

Comment



IPCC researchers huddle in Switzerland to address the impacts of climate change on land for a special report in August 2019.

Survey of gender bias in the IPCC

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The Intergovernmental Panel on Climate Change needs to do more to include the expertise and voices of women, even as numbers and policies improve.

Women are increasingly prominent in climate negotiations. Familiar figures include United Nations climate chiefs Patricia Espinosa and Christiana Figueres, Barbados Prime Minister Mia Mottley and youth activist Greta Thunberg. Yet gender equity is far from being realized across the climate research community, including in the Intergovernmental Panel on Climate Change (IPCC). Although the numbers of women involved in writing IPCC reports have increased steadily since the 1990s, a gender imbalance and barriers to women's participation persist.

In 2018, the IPCC established the Task Group on Gender to compile a report and make recommendations. The report, presented at a plenary session in May 2019, included the results of a survey of IPCC participants that showed ongoing gender biases and barriers. As members of that task group – including report authors, staff members and government representatives – we distil our findings here. We also describe subsequent actions and set out what still needs to be done as the IPCC wraps up its sixth assessment cycle in 2023.

Gendered experiences

The IPCC task group sent a survey to 1,520 contributors to understand how they perceived and experienced gender bias and barriers during their work with the IPCC. We received 533 replies. The response rate was higher for women (39%) than for men (28%; see Supplementary information; one person chose 'other' gender).

We found that women's representation has grown – from just 8% of authors in the first assessment report in 1990, to one-third in the Sixth Assessment Report (AR6; see 'IPCC gender breakdown'). However, the survey revealed ongoing challenges (see 'IPCC gender survey: select results').

Why does this matter? Fair representation and broad expertise are essential when considering an issue as global, urgent and cross-cutting as climate change. Research suggests that, overall, women are more likely than men to be affected by climate change. Events such as drought and storms undermine people's ability to provide food, water and child care, and those roles tend to be taken on by women in many societies. Women are more likely to lack access to land, insurance and disaster relief^{1,2}. And as caregivers, farmers and leaders of communities and organizations, they also have crucial roles in responding to climate change.

IPCC work boosts scientific careers. Nomination and appointment as a lead

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author or review editor, or election as a bureau member, brings international recognition, academic repute and the potential to influence policy. Growing numbers of studies reveal how diverse perspectives can improve decision-making and the quality of studies as well as inspire new generations of researchers^{3–5}.

In the climate sciences, as in other disciplines, women face compounding barriers – from unequal access to training and funding to fewer promotions and citations, lower wages, scarce role models, more harassment and greater family responsibilities compared with men. Women in the Earth sciences are less likely than men to be nominated for awards or to be offered senior leadership positions^{6,7}. They are disproportionately disadvantaged by metrics used to evaluate research. For example, in a Reuters 2021 ranking of the world's 1,000 leading climate scientists, which was based on scientometrics, only 2 women made it into the top 50 and just 12% of the total list were women (see go.nature.com/3rq9mf6).

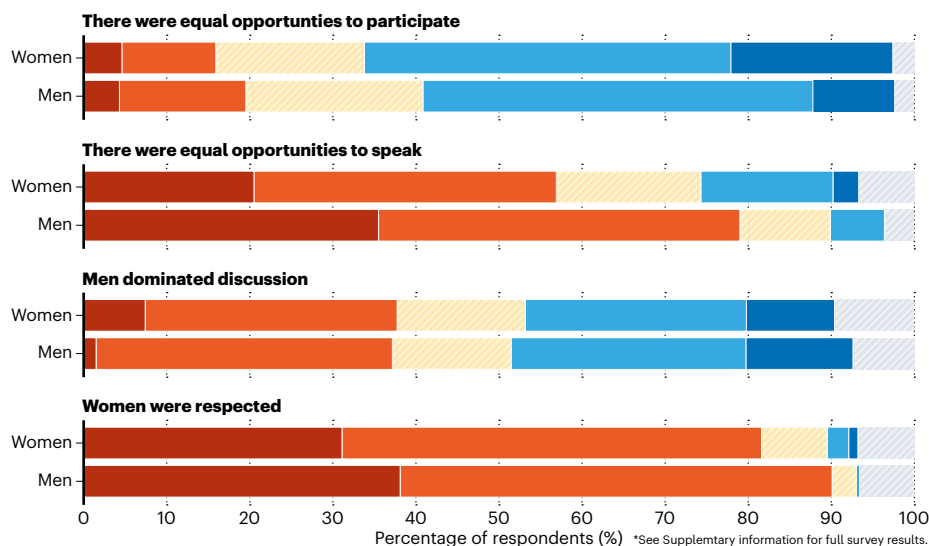
Since it noted the task group's report in May 2019, the IPCC has established another task group to develop a gender policy and implementation plan. The plan was adopted by the IPCC in February 2020 and sets out three priorities: equal opportunities for participation and leadership; a gender-inclusive environment; and raising awareness through training and guidance. Some lead-author meetings for AR6 have included training on gender and cultural sensitivity. The IPCC website includes a page highlighting gender issues (see go.nature.com/3hd4tpk). The organization spotlights female authors and those from developing nations in its media feeds and events. We hope that it will keep up this momentum.

Such measures have been even more important during the COVID-19 pandemic, because participation in IPCC work can be hindered by unequal technological access, travel restrictions and commitments to family or home institutions. The pandemic emerged in the middle of the sixth assessment cycle. Meetings moved online and the timeline was delayed. Although remote meetings might have helped some authors by avoiding the need to travel, they also raised new challenges, some related to gender bias. Delegates faced difficulties with Internet connections, time zones and the loss of in-person discussions. Efforts to compress meeting times could have limited the opportunity for diverse voices to speak, including those who are less confident or are not as comfortable speaking in English. If the IPCC continues with virtual meetings, it will need to address these challenges.

IPCC GENDER SURVEY: SELECT RESULTS

Of 533 contributors who responded, fewer women than men reported* that they were heard or respected in meetings.

■ Strongly agree ■ Agree or somewhat agree ■ Neutral ■ Somewhat disagree or disagree ■ Strongly disagree ■ No answer



Survey results

Our survey revealed some positive trends. Women's rising involvement (see 'IPCC gender breakdown') reflects broader shifts in science. Women now constitute about 30% of researchers worldwide, but have lower representation at senior levels (see go.nature.com/3g6ej88). The IPCC's rules of procedure list gender as

one criterion for selecting author teams, in addition to disciplinary and regional balance.

More than three-quarters of both women and men who responded to our survey agreed that the gender balance has improved. Overall, 79% felt positive about the transparency of decision-making, and 89% were positive about the learning experience. At least three-quarters had excellent or good experiences in terms of being respected and listened to, and in making professional connections.

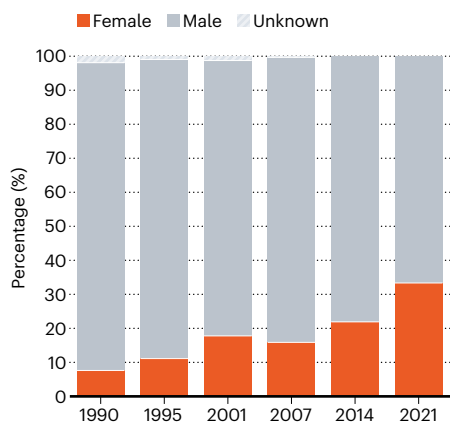
However, women were 15% less likely than men to agree that everyone has equal opportunities to be nominated, speak, shape content or lead chapters. Members of our task group and several survey respondents commented that increased numbers do not always equate to greater influence if women are excluded or not given voice or power.

Researchers have reported an ongoing imbalance in scientific and regional representation in the IPCC^{8–10}. IPCC authors tend to be drawn more from the natural than the social sciences, and from wealthy nations rather than developing ones.

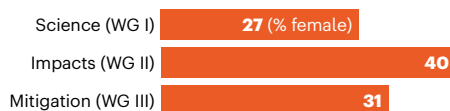
Gender balance differs across the working groups. Women are best represented in Working Group II, which covers climate impacts, adaptation and vulnerability and draws on the ecological and social sciences (see 'IPCC gender breakdown'). They are less well represented in the groups that focus on the physical sciences (I) or mitigation (III). This

IPCC GENDER BREAKDOWN

The percentage of female core authors on teams writing assessment reports has grown, from 8% in 1990 to 33% in 2021.



Female participation varies across working groups (WG).



Six priorities for gender bias

Recommendations that the Intergovernmental Panel on Climate Change gender task group called for in its 2019 report.

1. National and other contact points should consider and monitor gender balance in soliciting nominations; build diverse capacity; and share best practices.
2. Develop an IPCC gender policy and implementation plan and gender committee, with objectives, actions, monitoring and regular reporting.
3. Increase the share of women in the leadership of the IPCC; mainstream gender concerns into the selection of authors, review editors and reviewers.
4. Provide training on inclusive practices, gender balance and consensus decision-making, especially for those leading chapters and reports.
5. Undertake regular surveys and feedback.
6. Ensure that IPCC meetings take into account travel safety, family issues and pregnancy, with support and options for remote participation.

variation might reflect gender inequalities in the disciplines involved.

Meetings of IPCC authors are fast-paced, with a sense of urgency. IPCC processes and procedures are designed to achieve scientific rigour and excellence but, in practice, nationality, culture, gender, language, seniority and other variables can affect whose voices prevail.

More than one-third of respondents (both men and women) perceived that male scientists dominate discussions and writing. Women were less likely than men (64% versus 78%) to agree that all points of view were represented in discussions. Although most respondents said they had not themselves experienced or observed gender bias and discrimination, women were on average 15% more likely than men to have witnessed discrimination against others.

More women than men reported that they had observed someone else take credit for a woman's idea (38% versus 24%), or had seen a woman being ignored (52% versus 30%) or patronized (41% versus 27%). Around one-third of women reported that someone had implied

at least once that they were in the IPCC only because of their gender. Worryingly, some women had experienced (8%) or observed (11.5%) sexual harassment while working with the IPCC.

Unequal barriers

Most nominations to the IPCC are made through government agencies and other national focal points. These can reflect scientific hierarchies and biases in countries and organizations that favour men. Cultural patterns such as a greater reluctance by women to put themselves forward and obligations to family could also be factors. Opportunities to join the IPCC might not be widely publicized, narrowing the pool.

In the survey, the top six barriers that both men and women identified as most inhibiting their own ability to contribute were: lack of time (55%), childcare obligations (33%), not having confidence to challenge others (32%), problems with accessing computers or research materials (31%), inadequate financial support from their home country (31%) and limited writing skills (24%).

Many IPCC authors contribute on top of their full-time jobs. Most bureau members and authors are not paid by the IPCC. They also generally have to fund their own travel, although travel support is provided for people from developing countries. Almost twice as many women (44%) as men (24%) reported childcare responsibilities as a barrier. Also, 40% of women saw their lack of confidence in challenging others as a barrier to inclusion, compared with 26% of men. Respondents saw these barriers as greater for others than themselves, especially lack of time (66%), writing skills (64%), access to computers and materials (44%) and English language proficiency (41%).

The survey highlighted the importance of other dimensions of diversity that intersect with gender, and can be barriers, including ethnicity, race, nationality, religion, disability and age. Several respondents reported seeing themselves or colleagues be brushed aside owing to a lack of fluency in English, or to youth, race, gender or being from developing countries.

Survey respondents suggested ways to improve gender balance. These included widening the pool of nominations through broader publicity, mentoring and nominating opportunities, and establishing targets for and monitoring of gender balance in nominations and in the IPCC. They suggested that training on gender issues and guidance on group facilitation would help ensure that the voices of women and those with limited fluency in English are included fairly. They proposed formal processes, such as neutral points of contact and regular surveys for monitoring and managing issues related to gender, bias or harassment.

They also asked that IPCC processes be made more sensitive to family issues, including pregnancy, and child- and elder care. Health and travel risks that disproportionately affect women should be addressed by selecting conference locations and transport that pose a low risk to personal safety. Some respondents emphasized that opportunities for remote participation and access to research publications need to be expanded.

We echoed these survey comments in the recommendations in our task-group report (see 'Six priorities for gender bias').

Next steps

As the sixth assessment cycle concludes over the next year, the IPCC will reflect on its processes and draw lessons. A new gender action team proposes to undertake another survey of experiences in this cycle, and to further develop a code of conduct and formal training on diversity. An expert meeting on diversity and inclusivity is planned for the seventh assessment cycle.

Through continued attention and effort, we all look forward to a more balanced and gender-inclusive environment in the IPCC and in climate science more broadly.

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