Women and Science
Introduction

Women’s empowerment in science

Climate Change and Gender

Gender Equality and Water

Gender in agriculture and Food Security
Raya Muttarak

• IIASA Principal Research Scholar in the Migration and Sustainable Development Research Group, Population and Just Societies Program
• Professor of Demography and the Department of Statistical Sciences at the University of Bologna, Italy
• Reciprocal relationship between population and the environment
• MSc and DPhil in Sociology from the University of Oxford, UK
Ting Tang

- Research Scholar, Water Security Research Group, Biodiversity and Natural Resources Program
- Water quality modeling towards integrated assessment of global water resources and the associated solution options
- Background in environmental science and ecohydrology

With contribution from Keerthana Suresh
Amanda Palazzo, Research Scholar

• Research Scholar in Integrated Biosphere Futures Research Group, Biodiversity and Natural Resources Program

• One of the main developers of the partial-equilibrium land use model Global Biosphere Management Model (GLOBIOM)

• Water-energy-land nexus and participatory approaches to link qualitative and quantitative scenarios and modelling tools

• President of IIASA’s Women in Science Club

• Background in resource and consumer economics
Empowering women in science

Representation matters at all levels

Gender bias
Credit: Leon Walls

Safe space for discussing issues

Gender mainstreaming

Exploitative
Accommodating
Sensitive
Transformative

GENDER- BLIND

GENDER-AWARE
Representation in science

Share of women in science

Source: UIS (2020) Women in Science Fact Sheet

Share of IIASA researchers by gender and research level

Source IIASA/Islam
Gender bias

What can the community or an institution do to address the issue?
Develop a gender diversity and inclusion plan which includes:

- Data on gender representation
- Goals and guidelines for gender and minority representation
- Effective training
- Effective hiring and retention strategies
- Improve the workplace environment for families
- Invite more women and minority speakers

What can the can an individual do to address the issue?

- Support early career researchers
- Avoid participating on all-male panels or projects
- Call out gender bias or discrimination in yourself and your colleagues
- Actively expand your network

Fig 1 from Grogan 2019. *Nature Ecology and Evolution*
Background on WISC

• Bottom-up club of scientific and professional people connected to science

WISC goals:
• Learn from each other experiences
• Speak openly about the challenges
• Develop and cultivate a supportive network for sharing news, development and career opportunities, and
• Amplify the scientific contributions of women
Activities to build a supportive network

- Meet greet and eat lunchtime discussions with visitors, guests and IIASA staff
- Trainings: social media, communication with media, mentoring
- Mentoring Program

- Club organized Scientific Lectures open for all staff
  - Diana Ürge Vorsatz, Helga Krom-Kolb, Leena Srivastata, Julia Slingo
- Participation as a stakeholder in Institutional activities

- Blog posts
  - Social media
    - IIASA Connect
      - Email distribution list
      - Internal Intranet page

- Staying within scope of club goals and objectives
- Independence vs support
  - Effective participation as a stakeholder
What do we mean by gender mainstreaming?

Why do we care about gender mainstreaming?

Source: Gender in EU-Funded research Toolkit and Training project by Yellow Window Project
Why gender mainstreaming is fundamental for climate actions?

Demographic heterogeneity is key for policy planning and interventions

Age and sex distribution of migrants from the Philippines in the US, 2016

Source: Eurostat.

Source: Migration Policy Institute.
Sources of gender differentials

A conceptual framework for considering gender dynamics and disaster impacts

Gender differentials in hazards exposure

Source: The Chronicle.

Source: Globalgiving.

Source: Humanosphere.
Gender differentials in vulnerability and coping capacity

Physiological and biological differences

THREE FACES OF MALNUTRITION

STUNTING
144 million children under 5 are **stunted** (too short for their age)

WASTING
47 million children under 5 are **wasted** (too thin for their height)

OVERWEIGHT
38 million children under 5 are **overweight**
Interactions with socio-economic factors

Sex differences in thermoregulation

Social vulnerability to heatwaves

Source: Quiropractica Rodermans.

Tackling gender (and other forms of) inequalities can promote climate action.

Gender equality and water:
Water-related disasters (flooding) impact women and men differently due to their social, cultural and gender norms.

• Higher mortality risk for males in more developed settings
  In US and Europe, 70% of flood-related deaths are males.
  ▪ Mostly vehicle-related; behaviors of drivers

• Higher mortality risk for females in less developed countries
  Women's restricted ability to avoid danger of flooding
  ▪ The female dress code
  ▪ Not knowing how to swim
  ▪ The responsibilities in caring for small children

• Women to ensure household water supply
  o In case of contaminated boreholes & wells from flooding
  o In case family members getting sick from flooding-related diseases

Copyright: UN Women/ Mohammad Rakibul Hasan
Gender equality and water:
The primary responsibility of women/girls for daily water collection

Women/girls as primary water carriers due to water security issues

- Across 24 Sub-Saharan African countries
- Primary collectors of water spending more than 30 minutes per day

Limit access to
- Education
- Income generating activities
Gender equality and water:
Vulnerability to poor access to Water, Sanitation and Hygiene (WASH)

- Exposed to toxins through contaminated water
- Stigmatised menstruation
- Pressure to drop out of school after menstruation
- Economic discrimination
- Psychosocial stress
- At risk of gender-based violence
- Responsible for water provision in household
- Vulnerable to poor water quality
- Difficulty in accessing healthcare and public water and sanitation infrastructures
- Not included in decision-making processes

Discrimination occurs throughout the lifecycle of a woman (OHCHR)
Gender equality and water:
Women are severely underrepresented in water management and decision-making and the progress has been slow.

Source: IUCN Environmental Gender Index (EGI, 2013)

High levels of women’s participation in water policy and management processes

UN Women 2021 (number as percentage of countries [170])
Gender equality and water: Rebalancing the **constrained roles** and disproportional vulnerabilities/responsibilities of women in the water sector.

- **At all levels**
  - Household & community
  - Water management
  - Water policy-making
  - Socio-cultural norms

- **Systematically**
  - Water security
  - Climate
  - Environment & natural resources
  - Agriculture
  - Etc.

Source: Fauconnier, IUCN 2018
Gender equality and water: strong linkage to agriculture and food security

Land ownership is the preconditions for water access and use.

<table>
<thead>
<tr>
<th>Regions</th>
<th>pct female holders</th>
<th># countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-Saharan Africa</td>
<td>15.4%</td>
<td>20</td>
</tr>
<tr>
<td>North America</td>
<td>15.4%</td>
<td>2</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>18.2%</td>
<td>20</td>
</tr>
<tr>
<td>Middle East/North Africa</td>
<td>4.9%</td>
<td>8</td>
</tr>
<tr>
<td>Central, East and South Asia</td>
<td>10.9%</td>
<td>14</td>
</tr>
<tr>
<td>Europe</td>
<td>27.8%</td>
<td>34</td>
</tr>
<tr>
<td>Oceania</td>
<td>9.6%</td>
<td>6</td>
</tr>
<tr>
<td><strong>Global</strong></td>
<td><strong>12.8%</strong></td>
<td><strong>104</strong></td>
</tr>
<tr>
<td><strong>Developing regions only</strong></td>
<td><strong>12.1%</strong></td>
<td><strong>68</strong></td>
</tr>
</tbody>
</table>

Source: FAO Gender and Land Rights Database.
Gender dynamics of secure land tenure and access to resources

Source: Landsea

Source: CIMMYT
Agricultural livelihoods and disproportional burdens

- Female farmers receive only 5% of all agricultural extension services from 97 countries.
- Only 15% of the world's extension agents are women.
- Only 10% of total aid for agriculture, forestry and fishing goes to women.
- 75% of those farms are weeded by hand.
- 50-70% of total labour time is spent on this handweeding.
- 90% of this handweeding is done by women.
- 70% of farm children between the ages of 5 and 14 are forced to leave school and work in the agricultural sector at the peak period of weeding.

Source: Farming First; Croplife Foundation, ILO, and FAO
Gender and food security

Women face more food insecurity than men

Burden of care work falls overwhelmingly on women (2-10 times more than men), worldwide

Source: Ferrant et al. 2014; OECD (2014)

Source: FAO (SOFI 2021)
Empowering women improves food security for women and children

Source: Smith et al. (2003)
Gender and covid

Exposure and vulnerabilities

Photo: UN Women/Estella Estella Turukoyo John

Lockdowns and Livelihoods

©FAO/Luis Tato

Food security and employment/income crisis

Source: ILO Policy Brief: Building Forward Fairer

Source: ILO calculations based on ILOSTAT, ILO modelled estimates.
Key Messages and Systems Analysis

Gender is securely within the nexus of food security, climate, and water (etc.)

- Gender equality requires eliminating stereotypes and prejudices about gender, and creating institutions and environments that enable all people to exercise agency to cope, change and adapt.

- The solutions to overcoming challenges requires gender transformative change

IIASA with a gender perspective

- Expanding systems thinking to include a conscious consideration of gender will fill an analysis gap in systemic thinking practice. (Stephans, 2013).

- Mainstreaming gender into research offers a solution to move from gender blind to gender aware/sensitive
Thank you for your time!

Follow us!
Resources

CGIAR

Gender Equality in Science: Inclusion and Participation of Women in Global Science Organizations
Results of two global surveys

ACHIEVING SUSTAINABLE DEVELOPMENT GOALS 5 AND 6
The case for gender-transformative water programmes

www.oxfam.org

Gender, Water, Climate: The Way Forward
26 July 2021
2:00 - 2:20pm (GMT -08) 9:00 - 9:20am (CEST)
4:00 - 4:20pm (AEST) | 11:00am - 12:00pm India/Sri Lanka

Women, Water, Climate: The Way Forward
26 July 2021
2:00 - 2:20pm (GMT -08) 9:00 - 9:20am (CEST)
4:00 - 4:20pm (AEST) | 11:00am - 12:00pm India/Sri Lanka

European Platform of Women Scientists
Resources

- United Nations Entity for Gender Equality and the Empowerment of Women (UN Women)
- Gender and Water Alliance (GWA)
- Water and Sanitation Program (WSP)
- Global Water Security & Sanitation Partnership (GWSP)
- Gender CC- Women for Climate Justice (Gender CC)
What is gender mainstreaming?