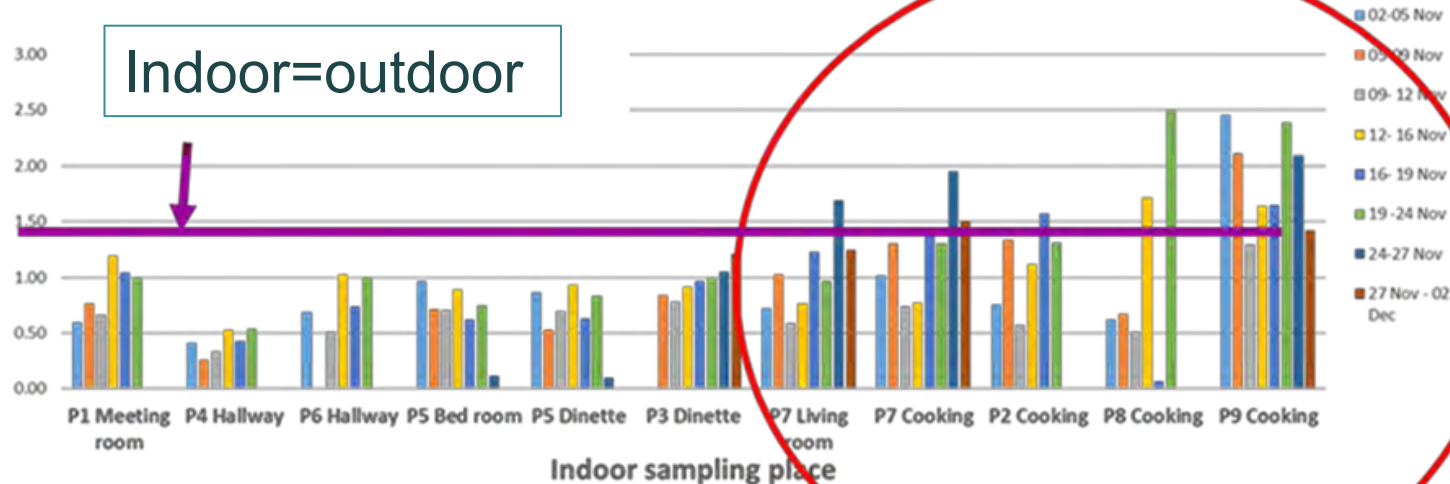


Figure 6: Indoor/Outdoor ratio for NO2 mean concentrations in all the places and sampling periods

NO2 Ratio indoor/outdoor

Ielpo et al. . 2017 18th European Meeting on Environmental Chemistry. Outdoor spatial distribution and indoor levels of NO2 and SO2 in a high environmental risk site of the South Italy

Gender dimensions at epistemological level

51

COSCIENZIAT@



Sapere post-normale

Marco Cervino e Cristina Mangia



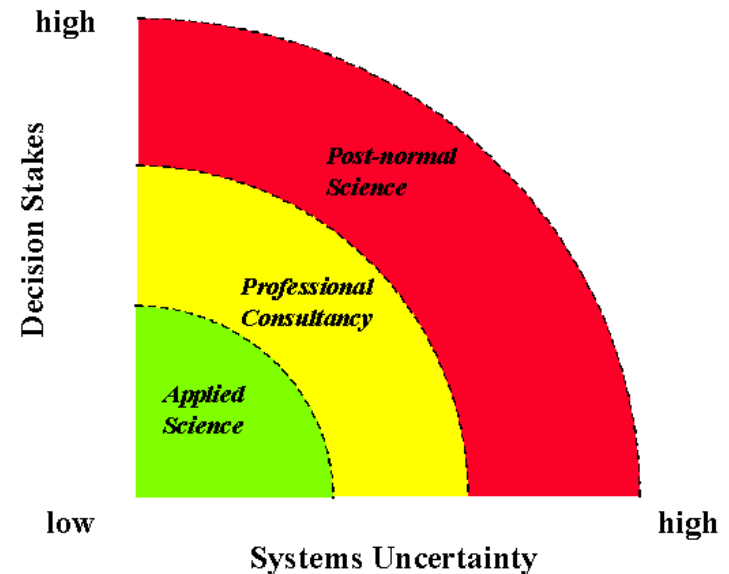
Environmental research and post-normal science

Post normal science adopts a novel approach including the uncertainties of natural systems:

facts are uncertain, values in dispute, stakes high and decisions urgent.

widening participation of the subjects authorized in defining research questions, work methodologies, collection of relevant data.

Next to experts, other scientists from other fields as well as citizen and other stakeholders.



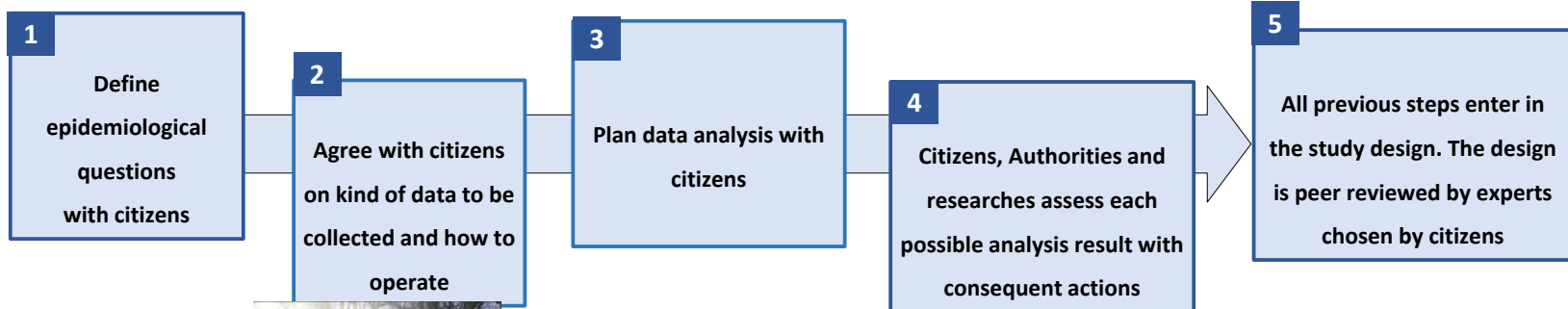
S. Funtowicz, JR Ravetz, Futures
1993; 31(7):735-55

Environmental research, post-normal science and feminist studies

Participatory approaches in finding optimal solutions to research questions
Intersects with feminist methods (*) of research e.g.. regarding the value of
situated knowledges and non neutral science.



The Manfredonia Environment and Health Project (De Marchi et al. 2017)



D. Haraway, Feminist studies 14.3 (1988): 575-599 B.De Marchi et al. " Panorama Public health(2017).

Gender dimension in research questions

- Women participation in research - also favored by European projects - has led to a number of European and national projects aimed at better understanding issues of evaluation, gender equality and comparisons in the (Mediterranean) countries.
- A broader issue concerning contemporary science and the model of the development of science and technology driven society emerged.
- It can contribute to creating or curbing economic and gender inequalities and environmental problems. This requires new questions, new looks, new paradigms.
- The analysis of emerging issues such as climate change and influences in the role of women in society and their careers, in addition the differences between the countries to the north and south of the Mediterranean can help us produce deeper and more focused reflections on the future that awaits us.

Gender dimensions: women presence in environmental organizations

Mamme NoPfas - genitori attivi -zona rossa



**passeggiino
rosso**
BRINDISI



The role of women associations: Associazione Donne e Scienza, Italy



www.donnescienza.it  ScienzaDonne



- Networking
- Member of European Platform of Women Scientists - EPWS
- Dissemination, conferences and debates
- Projects (also EC) and WGs
Working Group Gender & Environment
- Next Conference Pisa 20-21 Sep 2018
#weetooinscience



Conclusive remarks

Gender analysis

- expands the boundaries and enriches the environmental and health research
- may largely contribute to the environmental debate
- may promote new approaches to knowledge

Women scientists associations

- implement networks among scientists cross-cutting disciplines and research organizations
- may facilitate the process of sharing experiences

Thank you



Cristina Mangia
Istituto di Scienze dell'Atmosfera e del Clima
CNR Lecce, Italy
c.mangia@isac.cnr.it



Mariangela Ravaioli
Istituto di scienze marine
CNR Bologna, Italy
Mariangela.ravaioli@bo.ismar.cnr.it



Giuliana Rubbia
Istituto Nazionale di Geofisica e Vulcanologia
INGV, Roma, Italy
giuliana.rubbia@ingv.it

