



FROM CONSUMERS TO CLIMATE LEADERS

A review of women's roles in low-carbon
economic transitions

Authors

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About this report

This report is prepared by CDKN and ODI for the Gender Equality in a Low Carbon World (GLOW) programme and funded by Canada's International Development Research Centre. It is especially for the use of academics, researchers, students, and research funders seeking to understand the gaps in evidence on women's economic empowerment in low-carbon transitions. For a policy brief version with recommendations for decision-makers, please visit <https://glowprogramme.org/resources>

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Contents

Executive summary.....	2
CHAPTER 1 Introduction	5
CHAPTER 2 The changing world of work	14
CHAPTER 3 Green economies	17
CHAPTER 4 Feminist narratives on climate change mitigation	21
CHAPTER 5 Comparing gender integration across IPCC assessments	24
CHAPTER 6 Sector research and action	28
CHAPTER 7 Just transitions	40
CHAPTER 8 Countries' climate plans	48
CHAPTER 9 Summary and recommendations	62
ANNEX 1 Detailed methodology of the search-screen-extract and code component of the review	67
References.....	72

Executive summary

State and non-state actors are pivoting toward net zero carbon economies in response to the goals of the Paris Agreement on climate change, which commits countries to holding average global temperature rise to 2°C above pre-industrial times, and as close to 1.5°C as possible. To achieve the 1.5°C or 2°C goal will require rapid, deep, sustained reductions in carbon dioxide emissions globally, to reach net zero emissions in the 2050s, and achieve net negative emissions in the period thereafter (see Box 1; and IPCC, 2022b).

The economic transformations required will change the world of work: some jobs will no longer be climate-compatible and will discontinue. New opportunities for low-carbon work are already emerging and will continue to do so. Governments' planned transitions are set out in their Nationally Determined Contributions (NDCs), Nationally Appropriate Mitigation Actions (NAMAs), green economy strategies and in increasing numbers of voluntary decarbonisation targets in private industry and the financial sector.

This is happening against a backdrop of existing inequality in employed work, the care economy, and society at large. Indeed, the Covid-19 pandemic, the Ukraine war and other shocks have deepened existing inequalities. The world is currently at 1.15°C of warming above pre-industrial levels, and this warming has already driven more frequent and intense weather extremes, as well as slow-onset changes, which affect the poorest and most disadvantaged in society the most.

Inequality is partly a question of vast wealth versus grinding poverty, security of employment versus tenuousness and vulnerability of employment. There is also an important gender dimension. More women than men are in informal, insecure, paid work. Women bear a greater burden of unpaid work in the care economy, worldwide, and disproportionately shoulder the effects of shocks. In this sense, women's economic empowerment (WEE) must be integrally mainstreamed in the global transition to a net zero economy.

Box 1: 'Net zero global economy' versus 'low-carbon transitions'

The ultimate global goal is for a 'net zero economy' to be compatible with the Paris Agreement. Individual communities, businesses or countries are undertaking transitions that we call 'low-carbon' as a blanket term, because they are contributing to the overall net zero outcome. At the micro- to meso-scale, such transition activities may still release some emissions, or they may actually capture and lock away carbon and other greenhouse gases (as in the case with ecologically restorative land use activities).

There is not a single definition of women's economic empowerment, but most scholars address the following dimensions:

1. Labour market participation
2. Quality of work (including income levels, security/reliability of work, etc.)
3. Access to skills development
4. Agency (decision-making power over economic assets, lives, wellbeing)
5. Resources (legal, financial, social enablers that enable women to do decent work)
6. Care economy (burden of unpaid work).



Women's project on food security and forests, Cameroon. © CIFOR-ICRAF

This study reviewed academic and grey literature and related policy debates to ascertain whether women's economic empowerment, in all these dimensions, has been integrated into discussion of low-carbon transitions.

The study was commissioned by GLOW – **Gender Equality in a Low Carbon World** (2021–24), a research programme of Canada's International Development Research Centre (IDRC). GLOW funds a cohort of 12 action research projects that are investigating how to enhance women's economic empowerment via low-carbon processes in specific sectors and value chains in low- and middle-income countries. The principal objective of the study was to identify where the evidence gaps are and how the GLOW programme may contribute to filling gaps and advancing conceptual understanding and more gender-equitable practices.

The study found that, until now, there has been a general lack of integration of women's economic empowerment in low-carbon transitions at economy-wide level. Discussion of gender issues and people's intersectional vulnerabilities (such as age, ethnicity, class, caste, disability) is superficial in the influential literature on the economics of climate change mitigation, which are often framed as 'green economies' or 'green growth'. There is an immediate opportunity – indeed, an urgency – to address this gap.

A body of transversal feminist literature on gender and climate change has been deeply important for its focus on women's participation in climate-related decision-making. Its leading scholars and advocates have been successful in strengthening attention on gender issues in United Nations Framework Convention on Climate Change (UNFCCC) processes. This work, however, provides a shallower treatment of other aspects of economic empowerment and has been strongly biased toward the impacts of climate change on women and women's roles in adaptation. The climate change mitigation component has been very small by comparison.

Since the signing of the Paris Agreement in 2015, global policy discussions and grey literature have strengthened around the concept of 'just transitions'. The 'just transitions' focus is about compensating workers who are employed in fossil-fuel-extractive or fossil-fuel-dependent industries, by training and redeploying them to more environmentally sustainable jobs.

Rhetorically powerful and often headline-grabbing, these labour-market and skills-focused discussions have been championed by labour unions. They have tended to be biased toward male-dominated, polluting industries in the Global North. The International Labour Organization (ILO) has produced robust analyses of the finer gender and intersectional implications of transitions toward low-carbon jobs. However, their analysis has not translated adequately, until now, into global policy frameworks, such as the UNFCCC decision texts on 'just transitions'.

Hence, until recently, there has been little widespread discussion of how workers who start in the most disadvantaged positions, including women, informal sector, and rural workers in the Global South, can progress into more secure, low-carbon employment. Recently, coalitions of organisations and feminist thinkers based in the Global South have sought to address this gap and reframe the previous biases of 'just transition' policy debates.

Some of the boldest thinking on the interlinkages between women's economic empowerment and low-carbon transitions is seen in the sectoral literature and especially in the agriculture, forestry and agroforestry domains. This literature has documented pilot project experiences, as well as rural women's leadership on environmental protection. The latter includes strategic pivots by rural women's movements to demonstrate how their existing ecological practices are delivering global climate benefits, as well as more localised livelihood and wellbeing benefits.

By contrast, the energy sector literature contains a prominent gender vein but has tended to focus on women as somewhat passive household consumers of energy, rather than as low-carbon energy producers or leaders. The potential for women to achieve multidimensional economic empowerment in energy value chains is but a small and emergent area of work, both in theory and documented practice.

These sectoral advances are reviewed in the present study and linkages with policy are noted. The integration of gender concerns and low-carbon transitions at sectoral level is critical for achieving transformational change toward low-carbon economies and should not be underestimated. However, we assert that whole-of-government and whole-of-economy narratives around integration are also vital to drive investment, oversight and accountability.

This study also highlights that some of the most cutting edge, integrative work on the frontier of women's economic empowerment and low-carbon transitions is in a small number of governmental climate policies. The study notes that the Nationally Determined Contributions (NDCs) of Antigua and Barbuda, Nepal and the Republic of the Marshall Islands place gender equality at their heart, as well as being highly ambitious on climate change mitigation. These policies appear to be well ahead of the academic literature on the topic.

The opportunity for the GLOW programme lies not only in informing practice locally and nationally. It lies also in collaborating across borders to synthesise the key implications from diverse project findings and small-scale trials of revised business practice, so as to inform global meta-narratives and, ultimately, large-scale investments in gender-integrated, socially-inclusive low-carbon transitions.

INTRODUCTION

Why this report?

This idea for this report came about because the needs and concerns of women seemed to be missing from key global economic debates – and especially when it came to the opportunities for green economies that would be compatible with the Paris Agreement on climate change.

The world has been in deepening economic crises as a result of compounding shocks: pandemic, war, climate emergency and soaring debt for developing countries.

International financial institutions, finance ministers and investors, and especially those from the wealthiest nations (G7, G20), have met regularly to discuss roadmaps out of the economic crisis.

Sometimes (not always) leaders have pledged to ‘green’ their efforts to stabilise and grow economies – in rhetoric and in practice – by promising to invest more in climate change mitigation.

Worryingly, the impression is that both the rhetoric *and* the mechanics of long-term economic strategies and short-term spending programmes are gender-blind: whether on job creation, social protection or fiscal policies to grow green business sectors.



CHAPTER 1

THIS REPORT IS GEARED PRIMARILY TOWARD STUDENTS, ACADEMICS, RESEARCHERS AND RESEARCH FUNDERS WHO ARE INTERESTED IN WHERE THE INNOVATIVE THINKING AND PRACTICE LIES, AND HOW GLOW'S ORIGINAL RESEARCH WILL FIT INTO THE EXISTING EVIDENCE BASE.

Artisanal craft activities for sustainable development, Peru. © CIFOR.

When leaders have talked about a brave new world of green jobs as a route out of crisis, the focus is normally on male-dominated industries. Workers will be displaced as polluting industries such as coal mining are shut down, and these (principally male) workers must be compensated and retrained in secure, low-carbon jobs.

Meanwhile, in other policy debates and platforms, including work by the UN Secretary General himself and timely analysis by UN Women, the gender-unequal impacts of the Covid pandemic have been well described. Women were the first to lose jobs in the pandemic, and their care burdens sky-rocketed. On these two key indicators of empowerment – labour market participation and sharing of care work – women's status has slid backward and has not recovered to pre-pandemic levels.

This was particularly so in low- and middle-income countries, and acutely so for women workers in developing, rural economies. 'Sustainable Development Goal (SDG) 5: Gender equality and the empowerment of women and girls' seems to be as elusive as ever. Green spending pledges use words such as 'inclusive' in a superficial way, without addressing the specific needs of low-income women, or presenting operational means to advance them into environmentally sustainable, decent, secure work.

From this observation of a disjointed, gender-blind approach to economic development, and in response to it, Canada's International Development Research Centre (IDRC) initiated a research programme called Gender Equality in a Low Carbon World (GLOW). GLOW supports 12 projects in 17 low- and middle-income countries to investigate how women's economic empowerment can be integrated into low-carbon, climate-resilient transitions (see Box 2).

To situate GLOW's work, the present literature review was commissioned to:

- establish what evidence already exists on the intersections between women's economic empowerment and low-carbon transitions and where there are gaps;
- identify how the GLOW projects are contributing to gaps in the evidence base; and
- recommend how GLOW and other research initiatives and funders may further enrich evidence on the intersections, and inform policy and practice.

The central questions guiding the enquiry are as follows:

- To what degree are low-carbon trajectories and women's economic empowerment integrated in the literature?
- To what degree are low-carbon development policies and their implementation being linked to women's economic empowerment in policy and practice? What is the evidence?

This report is geared primarily toward students, academics, researchers and research funders who are interested in where the innovative thinking and practice lies, and how GLOW's original research will fit into the existing evidence base.

An accompanying policy brief to this report, **Women's economic empowerment: The missing piece in low-carbon actions and plans, by M. Dupar and E. Tan (2022)** contains specific recommendations for government and business leaders on changes they could make to policies and investments.

Box 2: Gender Equality in a Low Carbon World (GLOW)

Gender Equality in a Low Carbon World (GLOW), 2021–24, is an IDRC initiative that supports research on promising women-led solutions for green economies and climate action. The GLOW programme's entry point is sectoral and is focused on actionable, scalable measures to empower women in green investments.

A cohort of 12 research projects in GLOW is investigating how, in practical terms, government and business policies and investments can enhance women's economic empowerment while transitioning to, or embedding, low-carbon processes in specific sectors and value chains in low- and middle-income countries. These research projects have the potential to contribute substantially to the gaps in transdisciplinary thinking.

Researchers will collaborate to identify the transversal challenges and opportunities for advancing women's economic empowerment and climate action more integrally in countries' low-carbon policies and investments.

GLOW will explicitly seek to contribute to, and influence, these economy-wide meta-narratives in low- and middle-income countries. One example of how action research under GLOW is integrating women's economic empowerment across sectors in the context of Covid-19 recovery is the project 'Energy transition for the economic empowerment

of women in the horticultural value chain in Senegal and Guinea'. The project aims to improve the economic empowerment of women involved in the horticultural value chain, and it does so by linking with access to clean energy systems. It will provide evidence for the benefits of women's access to, and control of, solar-powered irrigation systems. This evidence will inform decisions for the establishment of a regulatory framework and public policies to support the large-scale adoption of such systems.

The 17 countries where GLOW is present are: Bolivia, Cambodia, Cameroon, El Salvador, Guatemala, Guinea, Kenya, Malawi, Nepal, Nicaragua, Palestine, Philippines, Rwanda, Senegal, Tanzania, Uganda, Vietnam. They cover women's economic empowerment and climate action in agriculture, forestry, land restoration and tourism. The projects are led by local research experts, who are working hand-in-hand with the people who can implement solutions. A further initiative, the GLOW Knowledge Translation Hub, seeks to synthesise knowledge from across the programme, support peer learning among the projects and engage relevant international audiences with the findings. The Hub led the research study described in this report.

For more information on GLOW, please visit: <https://glowprogramme.org/projects>



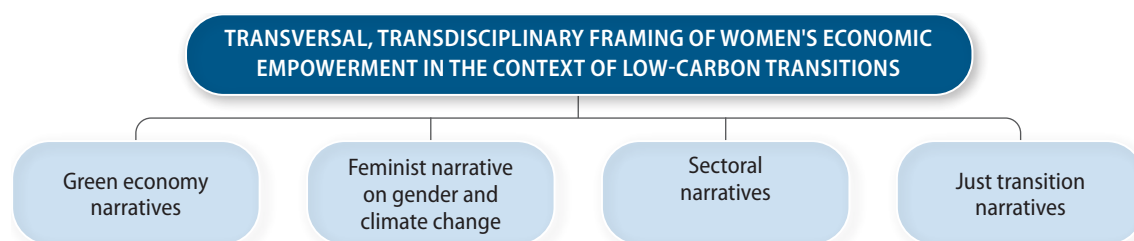
Carbon stocks measurement. © Aulia Erlangga/CIFOR-ICRAF

A guide to the report

Based on a rapid evidence review methodology, which is further explained below, this report identifies four broad streams of literature, since the early 2000s, which concern women's roles in low-carbon economic policies. These four literature streams are illustrated as the 'pillars' on the following diagram. Each of these pillars has acknowledged strengths, but also notable weaknesses.

The review also finds a few, scant examples of transversal low-carbon economy narratives with clear, intentional gender analyses and gender equality strategies at their heart. It identifies the need for many more of these integrated narratives, which are, in turn, fully actionable by governments and the private sector.

FIGURE 1: Narratives concerning women and climate change mitigation



Source: Authors' original analysis.

The report provides students and researchers with a guide to this literature, and is structured as follows:

Chapter 2

Characterises the changing world of work – across low- and middle-income economies – in terms of gender (in)equalities and shifts made necessary by climate change, societies' responses to climate change and other structural changes.

Chapter 3

Explores the advent of green economy narratives in the past two decades and how women and socially marginalised groups have figured in those framings.

Chapter 4

Highlights the emergence of feminist narratives on gender and climate change, and notes a bias towards women's vulnerabilities to climate change and roles in adaptation (rather than greenhouse gas mitigation).

Chapter 5

Reviews the increasing attention given to gender issues within assessments of the climate change mitigation literature by the Intergovernmental Panel on Climate Change (IPCC).

Chapter 6

Gives an overview of the literature on women and low-carbon activity in specific sectors, noting when and how integrated thinking has emerged conceptually and been pilot-tested in selected sector programmes.

Chapter 7

Considers the emergence of the global 'just transition' narrative and how this was initially heavily male-biased but is increasingly contested, and its definition broadened, by feminist movements and coalitions, chiefly based in the Global South.

Chapter 8

Investigates how gender has been addressed specifically in countries' climate plans. The chapter concludes by noting a few outstanding and pioneering efforts of governments to integrate women's economic empowerment and low-carbon transitions.

Chapter 9

Synthesises the findings and provides recommendations for further research and action.

Scope of the study

This study does not focus on the impacts of climate change itself on women's economic empowerment. This would orientate the discussion to climate change adaptation and climate risk management.

There is a robustly documented evidence base showing that climate hazards and risks affect socially and socio-economically marginalised people the most (IPCC, 2022a). Certain groups are disproportionately affected by climate change in the world of work: people's work can expose them more or less to climate hazards such as heat and heavy rainfall, for example. This can have a gender dimension (including certain vocations that put men at higher exposure than women). People's social and economic vulnerabilities, including labour rights, affect their ability to anticipate, absorb and respond to climate risks (Bahadur et al., 2015; ILO, 2018: 29; IPCC, 2022a).

This study is, by contrast, principally focused on the evolution and creation of decent work with the explicit aim to reduce, avoid or sequester greenhouse gas emissions, which is referred to as 'climate change mitigation' or 'low-carbon development'.

This study also recognises that many low-carbon interventions – either by default or by design – also improve climate resilience and support adaptive responses to climate change. This is particularly the case in the land-based sectors such as climate-smart agriculture and forestry, and the development of decentralised renewable energy. When we are discussing low-carbon initiatives that are recognised in the literature as simultaneously improving climate change adaptation and resilience, we use the expanded term 'low-carbon, climate-resilient development'.

Definitions of women's economic empowerment

There is no single accepted definition of women's economic empowerment: "The question of how to measure [women's economic empowerment] is neither new nor resolved. The concept itself is complex, multidimensional, and sensitive to culture and context, meaning that its measurement is likely to be equally so" (Dowie et al., 2021: 6).

For the purposes of this study, we focused the review around the following six components of women's economic empowerment – shown in bold – which the authors identified frequently in the literature. This includes common components of essays in the Grantham et al. (2021) volume from the Growth and Economic Opportunities for Women Programme:

- **Labour market participation:** Do women have equitable access to, and equitable participation in, the low-carbon economy segments of labour markets?
 - Which sectors? Which women? Where? When? How?
- **Quality of work:** Is the work well paying (enhancing income, assets) and secure (reliable/stable)? Does it include benefits, social protection wrap-around?
- **Skills development:** Do women have equitable access to, and participation in, training as a pathway to employment in low-carbon, climate compatible work?
 - Which sectors? Which women? Where? When? How?

- **Care economy:** Do low-carbon economic transitions evidence shifts toward greater equality of burden-sharing in the care economy and compensation for unpaid labour?
 - Which women? Where? When? How?
- **Agency:** Do low-carbon economic transitions provide evidence of strengthening women's decision-making power, not just over their own economic assets, but their lives and wellbeing?
 - Which women? Where? When? How?
- **Resources:** Are women offered equitable resources to enable them to enter, or continue in, low-carbon/climate-compatible vocations, including the ability to overcome legal, financial and social barriers to economic empowerment?
 - Which sectors? Which women? Where? When? How?

Methodology

The approach for the rapid evidence review was based on an effective methodology (Hagen-Zanker and Mallett, 2013) that has been widely used by ODI in other areas of international development and climate practice, such as rapid evidence reviews for Pathways to Resilience in Semi-Arid Economies (PRISE), Building Resilience and Adaptation to Climate Extremes and Disasters (BRACED) and Climate and Resilience (CLARE) programmes, among others.

The review includes academic journal articles, relevant books and book chapters and expert studies by universities, research organisations and UN and intergovernmental agencies. It includes government policy documents, and analyses by non-governmental organisations, especially those demonstrating robust quality review processes (excluding 'campaign literature' that has been written with the purpose of substantiating a certain political goal).

We used a combination of the following three strategies (guided by Hagen-Zanker and Mallett, 2013):

1. A keyword search-based method
2. Snowballing
3. Grey literature capture

1 A keyword search-based method

The first part of this review used adapted approaches from the systematic review method, namely the 'Search – Screen – Data Extraction and Coding' method, and was supported further by the EPPI Reviewer Platform (see detail in Annex 1).

To undertake the initial review and identify the most relevant works for inclusion, we carried out a range of keyword searches on EBSCO, an aggregated database of databases, where we had access to: STM Source, Business Source Corporate Plus, Environment Complete, Humanities Source, Political Science Complete, and SOCIindex. We mined EBSCO specifically for academic journal articles. We constrained the keyword search-based method to the period 2015–22, principally to focus on the period from the Paris Agreement onward and to manage the vast number of results, as explained next.

The terms we identified for our keyword search were:

- “women’s economic” AND “empowerment” OR “development” AND “low carbon” OR “net zero” OR “just transition”
- “gender” OR “women” AND “climate change” AND “mitigation” AND “economic*” OR “economy”.

We found very little literature at the deep intersection of women’s economic empowerment (as defined on pages 9–10) and low-carbon transitions. However, there was a vast amount of literature about low-carbon transitions that mentioned women very superficially, and therefore did not pass our initial screening test. Specifically:

- ‘Women’ as a keyword is included in some 14,300 texts on low-carbon development literature published since the Paris Agreement and listed in EBSCO. However, upon scrutiny (via spot checking), this result indicated that mentions of women were highly superficial and, in most cases, refer to women only in a wider list of marginalised groups, and as a passing mention.
- We searched for deeper, meaningful discussions of women’s economic empowerment in low-carbon transitions by narrowing the search to publications that featured ‘women’ and ‘low-carbon’ or ‘just transition’ in the title or subject of the work. We excluded texts that were only about the *impacts of climate change* on women or *climate disaster impacts* on women, or women’s roles exclusively in *climate change adaptation*. We looked for works that were centrally about ‘women’ or ‘gender’ and climate change mitigation (how to sustain economies while avoiding, cutting or locking up greenhouse gas emissions). We note here that, importantly, many activities in the land-use sectors (and to some degree other sectors) with intentional climate components in them may be cross-cutting for adaptation and mitigation.
- In keeping with GLOW’s geographic focus, the search-screen-extract and coding stage concentrated on low- and middle-income countries. It screened out findings that pertained solely to high-income countries. It is important to note that a significant number of works that were topically relevant were focused solely on European and North American (US, Canadian) countries and Japan, and so were excluded on geographic grounds.

Fewer than 50 academic works were ultimately selected via this method – works that offer deeper, meaningful discussions of women’s economic empowerment in low-carbon transitions in low- and middle-income countries. We thus pursued a supplementary review, based on the snowballing and grey literature methods.



University students. © Kelley Lynch/World Bank Rwanda

2 Snowballing

Snowballing is a process that “involves actively seeking advice on relevant publications in a particular field, or on a particular topic from key experts – which will then be reviewed – and subsequently looking at the reference lists of those publications” (Hagen-Zanker and Mallett, 2013: 10).

For this stage, we relied upon:

- our own expert involvement in the field of green growth and low-carbon development literature over two decades; and
- active consultation with experts within the Climate and Development Knowledge Network’s (CDKN) regional offices of Africa, Asia and Latin America, via an online review process; and a consultative webinar with GLOW project personnel and IDRC research officers.

The snowballing stage captured a range of both academic and grey literature. The study sought to establish how well the literature captures intersectional identities: i.e. not just the opportunities for women as a whole, but how women’s differing abilities, caste, ethnicity, age and gender identities can fuel greater privilege or discrimination in the labour market, workplace, community or household. The snowballing process was particularly helpful in surfacing relevant works and in languages other than English (e.g. Spanish texts from Latin America with helpful content on indigenous women’s opportunities). Perhaps inevitably, because the snowballing process signposted to influential references in the 2015–22 literature and expert judgment, it reached somewhat further back in time and incorporates key scholarship from circa 2004 onwards.

3 Grey literature capture

This part of the review took in

“relevant material [that] is often located outside the orthodox peer review channels (that is, academic databases, journals). Failing to incorporate a way of retrieving this material into the search strategy means you are unlikely to capture all available research – in particular, research referred to as grey literature, such as working papers, concept notes, donor reports, policy documents and briefings.” (Hagen-Zanker and Mallett, 2013; 11)

As well as being informed by the internal consultations with CDKN, IDRC and GLOW colleagues, we also interrogated Google Scholar, using the keyword search terms described in (1) above.

The Google Scholar search, which captured some academic as well as grey literature, delivered an astonishing 4.9 million works that mentioned women or gender in some way within texts about low-carbon development and just transitions to low-carbon economies. This component of the analysis was also limited to the 2015–22 period.

As with the keyword search and screen process for academic works on EBSCO described above, in this case we narrowed the field by focusing on Google Scholar 'title' content as a method for narrowing the results to ones that discussed women's economic empowerment in low-carbon development in depth. We excluded works that were about climate change impacts on women and climate change adaptation only and excluded those focused exclusively on high-income countries.

Of all the works identified, around half were behind a paywall. However, we were able to purchase a certain number of works, or at minimum, derive headline messages from the available abstracts. We have made a selection of these works available for readers to browse and download on the EPPI Review Visualiser platform, as a supplement to this report (see Box 3).

Box 3: A literature snapshot in an online presentation

EPPI Review is an online platform that supports systematic literature reviews in the sciences. As part of the initial keyword search-based method used in this review, we searched and scanned academic journal articles from 2015–22, screened for relevance with our key terms around 'women's economic empowerment', 'low-carbon development' and 'just transitions' to 'low-carbon economies'. We coded the most relevant works according to the definitions of women's economic empowerment shown on pages 9–10 of this report, and we uploaded PDF files of the open access publications we identified. We subsequently also uploaded and coded the most relevant grey literature publications from 2015–22 identified via the 'snowballing' and grey literature capture methods that followed.

EPPI Review has a 'visualiser' function that depicts the results of the researchers' coding graphically. A visualisation of this study's results allows readers to see – at a glance – which elements of women's economic empowerment have relatively more or less coverage in the literature on climate change mitigation and low-carbon transitions.

The results of the coding and access to the Visualiser are available for free at the following url: <https://bit.ly/3D1rwqe>

Please note that the larger study covers the period from 2000, but the EPPI Review and related Visualiser created by the authors covers only the 2015–22 period (being constrained by available time to populate the EPPI Review and Visualiser). The online platform also does not include government policies, such as Nationally Determined Contributions (NDCs), which we identify later in this report as the source of some of the most ambitious, integrated thinking. The EPPI Review and Visualiser therefore provide a snapshot and collection of relevant academic and grey literature during a seven-year time period.



The Google Scholar search, which captured some academic as well as grey literature, delivered an astonishing

4.9 MILLION WORKS

that mentioned women or gender in some way within texts about low-carbon development and 'just transitions' to low-carbon economies.

CHAPTER 2

THE CHANGING WORLD OF WORK

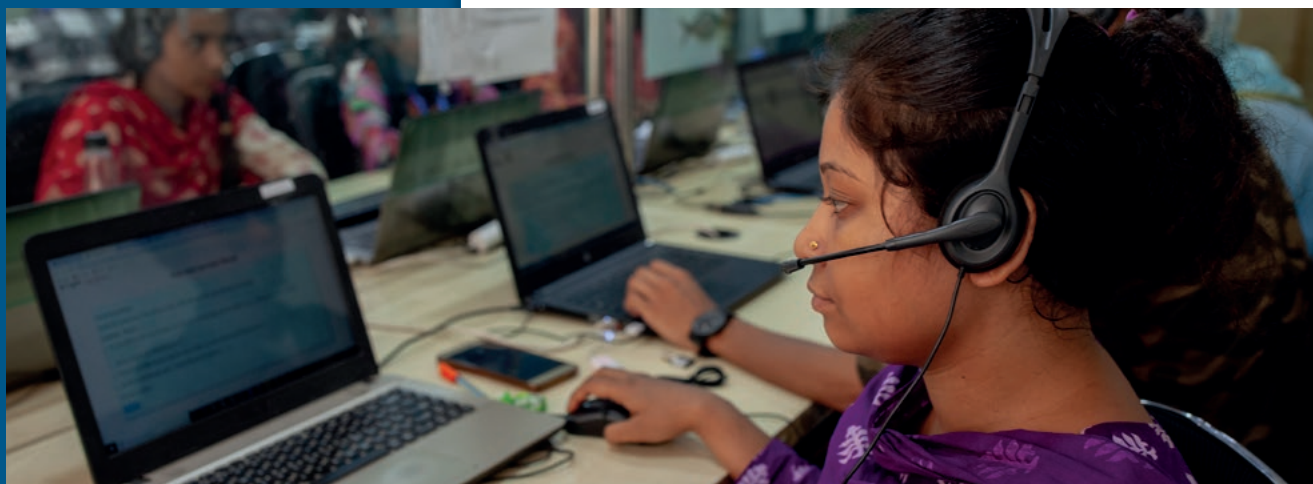
The world of work is changing – across low- and middle-income economies – in terms of gender (in)equalities, shifts made necessary by climate change and by societies' responses to climate change, and in response to other shocks and structural changes.

The climate crisis and road to net zero

It is widely recognised that the world is in a state of climate emergency. Average global temperatures have increased by 1.15°C since pre-industrial times (WMO, 2022). This warming is associated with: melting glaciers and ice sheets; sea level rise; more acidic, less oxygenated ocean waters; more frequent weather extremes, such as heatwaves, droughts and storms; and widespread hotter days and warmer nights (IPCC, 2021). These physical changes, in turn, are driving: decreases in crop and livestock productivity; widespread changes in the abundance and ranges of wild species and health of ecosystems; greater wildfire risks and other environmental changes; and serious risks to human health and wellbeing (IPCC, 2022a).



Average global temperatures have increased by 1.15°C since pre-industrial times (WMO, 2022)



Technology park, Bangladesh.
© K M Asad/World Bank

Climate-related loss and damage to societies is already widespread and impacts the world's least developed countries and small island states most acutely (IPCC, 2022a). Within those countries, groups of socially, politically and economically marginalised people, including women from poor and minoritised groups, are more affected than others (IPCC, 2022a). Illness and loss of life are attributable to climate change – directly through, for instance, extreme heat exposure, or indirectly via the spread of vector-borne diseases and other cascading impacts (see, for example, IPCC, 2022a: Chapter 9).

A total of 193 national governments and the European Commission ratified the Paris Agreement on climate change (UNFCCC, 2015). It commits Parties to limiting global warming to 2°C above pre-industrial levels, and as close to 1.5°C as possible to limit climate risks to social, economic and ecological systems.

The world has now so far overspent its 'carbon budget' – the amount of further greenhouse gases pumped into the atmosphere that would be compatible with 1.5°C of global warming – that overshooting the temperature target is increasingly likely. Only "an urgent system-wide transformation can deliver the enormous cuts needed to limit greenhouse gas emissions by 2030" said UNEP in its latest report (UNEP, 2022).

The world's medium-term pathway, within this limited 'carbon budget', must be to phase down net emissions to zero by mid-century, according to the Intergovernmental Panel on Climate Change (IPCC, 2021).



IT IS UNEQUIVOCAL THAT HUMAN INFLUENCE HAS WARMED THE ATMOSPHERE, OCEAN AND LAND. WIDESPREAD AND RAPID CHANGES IN THE ATMOSPHERE, OCEAN, CRYOSPHERE AND BIOSPHERE HAVE OCCURRED." (IPCC, 2021)

Impelled by a sense of urgency in the face of this crisis, low- and middle-income countries have sought international cooperation, including finance, to pay for their people's development needs in the context of transitions to low-carbon economies.

The Paris Agreement calls for finance for development that is fully compatible with the 1.5°C goal. In practice, this means it is insufficient to invest in 'green' activities such as renewable energy installations and conservation agriculture, if countries continue to pursue polluting activities such as coal-fired power and deforestation (Whitley, et al., 2018). It is essential to do two things at once: increase green investment and phase out 'brown' investments as rapidly as possible.



The Paris Agreement also recognises the special circumstances of women. Part of the transition to a 1.5°C world involves strengthening the capacity of people across society:

“Capacity-building should be country-driven, based on, and responsive to, national needs, and foster country ownership of Parties, in particular, for developing country Parties, including at the national, sub-national and local levels. Capacity-building should be an effective, iterative process that is participatory, cross-cutting and gender-responsive.” (UNFCCC, 2015: Article 11: 2)

The Paris Agreement’s Article 7 on climate change adaptation calls for action to be gender-responsive and to take into consideration “vulnerable groups, communities and ecosystems”. However, its articles on climate change mitigation account neither for social inequalities, nor the possibility that mitigation actions could help or harm groups of people differently. This omission was later addressed by the formation, in 2018, of the Katowice Committee of Experts on the Impacts of the Implementation of Response Measures of the UNFCCC, although it is yet to fulfill its potential to address gender concerns (see Chapters 7 and 8).

The gender gap

Across the world, and in the aggregate, women are universally behind men on multiple measures of development, which is referred to as the ‘gender gap’ (United Nations Development Programme, n.d.; United Nations, n.d.).

Only some measures of women’s economic empowerment are consistently measured in and across countries. By common measures such as formal labour market participation, women’s status has been backsliding since the outbreak of the global pandemic in 2020 and with little subsequent recovery (World Economic Forum, 2022; UN, 2022: 26, 28, 37).

The United Nations’ *Sustainable Development Goals Report 2022* finds that the world is “not on track” to achieve the key targets under SDG5: Gender equality, and furthermore, “the social and economic fallout from the pandemic has made the situation even bleaker. Progress in many areas, including time spent on unpaid care and domestic work ... is falling behind. And despite women’s leadership in responding to Covid-19, they still trail men in securing the decision-making positions they deserve” (UN, 2022: 36).

GREEN ECONOMIES

In the past two decades, women and socially marginalised groups have featured superficially in green economy narratives.

A body of literature over the past two decades evaluates the need for reconfiguring national and global economies toward low-emission pathways (decarbonisation) and evaluates the comparative costs of climate change mitigation at whole-of-economy scale. This includes important research on the intrinsic links between extreme poverty reduction and transitions to a low-carbon global economy. We summarise this as the ‘green economy’ literature, which is one of the common terms adopted within it – ‘green growth’ is another common term. We find that with a few exceptions, this body of work is very weak on gender issues – if it mentions gender at all.

The green economy literature was first focused on making the case for investing in climate change mitigation in the face of broad scepticism or downright resistance among government and industry decision-makers. *The Economics of Climate Change: The Stern Review* (Government of the United Kingdom, HM Treasury, 2006) was not the first report to examine the economics of acting on climate change, but it was hugely influential in making the case, internationally. *The Stern Review* categorically established that economic growth should be decoupled from greenhouse gas emissions, and that it would cost less to implement climate change mitigation measures now than to bear the costs of unmitigated climate change in the future. *The Stern Review* discusses the challenges of “developing countries” and/or “the poorest countries and people” in the aggregate (Government of the United Kingdom, HM Treasury, 2006: vii). A discussion of the “social cost of carbon” considers the harm to human wellbeing created by each incremental unit of greenhouse gases emitted; gender is mentioned briefly in respect of climate change adaptation and vulnerability.

In the following years, the possibility of decoupling emissions from per capita GDP began to be mainstreamed into economy-wide thinking and proven in practice (Ritchie, 2021). Economists and development experts expanded *The Stern Review’s* world view to explore the more nuanced distributive implications of ‘green growth’ within societies. They asked: Which forms of production and trade would need to change, and how? Which jobs, investment flows and capital assets would be affected and how?

CHAPTER

3

THE GREEN ECONOMY LITERATURE WAS FIRST FOCUSED ON MAKING THE CASE FOR INVESTING IN CLIMATE CHANGE MITIGATION IN THE FACE OF BROAD SCEPTICISM OR DOWNRIGHT RESISTANCE AMONG GOVERNMENT AND INDUSTRY DECISION-MAKERS.



The term 'inclusive green growth' began to be widely used by major international and multilateral institutions. Policy reports drilled into the forms of fiscal and labour policies that would be needed to offer decent work and welfare gains to the poorest in society, as climate change mitigation policies and measures began to be enacted (Faye, 2012; GGGI et al., 2014). These works framed the opportunities for low-carbon transition principally at country level. They gave only superficial treatment to the concerns and targeted measures needed for women and other disadvantaged groups within societies to benefit from low-carbon transitions.

Reflecting the spirit of the age, the Global Green Growth Institute (GGGI) was founded as a think tank in 2010 and converted to an international organisation in 2012 at the Rio+20 Summit. In partnership with several United Nations bodies, GGGI went on to found the Green Growth Knowledge Platform (GGKP) around this time. A major, two-year study led by academic experts, and culminating in the report *Green Growth in Practice* (GGGI et al., 2014) aimed to "accelerate learning and to inform design of green growth programs [sic] by undertaking an analysis of early experience" (GGGI et al., 2014: Introduction). Focused primarily on low-carbon, whole-of-economy transitions, and without explicit discussion of gender, *Green Growth in Practice* recognised the social tensions inherent in economic restructuring: "Successful labour market and skills development policies avoid bottlenecks to investment, increase employment opportunities, smooth the transition of workers from declining sectors, and reduce social inequality, especially for marginalised and lower-skill workers" (GGGI et al., 2014: 130).

The study's principal coverage of integrated gender equality and climate goals was its reference to Cambodia's National Green Growth Roadmap, albeit in climate change adaptation rather than mitigation terms. This Roadmap pledged "to create jobs, to increase the resilience of the environment and of the population to adverse impacts, thus sustaining economic growth and human and environmental wellbeing in the long term. This Roadmap is also intended to promote women's status for the realisation of a gender-equal society" (GGGI, 2014: 17).

The Millennium Development Goals (MDGs), which came to an end in 2015, had been criticised for their lack of comprehensiveness, both with respect to the targets and indicators used to measure gender equality and women's empowerment (Kabeer, 2015), and their perceived weakness on environmental sustainability (Elder and Olsen, 2019; Hickmann et al., 2022). The following, wide-ranging Agenda 2030, with its 17 Sustainable Development Goals (SDGs) and 169 targets, reset international ambitions and provided an important focus for the integration of gender equality (SDG5) and climate action (SDG13) – with environmental concerns more assertively incorporated in the targets of the other goals (Elder and Olsen, 2019).

As the MDGs came to an end and the SDGs were agreed, new conceptual work built upon earlier analysis of the relationship between investing in climate change mitigation measures in the present day and hence reducing climate change impacts and their costs in the future. Granoff et al. (2015), for instance, argued that it would be feasible – albeit challenging – to eradicate extreme poverty by 2030 (SDG1) while simultaneously transitioning to a low-carbon development pathway by 2030 that would be compatible with reaching net zero carbon emissions by 2050. Granoff et al. recognised the deep social implications of such economic shifts, although gender relations are not explicitly discussed:

“One inescapable fact is the sheer scale of the structural transformation and related policy ambitions that are needed to achieve either of the zero goals [zero extreme poverty, zero emissions]. Even if the ethics of eradicating extreme poverty are clear enough, the interests of extremely poor people align only partially – at best – with the interests of those who hold political power.” (Granoff et al., 2015; 46)

Seen through the lens of gender and intersecting forms of economic and social discrimination in the current day, this conclusion seems especially prescient and enduring.

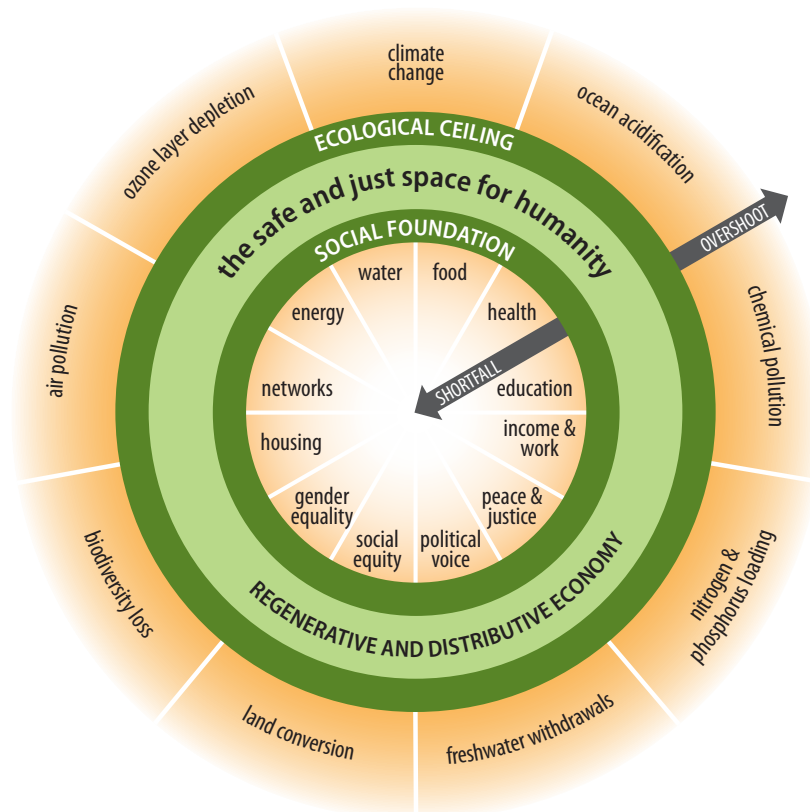
More recently, an important quantitative study by McGee et al. (2020) sought to interrogate the relationship between gender equality and emissions reductions outcomes. Its intriguing findings raise the question of whether gender equality may be *instrumental* in the transition to lower emissions (which complements the *ethical* case for transitioning to net zero in a gender-equitable way). The authors constructed a fixed-effects panel regression model, based on data from 140 countries. Whereas it was historically observed that increases in per capita carbon dioxide emissions accompanied GDP per capita growth, McGee et al. found, “... that increases of gender equality decouple [this relationship of] economic growth from emissions.” The finding does not suggest that greater gender equality is necessarily associated with declining emissions – only that gender equality seems to ‘decouple’ the GDP-emissions relationship, i.e. emissions may grow less rapidly. Furthermore, the findings “do not indicate that gender equality is a singular cause of decoupling, rather a strong correlative factor in instances of decoupling” (McGee et al., 2020: 11). The work opens many new questions for further research.

A highly influential conceptual framing of the past decade wove together the strands of gender equality, social justice and environmental sustainability and was published under the title *Doughnut Economics* in 2017. In this volume, economist Kate Raworth integrated the “social foundations” of a sustainable society committed by governments in the Sustainable Development Goals with ideas about Earth’s bio-geo-physical “planetary boundaries”, elucidated earlier by Rockstrom et al (2009). Rockstrom et al. had assessed how close human societies and economies are to breaching the boundaries of “safe operating space” for nine key earth systems: climate change, ocean acidification, stratospheric ozone depletion, interference with the global phosphorus and nitrogen cycles, rate of biodiversity loss, global freshwater use, land system change, aerosol loading and chemical pollution (Rockstrom et al., 2009).

Raworth proposed that these planetary boundaries, together with the social foundations of the SDGs, provide a framework for living within ecological limits and creating a just society, as a counterpoint to conventional economics (see Figure 2). As with the SDGs themselves, Raworth identified gender equality as a prominent component of a just and sustainable world order.

Raworth’s analysis addresses sustainable development writ large and, as such, it is technically beyond the scope of this literature review. However, ‘doughnut economics’ is included here because of its considerable influence.

FIGURE 2: The doughnut of social and planetary boundaries



Source: Kate Raworth and Christian Guthier. CC-BY-SA 4.0.

It is also worth noting an incidental finding of our review. During the search-screen-extract and coding process, we noted a *lack* of discussion of women’s roles and gender issues that we were looking for in the *climate change mitigation-focused* ‘green economy’ and ‘green growth’ literatures. By contrast, gender issues and women’s empowerment appear to be far more frequently addressed in the general, sustainable development literature.

For example, we noted connections in sustainable development texts to women’s economic empowerment via their household roles, particularly in the realms of food security, household income and expenditure on energy, travel, healthcare and education. It has been suggested that these roles could be viewed as opportunities for women to exercise greater agency or decision-making influence. Alston and Akhter (2016) call for gender mainstreaming to prevent women and girls from taking on disproportionate responsibility for intra-household responses to shocks.

Grey literature, including numerous reports and articles by the Green Economy Coalition (formed 2009; GEC, n.d.), look at the imperative of addressing deep social injustices, including gender issues, in the context of moving to low-emission economies that conserve and enhance biodiversity and harness resource efficiencies (e.g. materials reuse and recycling). Although named as ‘Green Economy’, the coalition’s work addresses sustainable development far more broadly.

A further exploration of documented correlations and causal links between gender equality and diverse indicators of sustainable development would merit further literature reviews in the future.

FEMINIST NARRATIVES ON CLIMATE CHANGE MITIGATION

Since the early 2000s, feminist narratives on gender and climate change have emerged. In a low- and middle-income country context, their relative bias is towards impacts, vulnerability and adaptation to climate change, rather than women's leadership in climate change mitigation.

In the early 2000s, a new feminist literature began to emerge that sought to explore women's relationship with climate change in the economic production and subsistence (household reproduction) spaces. It was a counterpoint to the green economy literature, in Chapter 3, which was virtually gender-blind. This parallel body of work – explicitly feminist in its approach – emerged out of earlier works about “women's roles in sustainable development” and sought to investigate: “What are the roles of women in addressing climate change? How could society's low-carbon choices change the nature of women's work?”

There was initially little acknowledgement of this feminist work in the green economy literature described in Chapter 3. Denton (2004) described the late entry of gender into mainstream climate research and policy debates. She found that the initial discourses were aggregated to the level of the global North and South; they focused on market-based mitigation mechanisms and they emphasised the physical – not social – causes and impacts of climate change.

The evidence base on women's vulnerability to climate change and their roles in climate change adaptation far exceeded the scholarship on women and climate change mitigation – according to the results of our search-screen-extract and coding method, snowballing and grey literature review. That is not to say that the literature on women and adaptation is comprehensive. It still has major gaps, such as geographies affected by conflict and fragile governance (Vincent, 2022), and the intersections of climate impacts, adaptation and vulnerability over the course of girls' and women's lives (Dupar et al., 2021).

CHAPTER

4



In the early 2000s, a new feminist literature began to emerge that sought to explore women's relationship with climate change in the economic production and subsistence (household reproduction) spaces.

THE EVIDENCE BASE ON WOMEN'S VULNERABILITY TO CLIMATE CHANGE AND THEIR ROLES IN CLIMATE CHANGE ADAPTATION FAR EXCEEDED THE SCHOLARSHIP ON WOMEN AND CLIMATE CHANGE MITIGATION.

In the domain of low-carbon transitions, the evidence on women's economic empowerment began to be developed only modestly. Scholarship that was pioneering in its time, by addressing the intersection of feminist theory and climate action, included a volume entitled *Women and Climate Change*, published by the Global Gender and Climate Change Alliance and International Union for the Conservation of Nature (GGCA and IUCN, 2009). This volume was principally dedicated to climate change adaptation and vulnerability. However, it contains several important case studies that embrace both adaptation and mitigation dimensions, or are even wholly mitigation-focused.

This early feminist work tended to focus predominantly on the reproductive and subsistence uses of energy and forest products – for example: women as forest conservators who valued non-timber forest products for subsistence food and medicinal uses; or women as users of clean cook stoves in the home who avoided unhealthy emissions in cooking areas and unsustainable timber cutting for fuelwood and charcoal use (GGCA and IUCN, 2009). The overall emphasis was on women's contributions to climate change adaptation and mitigation in their roles as household consumers of various environmental services (see Chapter 6 for more on these examples and a diagnostic summary). In many ways, these were extensions of the “integrated conservation and development” framings and project work in the 1990s and early 2000s (such as Mahanty et al., 2006) – now reconfigured through a climate change adaptation and mitigation lens (see, for example, RECOFTC, 2011).

Aguilar (2010) recognised the disposition of authors in the ‘mainstream’ green economy literature to paint women as helpless victims of climate change. This notion should be flipped, she argued, to recognise women as powerful agents of change in forging a low-carbon, climate-resilient world: their leadership is critical. Women can help or hinder strategies that deal with issues such as energy consumption, deforestation, burning of vegetation, population and economic growth, development of scientific research and technologies and policy-making (Aguilar, 2015: 173–174). Andersen et al. (2017) call for a better understanding of the complicated circumstances under which women become decision-makers in their households, in a climate action context.

In criticising the gender-blind green economy discourse, feminist scholars asserted that:

- Feasibility studies for climate change adaptation and mitigation interventions should have distinct gender strategies, recognising how these interventions themselves could bear gendered consequences (Aguilar, 2015: 174).
- Assessments and initiatives to introduce climate-smart technologies should be deeply informed by women's concerns and needs, to avoid purely male preferences in technology investment and development (GGCA and IUCN, 2009).
- Gender relations and climate actions should be connected at a ‘meta’ level of analysis, in a way that is policy relevant and is woven inherently through climate negotiations and investment processes. “Many of the existing studies and research on gender and environment focus on specific sectors, elements and cases, such as gender roles in food production, in water management and in energy use at global, national or local level” noted Dankelman at the time (2010: 5–6).

The feminist literature captured several outstanding examples of early practice at the intersection of gender and scientific leadership in low-carbon technological transformations. For example, a Canada-China Cooperation Project in Cleaner Production targeted emissions in the pulp and paper, fertiliser, plastics and brewing industries and dedicated specific activities to:

“... increase the participation of women as workers, technicians and managers. Women received training in process improvement, auditing practices, monitoring of equipment, computers, and other technical aspects of their work. At the same time, gender equality awareness sessions began to transform the attitudes of both men and women.” (GGCA and IUCN, 2009: 191)

In India, the M. S. Swaminathan Research Foundation experience in Pondicherry, and Tilonia Barefoot College trained men and women to use a Geographic Information System (GIS) for water management; a case study documented how “women trained in ICT [information and communications technology] not only play a useful role as change agents, but are able to spiral into a personal empowerment trajectory” (GGCA and IUCN, 2009: 185).

In spite of recognising that a meta-narrative was lacking around women’s economic empowerment and the need for such a narrative, these pioneering feminist scholars tended to lean on substantiating evidence from sectors – particularly from the land-use sectors (see Chapter 6). Indeed, we recognise that in the early days it was difficult to avoid this. These thinkers nevertheless raised vital questions, which were influential in shaping subsequent works, including the present study and the work of the GLOW research programme, namely:

- How can a strong and compelling meta-narrative be forged about women’s economic empowerment in low-carbon transitions, in order to drive whole-of-economy decisions and investments to be more climate-smart and women-friendly?
- How does such a meta-narrative coexist with the reality that climate action (i.e. implementation) necessarily takes place in specific sectors and geographies?

In summary, the imprint of this feminist thinking in the evolving academic literature remains somewhat modest. However, we can, from today’s perspective, trace its vital legacy into government policy, and particularly via feminists’ efforts to design and deliver the Lima Enhanced Work Programme of the UNFCCC, as reviewed in Chapter 8.

Early feminist scholarship suggested that gender-informed, whole-of-economy narratives and sectoral and territorial implementation necessarily coexist and are mutually reinforcing. Only after the Paris Agreement was concluded in 2015 and new policy documents and evaluative studies of ‘Paris Agreement implementation’ emerged, did we see robust analysis of the mutually reinforcing dynamic of whole-of-economy and sector-level policies and actions in the climate context. A compelling illustration of how this conceptual development took place is evident when studying the literature assessments over time by the IPCC. The next chapter is dedicated to this topic.

CHAPTER 5

THE SUMMARY FOR
POLICY MAKERS OF
THE REPORT MITIGATION
OF CLIMATE CHANGE
(IPCC, 2014A)
DOES NOT MENTION
THE WORD 'WOMEN' OR
'GENDER' ONCE.

COMPARING GENDER INTEGRATION ACROSS IPCC ASSESSMENTS

The IPCC's assessment of women's roles in low-carbon transitions reflects the paucity of peer-reviewed literature on the topic, although it does show some strengthening of the evidence base over time.

One way of measuring progress on the integration of gender issues into climate change mitigation literature is to look at the literature assessments by the Intergovernmental Panel on Climate Change. In particular, one may look at what changed between the *Fifth Assessment Report* (IPCC, 2014a,b) and the *Sixth Assessment Report* (IPCC, 2022b). The assessment reports have three sections, corresponding with Working Group I (*Physical Science of Climate Change*), Working Group II (*Adaptation, Impacts and Vulnerability*) and Working Group III (*Mitigation of Climate Change*).



Young women learn computer skills.
© Visual News Associates/World Bank

The *Summary for Policy Makers* of the report *Mitigation of Climate Change* (IPCC, 2014a) does not mention the word ‘women’ or ‘gender’ once. The Technical Summary only mentions women in respect of clean energy consumption within households (IPCC, 2014b: Table TS:5).

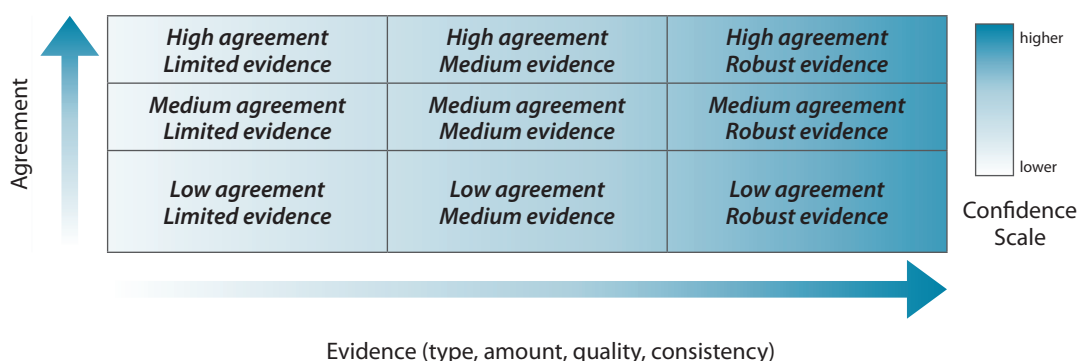
By the time the *Summary for Policy Makers* of *The Mitigation of Climate Change* (2022b) was published, there was some progress in gender integration in the mitigation literature. In the summary, the word ‘women’ is mentioned once and ‘gender’ four times. Although this coverage appears modest, the statements are significant, signalling the broader need for gender equality and women’s empowerment to play a role in low-carbon transitions. The IPCC found, with high scientific confidence, that climate change mitigation actions have differential impacts on women and other marginalised social groups, as follows:

“Ambitious mitigation pathways imply large, and sometimes disruptive, changes in economic structure, with significant distributional consequences, within and between countries. Equity remains a central element in the UN climate regime, notwithstanding shifts in differentiation between states over time and challenges in assessing fair shares. Distributional consequences within, and between, countries include shifting of income and employment during the transition from high- to low-emissions activities. While some jobs may be lost, low-emissions development can also open more opportunities to enhance skills and create more jobs that last, with differences across countries and sectors. Integrated policy packages can improve the ability to integrate considerations of equity, gender equality and justice (high confidence).” (IPCC, 2022b: SPM D.3.2, 47)

Box 4: The IPCC’s confidence levels

This matrix helps explain what the IPCC means by high, medium or low confidence. High confidence means that there is a high level of agreement and evidence in the literature to support the categorisation as high, medium or low.

Low confidence denotes that the categorisation is based on only a few studies. Medium confidence reflects medium evidence and agreement. Confidence increases towards the top-right corner as suggested by the increasing strength of shading.



Source: IPCC, 2010.

Gender issues are further highlighted, along with other intersecting identities such as youth, indigenous status, etc., in the discussion of governance issues around climate change mitigation, in the same 2022 volume (IPCC, 2022b). The IPCC authors further assess the evidence for how climate change mitigation measures may be aligned with or – in the worst case – may undermine, the attainment of other Sustainable Development Goals. Their policy-relevant findings are summarised in a figure, which is abridged and presented here:

FIGURE 3: Synergies and trade-offs between climate change mitigation actions and SDGs, including gender equality

The latest IPCC assessment (2022b) defined which low-carbon actions (sector by sector) were aligned with other SDGs. Here we highlight those low-carbon sector actions which the IPCC found to be aligned with gender equality (and showing whether their finding was with medium or high scientific confidence).

URBAN SYSTEMS



Urban land use and spatial planning Medium confidence

Urban planning strategies can improve access of low-income populations to jobs while “gender-responsive transport systems can enhance women’s mobility and financial independence.”

BUILDINGS



Efficient appliances Medium confidence

“Efficient cook stoves and improved access to electricity and clean fuels in developing countries will result in substantial time savings for women and children, thus increasing the time for rest, communication, education and productive activities.”



On-site and nearby production and use of renewables Medium confidence

Expanded access to clean household energy for cooking, heating and lighting can alleviate the burden of fuelwood collection that tends to fall on women and girls. When electrification of the education sector is coordinated, renewable energy access can enhance school attendance. (Note: the IPCC does not acknowledge the diversity of customs among low- and middle-income countries or even among different parts of the same country.)

TRANSPORT



Shift to public transport High confidence



Shift to bikes, e-bikes and non-motorised transport Medium confidence

“A focus on people-centred solutions for future mobility with more pluralistic and feasible sets of outcomes for all people can be achieved when they focus on more than simple benefit-cost ratios but include wellbeing and livelihoods, considering transport as a system, rather than loosely connected modes as well as behaviour change programmes.”

INDUSTRY



Electrification High confidence

“Increasing electrification will support and reduce the costs of key elements of human development, such as education, health, and employment. Greater access to electricity might offer greater access to irrigation opportunities for agricultural communities, which could have the potential of increasing farmer incomes in support of SDG1, the eradication of extreme poverty.”

Source and all direct quotes taken from: IPCC, 2022b, Figure SPM.8; 45.



A woman cuts lemongrass to be distilled into essential oil. © Chandra Shekhar Karki/CIFOR

Tracking the evolution of finance for climate change mitigation, the IPCC says that finance would be well aligned with people's needs if multilateral and national climate funds and development banks would make their financing more accessible to underserved groups. Diverse groups in society would also be well served by extending low-carbon finance through "economic instruments which consider economic and social equity and distributional impacts; gender-responsive and women-empowerment programmes, as well as enhanced access to finance for local communities and Indigenous Peoples and small landowners; and greater public-private cooperation (high confidence)" (IPCC, 2022b: E.5.4, 54).

It is encouraging to see this progress in the assessed literature on gender and climate change mitigation intersections. It is also worth noting that the works cited by the IPCC do not look robustly at economic empowerment. They only glancingly refer to the alleviation of women's work burden in activities such as fuel gathering, which is described as freeing time for "productive activities". However, those "productive activities" themselves are not well described.

Research would be needed into the detail of whether the different facets of economic empowerment were achieved. We further revisit the theme of displacing women's drudgery in the energy sector (see Chapter 6, 'Energy'), noting the incomplete evidence base on dimensions of women's empowerment and wellbeing when clean energy technologies are introduced.

CHAPTER 6

SECTOR RESEARCH AND ACTION

In selected sectors, more integral thinking has emerged to tie women's economic empowerment into low-carbon transitions. This has been both pilot-tested in projects and programmes and embraced by some national women's movements.

IN THE SECTORAL LITERATURE AND PRACTICE, SOME OF THE MOST PATH-BREAKING WORK TO UNITE GENDER EQUALITY AND LOW-CARBON DEVELOPMENT APPROACHES HAS BEEN IN THE AGRICULTURE AND FOOD SECURITY DOMAINS.

Some of the breakthrough work that begins to address the economic empowerment potential of women's involvement in climate mitigation activity has been at sectoral level. It has emerged, notably, at the close interface of programme evaluation, monitoring frameworks and target development and climate-development practice. It may even be dubbed 'programme literature' rather than 'policy literature' per se because it is so close to the applied or action sphere. This may explain why the works are little acknowledged in the formally assessed IPCC literature.

We flag here some of the most progressive and interconnected works identified in the present study.



University students. © Kelley Lynch/World Bank Rwanda

Agriculture and food security

In the sectoral literature and practice before 2015, some of the most path-breaking work to unite gender equality and low-carbon development approaches was in the agriculture and food security domains.

The analytic frameworks developed by the Consultative Group in International Agricultural Research (CGIAR) are notable. The Climate Change Agriculture and Food Security (CCAFS) unit worked across the CGIAR centres and was in operation from 2009 to 2021 (CCAFS, 2021). In a working paper that sought to create a gender-responsive research agenda for CCAFS and across the CGIAR, Edmunds et al. (2013: 15–16) described how climate change mitigation interventions shape gender relations in four principal ways:

1. New “markets, finance streams and actors, particularly private investors requiring high returns (in terms of greenhouse gas savings) for investments” and the new monitoring, reporting and verification requirements these bring, impose different burdens and potential opportunities on low-income women and men.
2. Emerging climate science – including the science of climate-smart agriculture and economics of climate action – drive recommendations for mitigation action, but the science is often “inaccessible and not transparent to local people” and can overlook the need for locally-tailored interventions.
3. Narratives of crisis and shared responsibility “legitimate top-down planning through existing, often patriarchal, institutions” and make it more challenging to pursue social justice.
4. The large scale at which climate change negotiations and many key mitigation policies and investments are devised and the large institutional actors involved “strain the types of institutions, networks, and organisations that women significantly influence” (Four trends shaping gender relations from Edmunds et al., 2013: 15–16).

Intended to be specific to the agriculture and food security domains, this analysis may be considered relevant to the conceptualisation of climate change mitigation policies and projects more generally. Indeed, Edmunds et al.’s (2013) analysis draws richly from failed early efforts, in developing countries, to pilot schemes to Reduce Emissions from Deforestation and forest Degradation and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks (REDD+), which disenfranchised rural women, as discussed further in the following section.

A global qualitative field study, entitled GENNOVATE (Enabling Gender Equality in Agricultural and Environmental Innovation) was subsequently launched by the CGIAR centres. The initiative’s research methodology has the objective of “combin[ing] contextually grounded, comparative, and collaborative research strategies to illuminate regularities in how gender norms and agency interact to shape local innovation processes across diverse contexts. This can inform strategies and interventions for more gender-equitable adoption of improved agricultural technologies and practices” (Petesch et al., 2018; 29). The methodology has been tailored and applied in diverse low- and middle-income countries, contexts and agricultural sectors, with the intention that it should be applied in contexts of climate-smart agriculture development (GENNOVATE, n.d.). It was beyond the scope of this study to look at its application in depth, but readers may explore the GENNOVATE platform (<https://gennovate.org>) or the CGIAR gender platform (<https://gender.cgiar.org>) for more information.



Gartaula et al. (2020) identify intersections where there is high potential for emissions reductions in agriculture, where women's participation in agriculture is high, and where the contribution of the agricultural sector to total national emissions is significant. These intersections present opportunities to achieve greenhouse gas mitigation and simultaneously reduce drudge work for women in agriculture. Other gender-sensitive analyses of women's sectoral participation could provide similar opportunities to consider women's labour contribution in step with emissions reductions.

The literature also documents low-carbon and climate-resilient agricultural practices that build on local and indigenous knowledge systems – of which local women are often the primary knowledge-holders and innovators. Such case study material can be found extensively in the sectoral literature. We highlight the following examples, in particular, because they highlight the strategic choices by women's networks to extend their ecological practices to wider scales and promote their members' participation in public policy-making.

A study by Tovar-Restrepo in Dankelman (2010) describes how indigenous women in Colombia have commonly practiced “intercropping and multiple cropping practices, planting crop varieties more resistant to drought or floods, finding alternative irrigation systems and taking special care of springs, well and rivers through reforestation” as strategies to both adapt to, and mitigate against, climate change (Dankelman, 2010: 148). Further, these women were politically active:

“By emphasising climate change and environmental sustainability as the central issues within their local organisations and national and international networks, indigenous women have also called the attention of policymakers and authorities to these issues. Women's active political participation is crucial to prevent actions such as monocrops or deforestation that would worsen negative environmental impacts of climate change.” (Dankelman, 2010: 148)

Feitosa and Yamaoka (2020) discuss the development of climate-smart agriculture projects with a feminist lens in Brazil. In these cases, women traditionally collected seeds, restored forest lands and managed water collection and irrigation. Several agroecological projects were designed to integrate and scale up women's economic empowerment and enable women to participate as key actors in decision-making processes. By integrating a strong gender lens and understanding of women as agents of change, these projects supported effective environmental regeneration, as well as providing women with alternative incomes (Feitosa and Yamaoka, 2020).

Forestry, REDD+ and land use

International attention and financing for pilot schemes in REDD+ have grown since the inception of such schemes in the early 2000s. These schemes pay communities to stop cutting timber in forests, or to replant and restore forest lands. The greenhouse gas emissions captured or avoided by REDD+ activities are monitored and measured and may be converted to emissions reductions credits for domestic and/or international sale.

Feminist scholars recognised that REDD+ schemes risk deepening social and gender inequalities if they are poorly designed and implemented (GGCA, 2009). Women often start from a place of disadvantage: they have less formal access to, and control over, forest resources or other means of production, such as finance. REDD+ schemes risk removing forest access and use rights that women exercised before the schemes were put in place, particularly if those rights were previously informal (Dankelman, 2010).

Neefjes and Nelson (2010: 107–114) discuss how REDD+ pilot projects may pose threats or opportunities to women's economic empowerment, depending on the nature of forest governance and management regimes. In their study of Vietnam, they draw particular attention to the need for empowering women in minority ethnic communities.

Odigie-Emmanuel documents that the Government of Nigeria aims to combat deforestation and desertification by paying women and young people to plant trees (Odigie-Emmanuel, 2010: 127), but the short essay does not discuss other dimensions of economic empowerment.

In their analysis of REDD+ projects on subjective wellbeing in Brazil, Peru, Cameroon, Tanzania, Indonesia and Vietnam, Larson et al. (2018) found that REDD+ initiatives failed to provide sufficient attention to gender equality and safeguarding of women's rights. In addition, they found a significant association between decreased wellbeing and living in a REDD+ village for women. In focus group discussions with participants, half of women's groups brought up the importance of having their own source of income.

Scorviana and Setiadi (2018) had a somewhat different finding in their gender assessment of the Kalimantan Forests and Climate Partnership REDD+ programme in Indonesia. They found that the programme reinforced gender-differentiated roles – allowing men to take more diverse and unconstrained roles in forest restoration, while women's roles were more constrained, to the work of bagging seedlings into poly sacks. The outcomes, however, were not considered to inflict enduring harm, because the authors found that women reverted to their previous roles once the programme ended (perhaps a reflection of the programme's lack of enduring impact?). The women who previously were guardians of nature continue to be so, irrespective of the REDD+ programme having taken place (Scorviana and Setiadi, 2018).

Michael et al. (2019) evaluate policies, including India's REDD+ programme. Their two-step assessment of the key operational mechanisms and policy frameworks enabling India's REDD+ programme concludes that the existing policy strategy fails to acknowledge existing gender injustices in forest management and use that hinder women's effective participation in REDD+ implementation. Despite the safeguards in place, rural women have been excluded from their "traditional rights to forests by restricting their livelihood activities and overburdening them with social reproduction responsibilities" (Michael et al, 2019: 8).

Shining from this literature on gender-climate intersections in the forest sector is the insight that local women have been leaders of environmental restoration and sustainable practices for decades – and these practices happen to have co-benefits for climate change adaptation and mitigation. Similar to the agriculture sector (above), an emerging question for scholars of the forest sector is: how can women's organisations and networks capitalise on women's relevant knowledge in the forest domain to benefit women directly in climate project implementation, as well as through forest-climate-related public policy-making? Opinions are split on this potential.

Westholm and Arora Jonsson (2018) take the view that it is highly challenging to introduce gender issues into the technical arena of climate policy. They caution that women's organisations are at risk of being co-opted by such processes.

Aguilar (2020: 177) describes how Kenya's famous women-led Green Belt Movement, founded in 1977, evolved successfully during the 2000s to exploit new opportunities in greenhouse gas mitigation and carbon markets. The Green Belt Movement signed an agreement with the World Bank's Community Development Carbon Fund to reforest two mountain areas in Kenya and sell the carbon credits to the Fund:

"Women's groups would plant thousands of trees, an activity that would also provide poor rural women with a small income and some economic independence. Women's empowerment through this process would also capture 350,000 tons of CO₂, restore soil lost to erosion and support regular rainfall essential to Kenya's farmers and hydroelectric power plants." (Aguilar, 2010: 177)

This initiative endures as part of the movement's larger success in planting and nurturing 51 million trees across the country (Green Belt Movement, n.d.). The Green Belt Movement is among the organisations that recognise government and multilateral organisations' lack of responsiveness to community priorities in forest-climate policies; the movement argues that capacity-building for local women and communities and alliances of like-minded organisations have the potential to drive improvements in policies (Green Belt Movement, n.d.).

Land-intensive mitigation actions

As well as REDD+ per se, there is a larger point to be made around the gendered implications of land-intensive climate change mitigation pathways and their treatment in the literature. Land-intensive mitigation activities include cultivating biofuel crops, and other policies, such as solar arrays and wind farms requiring large areas of land. (Hydropower dams as a land-hungry source of renewable power are another example, although large hydro dams are increasingly viewed as bearing high climate risks and being possibly maladaptive, in the places where climate change impacts include droughts and unreliable water flows).

The IPCC finds that land-based mitigation interventions may interfere with traditional livelihoods in rural areas and cause conflicts, which could lead to a decline in women's livelihoods and reinforce existing inequities and social exclusions (IPCC, 2019: Chapter 7, Cross-Chapter Box 11). Despite known differences between women and men, land restoration and rehabilitation efforts have tended to be "gender-blind" (IPCC, 2019: Chapter 7; Dupar, 2019).

We note through both the original review of the published literature undertaken for this study as well as in IPCC assessments (IPCC 2019; IPCC, 2022b), that there appears to be relatively more literature on gender and REDD+ than there is on gender and biofuel feedstock production or other land-intensive mitigation measures.

Energy: Renewable energy and energy-efficient technologies

In the 2000s and 2010s, important early analysis on women in decarbonisation of the energy sector focused on their roles in the care economy (i.e. reproductive, unpaid work in households) and primarily as consumers of energy. In particular, the ENERGIA network pioneered analysis and hands-on support for women in transitions to cleaner energy, predominantly in the Global South, for some years.

This work took a principal focus on women's use of unsustainable energy forms such as unsustainable fuelwood and charcoal and the substitution of cleaner, more efficient and burden-sparing forms of energy via alternative technologies, such as clean cook stoves. The focus of much of this investigation was the care economy, especially in the earlier years. Research questions initially tended to revolve around women's and girls' roles as mothers, wives, daughters and members of extended families, and the contribution of their unpaid labour in fuel collection and cooking – and how, as consumers, they could transition to less burdensome and polluting practices.

Until today, this trend continues to some degree. There are still plenty of programmes targeting women as cook stove users (consumers) in the low-carbon and climate change mitigation space. The intersections with health (e.g. inhaling particulate pollution) are real and significant, and these initiatives are important for achieving the SDGs.

However, household-limited projects might rather be considered conventional, underutilising wider opportunities for women's economic empowerment. Daniel (2021) notes with respect to a "climate-friendly cooking" project funded by the Green Climate Fund in Kenya and Senegal: "This project, on a topic long-associated with gender relevance (clean cook stoves), neglected to recognise additional opportunities for considering gender beyond its focus on women as primary users of cook stoves" (Daniel, 2021: 36). In this Kenya-Senegal project, women and women's groups were considered vital to distributing improved cook stoves; integrating 8,000 local women's groups was explicitly tied to achieving the project's distribution goals. However, the project provided less information on the sex-disaggregation of cook stove producers.

Meanwhile, over the course of the last two decades, there has been a small, but slow and steady, increase in the documentation of programmes and projects (via grey literature) that has sought to position women as renewable and clean energy producers. These projects have started to push the frontier on women's productive roles in generating income, and even leadership positions, in low-carbon energy – not just in the power (electricity) sector but energy systems more broadly.

The broader observation is that the most pioneering efforts come from non-governmental and private philanthropy-backed initiatives, many of whose results are captured in internal documents or grey literature that is not readily captured through search-screen-scan processes (and which only came to light during snowballing and consultation-based, grey literature reviews). In the energy domain, we find that the academic literature may be lagging behind some of the innovation that is occurring in policy and practice.

A notable case study in GGCA and IUCN (2009), evidenced women's economic empowerment across multiple dimensions of paid workforce participation and increased agency in the energy sector. An Indian NGO, CleanStar Trust, supported women's self-help groups in Maharashtra, India, to devise and implement business plans for emissions-avoiding enterprises – including biofuel feedstock production (primarily jatropha and pongamia) – that empower women as actors in agricultural value chains. The initiative supported women in stepping up as vendors and becoming involved in the processing of oilseeds for biofuel and "agroforestry on wasteland, which involves supplying micro-loans for intercropping biofuel trees with fruit trees and hardy, leguminous crops or fodder" (GGCA and IUCN, 2009; 166–167). The Ghana Regional Appropriate Technology Industrial Service (GRATIS) and *Kampuni ya Kusambaza Teknolojia* (KAKUTE Ltd) scheme in Tanzania both involved women's leadership in producing and processing oilseeds for biofuel (GGCA and IUCN, 2009: 187).

More recent literature – which even at the time of writing in 2022 is still in an emergent phase – queries why women do not have equitable access to manufacturing, trade, sales, maintenance and service jobs in clean energy value chains (Rojas, 2015; Dupar and Velasco, 2021).

A case study by Brill (2021: 42–47) describes how the non-governmental organisation SNV has worked intentionally for women’s economic empowerment in the improved cook stove sector in Tanzania as part of the larger, path-breaking Energising Development (EnDev) programme: “The programme set out targets and indicators ... to ensure that women were provided with a fair share of participation in the production, marketing and sales of cook stoves” (Brill, 2021: 44).

Advances in EnDev and in multilateral programmes in the sector were well documented by gender and energy expert Rojas in the grey literature. Women have important roles to play across energy value chains, beyond being mere consumers of energy sources, she argued (Rojas, 2015). There is a need and opportunity to evaluate and publish openly more evaluations and analyses of the type of innovations outlined here.

Further validation of the promising intentions for gender-equitable design of energy programmes came from evaluations of Nationally Appropriate Mitigation Actions (NAMAs). NAMAs were initiated as a national instrument in non-Annex I (low- and middle-income countries) under the UNFCCC, first appearing in the Bali Action Plan in 2007. Although not defined as purely energy-sector-focused, the grey project literature on gender in NAMAs is, in effect, energy-sector-related.

It took some years for evaluations of NAMA outcomes to be undertaken and published. The Asian Development Bank was an early mover in both the field support and publication of evaluative findings. Its regional technical assistance project, Harnessing Climate Change Mitigation Initiatives to Benefit Women aimed to assist policy-makers in Cambodia, the Lao People’s Democratic Republic, and Vietnam with integrating gender into national and/or subnational climate strategies, climate action plans, and climate finance screening processes. It “pilot[ed] a model to develop low-carbon technology projects linked to gender-equality benefits” (Adams, 2011). In 2016, a policy report synthesising lessons learned from these early experiences found:

“The climate policy landscape has undergone important changes in recent years. The impetus for those changes is the realisation that actively engaging women as ‘agents of change’ in climate solutions not only helps stabilise the climate but also yields multiple other benefits, including gender equality and women’s empowerment.” (Zusman et al., 2016: 1)

Zusman et al. explore good practice in generating jobs for women in low-carbon energy, beyond targeting women as consumers. They present SNV’s development of “installation and customer training program[mes] to build women’s skills in the operation and maintenance of the selected [energy] technologies” (Zusman et al., 2016: 11; Dupar and Velasco, 2021). Another case study describes how the Republic of Georgia developed a gender-responsive NAMA to install 20,000 solar water heaters and energy-efficient stoves in rural households, which “helped women identify newfound interests in construction” (Zusman et al., 2016: 12).

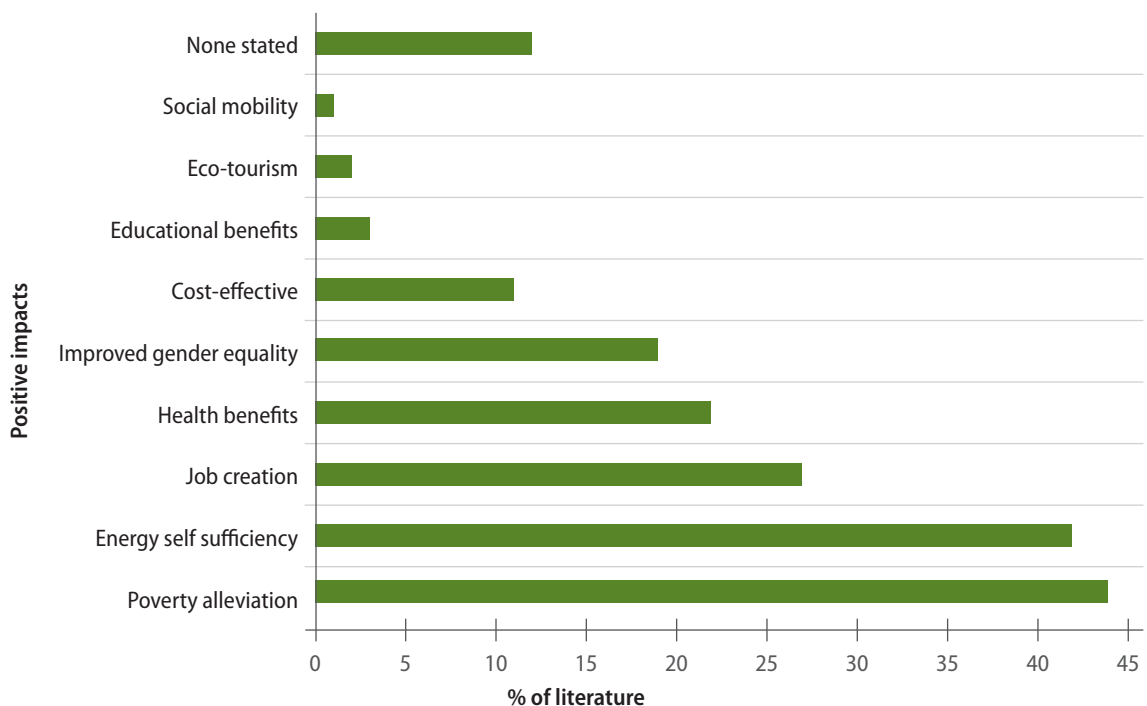
In India, a gender analysis by Stock (2021) of a solar park development project finds a gendered surplus of labour: women are not absorbed into the wage-labour employment generated by such sustainable energy projects. Women tend not to advance in the job application process, and those who do access jobs are from higher castes. “Gender positive” development initiatives must be mindful of exacerbating existing gender disparities and economic exclusion (Stock, 2021).

In contrast to Rojas’ more propositional approach, Johnson et al. (2020) undertook a literature review and situation analysis on the consequences of low-carbon energy transitions for women. They found that investments in decarbonisation or emissions avoidance can have decidedly mixed results for women, if they are not gender-responsive in their design.

Johnson et al. found that circa 18% of the literature documented improvements in gender equality as a consequence of energy transitions (see Figure 4), while 10% of literature documented worsening gender equality (see Figure 5). Their review exposes the complexity of changes in people’s wellbeing arising from energy transitions – for instance, householders may lose access to land for subsistence or commercial uses, as a result of hydropower dam, solar array or wind farm construction, or to make space for cultivating biomass feedstock:

“Energy transitions bring about complex consequences that are seldom discrete: 47% of the examined literature explicitly addresses mixed consequences of a particular transition.” (Johnson et al., 2020: 6)

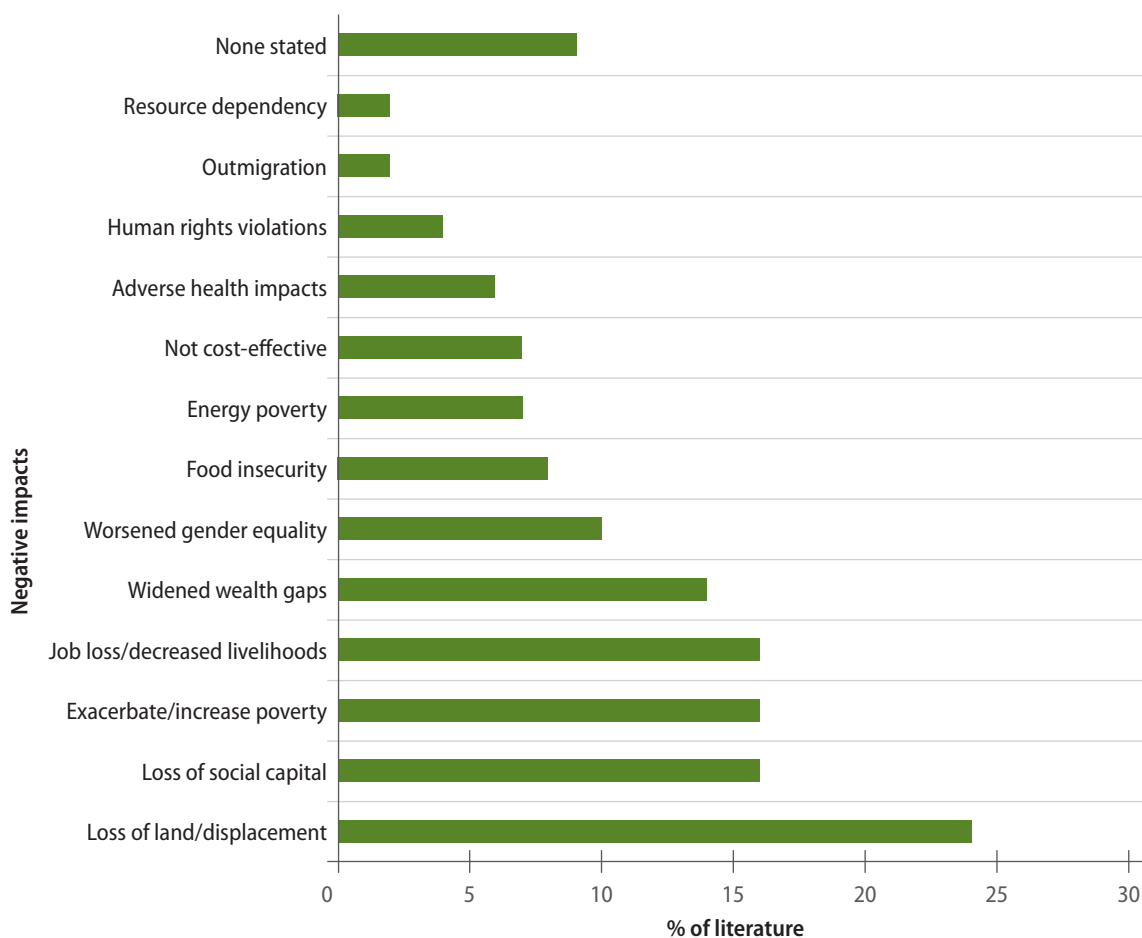
FIGURE 4: Percentage of literature mentioning positive impact of energy transitions (gender and social equity impacts)



Note: The percentages are mutually exclusive as one piece of literature can have multiple counts of impacts.

Source: Johnson et al., 2020: 6.

FIGURE 5: Percentage of literature mentioning negative impact of energy transitions (gender and social equity impacts)



Source: Johnson et al., 2020: 7.

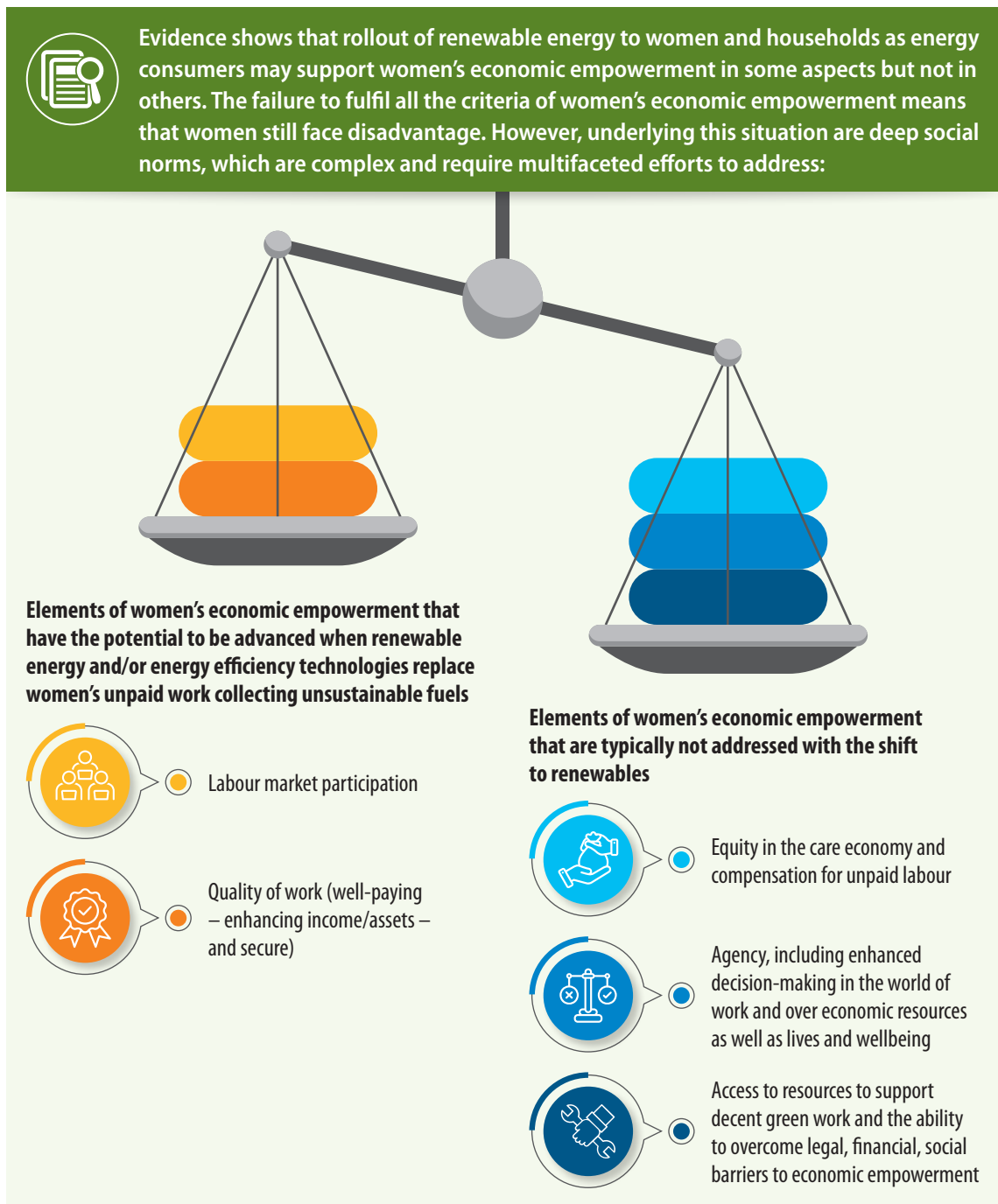
Johnson et al.'s 2020 review finds that introducing renewable energy into communities may create economic empowerment for women in the sense that it shifts time out of burdensome unpaid work to gather fuel for energy (wood, charcoal, etc.). This has even been shown to free up time for them to pursue income-generating opportunities. However, the income-generating opportunities may be less lucrative or easy to initiate for women than they are for men, due to women's more limited access to land, property, finance and banking services, etc. Furthermore, women may end up working just as hard, with equally less leisure or rest time as before.

In this sense, the literature in the energy sector is evidencing how one aspect of women's economic empowerment – income – can be linked to renewable energy development. Their increased participation in paid work, is a 'mixed blessing' when offset against ongoing deficits in other areas of economic empowerment, such as decision-making agency over their lives and choices, which can still be shaped by discriminatory social norms.

The implications of the review of gender and energy are that:

“... with the exception of one paper, there appears to be little evidence of formal gender assessments being undertaken to assess how low-carbon energy solutions might consider existing gender injustices. For example, women could be provided with access to certain resources that help ease their transition; officials could develop more holistic compensation plans; or land can be jointly titled in the case of resettlement. This suggests there is a need to conduct gender impact assessments alongside environmental and social impact assessments when developing low-carbon energy projects.” (Johnson et al., 2020: 133)

FIGURE 6: Summary of how energy shifts relate to women’s economic empowerment



Source: Authors’ compilation and visualisation, based on the original analysis supplied by Johnson et al., 2020.



Women from the Binayi Community Forest User Group collect lantana for green manure.
© Chandra Shekhar Karki/CIFOR

Women and low-carbon transport

There is increasing policy and programme work that aims to integrate women's concerns into low-carbon public transport, and the documentation thereof. However, it is not yet evident that dimensions of women's economic empowerment are being addressed via this work.

The intersection of women's issues and low-carbon transport is framed principally in terms of the very real and significant potential for personal safety and freedom from harassment or attack that women may experience in public spaces. Design of low-carbon public transit systems, in the rare cases when they are informed by holistic gender analyses, have endeavoured to design women-friendly features into them that reduce harassment, such as better lighting, less crowding (GGCA et al., 2015). Here it is less the switch from carbon-intensive to low-carbon modes of transport that inherently reduces gender-based violence, as the opportunity presented by system change to introduce women-friendly features that were previously lacking.

The literature tends to cast women as transport users or consumers, not as transport workers. However, one case study in Karachi, Pakistan also demonstrates how multiple dimensions of low-carbon transport can be developed to promote women's economic empowerment.

Karachi took a gender-responsive approach to developing its low-carbon Bus Rapid Transit (BRT) system (Daniel, 2021: 35). One aspect of its gender approach was user-focused: the project captured user experiences of safety, convenience and comfort, and sought to improve customer satisfaction over time. The data was disaggregated for sex and for "other variables such as age, ability, ethnicity, employment and economic situation ... across various activities and targets" (Daniel, 2021: 35).

The Karachi project and its Gender Action Plan (Asian Development Bank, 2022) also describe how the BRT management sought to offer women secure jobs as transport workers and sought to create a safe environment for women to travel to other forms of employment. These evaluations provide a novel, albeit limited, insight into gender in the low-carbon transport sector, and signpost the potential for considerably more research on the broader implications of low-carbon transport for women's economic empowerment.

CHAPTER 7

IN LOW- AND MIDDLE-INCOME COUNTRIES, MOST WOMEN ARE ENGAGED IN THE INFORMAL ECONOMIC SECTORS AND LAG BEHIND MEN IN EMPLOYMENT SECURITY. THIS HAS LED SCHOLARS AND PRACTITIONERS TO ASK: WHY NOT ADDRESS THOSE WOMEN WORKERS LEFT BEHIND PREVIOUSLY, AND GIVE THEM THE OPPORTUNITY FOR SECURE, GREEN JOBS?

JUST TRANSITIONS

The emergence of the global ‘just transition’ narrative was initially heavily male-biased but is increasingly contested, and its definition broadened, by feminist coalitions from the Global South.

The post Paris Agreement period has seen a flourishing of green growth and low-emissions development analysis in the grey literature, including greater focus on what this means for the world of work.

The Paris Agreement discusses, in its preamble, the notion of a ‘just transition’, stating that Parties will: “Tak[e] into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities” (UNFCCC Paris Agreement, 2015: 2).

Since the Paris Agreement, there has been significant policy debate, coverage in the policy literature, and some (lesser) academic publishing around the concept of ‘just transitions’. At the forefront of these narratives have been European governments and institutions, and hence they have tended to have a Europe bias. They, initially at least, have focused on compensating workers who are employed in fossil-fuel-extractive or -dependent industries, and should be redeployed in more environmentally sustainable jobs.

These policy narratives and the accompanying literature have focused primarily on the following elements of economic empowerment:

- Labour market participation
- Quality of work (well-paying and secure)
- Skills development for low-carbon, climate-compatible work.

The Polish Presidency of the Conference of the Parties to the UNFCCC, in Katowice, Poland in 2018 (COP24), adopted ‘just transitions’ as a major theme via its *Silesia Just Transition Declaration* – named for Poland’s major coal mining region (see Climate Chance, n.d.). Also at COP24, the Parties to the Paris Agreement adopted a work programme on the impact of the implementation of response measures. Translated into plain English, this is about the impacts of climate change mitigation and adaptation actions on different groups in society. The forum, and its related expert group of ministers, was tasked with providing a platform for Parties to share information, experiences, case studies, best practices and views on the topic and with producing recommendations for future Conferences of the Parties (discussed again with regard to recent developments on page 45, below).

Nursing students in training. © World Bank Photo Collection

The risk in this framing of the problem, and the accompanying policy solutions, is that it privileges workers in the formal sectors and in the conventionally male-dominated industries. In this framing, women and gender are not mentioned, and the voices of women leaders, informal sector and rural workers, and particularly those in low- and middle-income countries, are scarcely heard.

The International Labour Organization (ILO) recognised early the risk of focusing on male-dominated polluting industries. It stated in its global *Green Jobs* report:

“Climate change mitigation could bring down slightly the share of women in total employment unless action is taken to reduce occupational segregation, as employment gains associated with the 2°C scenario are likely to create jobs in currently male-dominated industries (renewables, manufacturing and construction).” (ILO, 2018:2)

This need for low-carbon shifts in labour market shifts to be gender-equitable and socially inclusive was further woven into a UNFCCC technical report, which was informed by the ILO. The technical report was an outcome of a three-year programme on ‘just transitions’ mandated by Parties to the UNFCCC in Paris 2015 (UNFCCC, 2020).

ILO (2018) further identifies a positive link between “the involvement of trade unions and the development of training provision for entry into low-carbon jobs, in studies of advanced economies such as France and the United Kingdom, and of emerging economies such as Argentina, Hong Kong (China) and the Philippines (ILO, 2018: 149). This has led to an ILO resolution to address the issue, which stated:

“Limited trade union participation carries the risk that inadequate consideration will be given to the needs of workers disadvantaged on the grounds of disability, gender, skill level, migration status, or age. For these reasons, and as specified in ILO Recommendation No. 195, governments should strengthen their support for social dialogue (Paragraph 5(h) (i)) and collective bargaining (Paragraph 9(c)) in relation to training at all levels, including the national, sectoral and enterprise levels.” (ILO, 2018: 149)

However, as Atteridge (2022) point out, trade union representation covers only a small percentage of workers, including women workers in low- and middle-income countries. Aguilar (2021) highlights that in Latin America, more than 80% of the new jobs created by the decarbonisation agenda will be in sectors that are currently dominated by men. Women will not benefit from job creation unless this segregation is addressed. Unfortunately, this important analysis of labour markets appears not, as yet, to have significantly influenced global and national policies.

While the ILO has challenged the complexity (and over-simplification by others) of ‘just transitions’ in the world of work, more recent and emergent scholarship has contested Eurocentric and narrow definitions of ‘just transitions’ even further.

In low- and middle-income countries, most women are engaged in the informal economic sectors and as such, lag behind men overall in terms of employment security (Guterres, 2020). Not unreasonably, this has led scholars and practitioners to ask: Why should the spotlight, the focus of investment, be principally on those who had secure employment before; why not address those women workers ‘left behind’ previously, and give them the opportunity for secure, green jobs? (Dupar et al., 2021; Dupar, 2022).

The South to South Just Transitions Initiative (Atteridge, 2022) defines ‘just transitions’ and the risks they pose to different social and socio-economic groups more expansively than the secure jobs envisioned in the European context. They describe how:

“Avoiding dangerous levels of climate change requires major structural changes in the way we live. This includes how we produce energy, food, and other goods and services like mobility, as well as the way we manage land, waste, and protect our forests, seas and other natural resources. Some of these structural changes are profound, and will create livelihood risks for some communities who, today, depend on particular economic activities that need to be phased out to achieve climate goals.” Furthermore, “... the use of international climate finance is presently focused on implementing techno-economic transitions – to low-carbon or climate resilient practices – with little financial support for ensuring the outcomes are socially, economically and environmentally just.” (Atteridge; 2022: 7)

Post colonial critiques of gender and mitigation action

Akina Mama Wa Afrika’s *Intersectional Feminist Climate Justice Guide* tackles the barriers to women’s progress on climate action from a combined perspective of African women and the legacy of colonialism, racism and classism (Akina Mama Wa Afrika (AMWA), 2023). With an analysis of inequality that falls along racialised, ethnic and class lines and privileges some women above others, they propose to “[build] women’s socio-economic and cultural agency in coping with climate change impacts instead of merely seeking handouts”. Their approach “further emphasises the need to address the power dynamics and structures that influence the pace of change and levels of existential insecurities, the distribution of resources and a host of benefits [for] current and future outcomes” (AMWA, 2023). As such, the integration of more inclusive perspectives in climate mitigation actions requires intersectional, post-colonial thinking beyond the mere inclusion of women in climate action strategies.

Unequal access to land, knowledge, and finance for low-carbon development

Women’s lack of access to land, relevant knowledge and information, and finance are highlighted consistently in the literature as barriers to more gender-equitable low-carbon transitions.

Land. The literature over the period 2015–22 places a relatively strong emphasis on women’s unequal access to assets such as land and capital that would boost their productivity in climate-smart jobs (Ogbeide-Osaretin and Efe, 2022; IPCC, 2022a). While a large number of studies investigate these phenomena at country level, the Prindex study, which has captured gender-disaggregated data on tenure security from 140 countries, provides a global overview. Prindex seeks to measure global progress against Sustainable Development Goal indicators 1.4.2 and

5.A.1, which refer to the strengthening of women's land and property rights as a fundamental pathway towards poverty reduction and women's empowerment (Prindex, 2020). The study's methodology asks respondents to rate their perceptions of tenure security (for landholding, rental occupancy). The 2020 dataset of over 90,000 women and 78,400 men worldwide found that, equally, around one-fifth of women and men feel tenure-insecure.

Measuring people's perceptions of tenure security is important because there can be a large gap between law and its enforcement. In many countries, women may have rights to land by law that may be denied in practice because of social norms.

The IPCC's *Special Report on Climate Change and Land* and its links to low-carbon, climate-resilient development finds that in dryland areas, insecure property rights and lack of access to credit and agricultural advisory services hamper the advancement of climate-smart approaches to land management – especially by women (IPCC, 2019).

Knowledge. Women's lower educational attainment, and the cascading impacts on access to technical and vocational training that is explicitly climate-smart, is explored in various country- and region-specific studies. For example, Dupar et al. (2021) explore these issues with regard to dryland, predominantly pastoralist communities of east and west Africa, finding that narratives, training support and jobs must be expanded around young people's livelihood options, within and beyond agricultural value chains, to encompass a wider suite of decent jobs in climate-adaptive and low-carbon sectors.

Ogbeide-Osaretin and Efe (2022) hypothesise that gender inequality in Africa has been bad for climate change mitigation efforts, due to women's relative impoverishment compared to men's and, specifically, women's relative lack of education, information, credit and land rights for agriculture. They posit: "... an effort to eliminate gender inequalities requires a specific gender-based policy. Agriculture and greenhouse gases have been identified to be a major cause of climate change. It has also been established that women are more in these activities" [in Africa] (Ogbeide-Osaretin and Efe, 2022: 5). They conclude that closing the gender gap in development has received inadequate attention in Africa as a means to tackle the root causes of climate change. Empowering women economically (including in all means of production and via adequate environmental knowledge) will lead to greater environmental health and personal wellbeing for women (Ogbeide and Efe, 2022: 5). Accordingly, solutions could include increasing women's access to land, credit, and other assets, which would make their agricultural workload more productive, secure and with the potential to be 'climate-smart'. Increasing their access to decent work opportunities in agricultural value chains and outside agriculture is another solution.

Finance. There is still relatively little published literature on women's access to climate finance and the outcomes thereof. (Climate finance here is defined as discrete projects with climate goals, funded by public or private sources). This is in spite of there being a growing evidence base and ongoing research into the linkages between women's land and access to capital and credit and, more generally, their access to climate-related information and training, and climate-smart outcomes.

Some of the best sources of information on this topic are from large international public climate finance funds themselves, such as the Adaptation Fund (Adaptation Fund, 2020) and to a lesser

degree the Climate Investment Funds (n.d.), which have explicit gender requirements at planning and decision stage. The Adaptation Fund has a particularly notable set of learning documents around gender integration in diverse countries (both case studies and synthesis, such as Adaptation Fund, 2016 and, on an intersectional basis, Adaptation Fund, 2022). However, self-evidently, these analyses focus on adaptation activities not mitigation of climate change. They are instructive for climate change mitigation purposes in so far as a significant proportion of project and programme experience is in land-based sectors where adaptation interventions yield mitigation co-benefits.

The Green Climate Fund (GCF) asserts that it is “the first climate finance mechanism to mainstream gender perspectives from the outset of its operations as an essential decision-making element for the deployment of its resources. GCF has placed gender as a key element of its programming architecture.” However, the GCF’s website yields little by way of outcome-focused lessons on its achievements in defending or advancing gender equality through its investments.

An independent study by the Women’s Environment and Development Organization (WEDO) and CDKN (Daniel, 2021) found that there is considerable scope for strengthening the pursuit and achievement of gender equity within climate finance projects, especially beyond the initial proposal stage, through all cycles of implementation. Their study focused on implementation of GCF, Adaptation Fund (AF), Climate Investment Fund (CIF) and Global Environment Facility projects. “Even within projects in sectors where gender considerations are more widely understood (e.g., agricultural resilience projects), it is imperative to create mechanisms for gender analyses and accountability for applying gender-responsive approaches”, Daniel reflects.

Official flows are themselves meagre in comparison to the need for climate finance: the world’s richest countries have notoriously missed the 2020 target to channel US\$ 100 billion in climate finance to low- and middle-income countries. However, this study found that documentation of women’s economic empowerment in climate finance projects is still weak. And the documented outcomes indicate that many projects do not consistently follow their gender objectives from planning through implementation as they should (Daniel, 2021).

The WEDO-CDKN study on gender mainstreaming in climate finance projects did identify promising practices, but intentionally shied away from the term ‘best practice’ for the following reason:

“Despite the attention to gender and climate finance in recent years, this work is nascent, complex and ongoing. While some projects are better equipped, or have had better results than others, there are no shining, golden examples of perfection achieved: indeed, good practices exist that promise the best is yet to come. Even widespread replication of elements of some currently remarkable projects would not be enough to fully address the concerns of inadequate attention to gender in climate finance. Moreover, suggesting that the top performers of today are the standard to be reached could potentially limit the possibilities for truly transformative work on gender.” (Daniel, 2021, 7)

The literature is beginning to reflect experience in communities and localities where pilot projects have trialled women’s financial inclusion for climate-compatible work, particularly

microenterprise development – this has tended to focus on the multiple dimensions of climate resilience and adaptation (as covered extensively by the BRACED research programme from 2015–19; see, for example, Le Masson, 2016; Gebremichael et al., 2020). Other documentation of pilot projects for financial inclusion in the context of climate change mitigation has tended to be in what we call, in this paper, the sectoral literature: climate-smart agriculture or agroforestry, sustainable forest product development and small-scale energy microenterprises, as discussed in Chapter 6.

Low profile for gender in UNFCCC decisions on ‘just transition’

At the time of publishing, the just transition narratives in international governmental statements, such as in the UNFCCC’s, still lack explicit acknowledgement and integration of gender issues. The cover decision of COP27, known as the Sharm El-Sheikh Implementation Plan (UNFCCC, 2022b) commits to initiating a new UNFCCC work programme focused on the just transition to net zero emissions economies by, or around, mid-century (UNFCCC, 2022b). This segment of the COP27 decision does not mention women or gender, although a separate section calls on governments to push forward with implementing the gender equality objectives of the Lima Work Programme on Gender in ambitious climate action. A separate document adopted by COP27 – the *Report of the Forum on the Impact of the Implementation of Response Measures* (UNFCCC, 2022c) essentially deals with the topic of just transition and who will get displaced by decarbonisation of economies. The latter report contains no gender references at all.

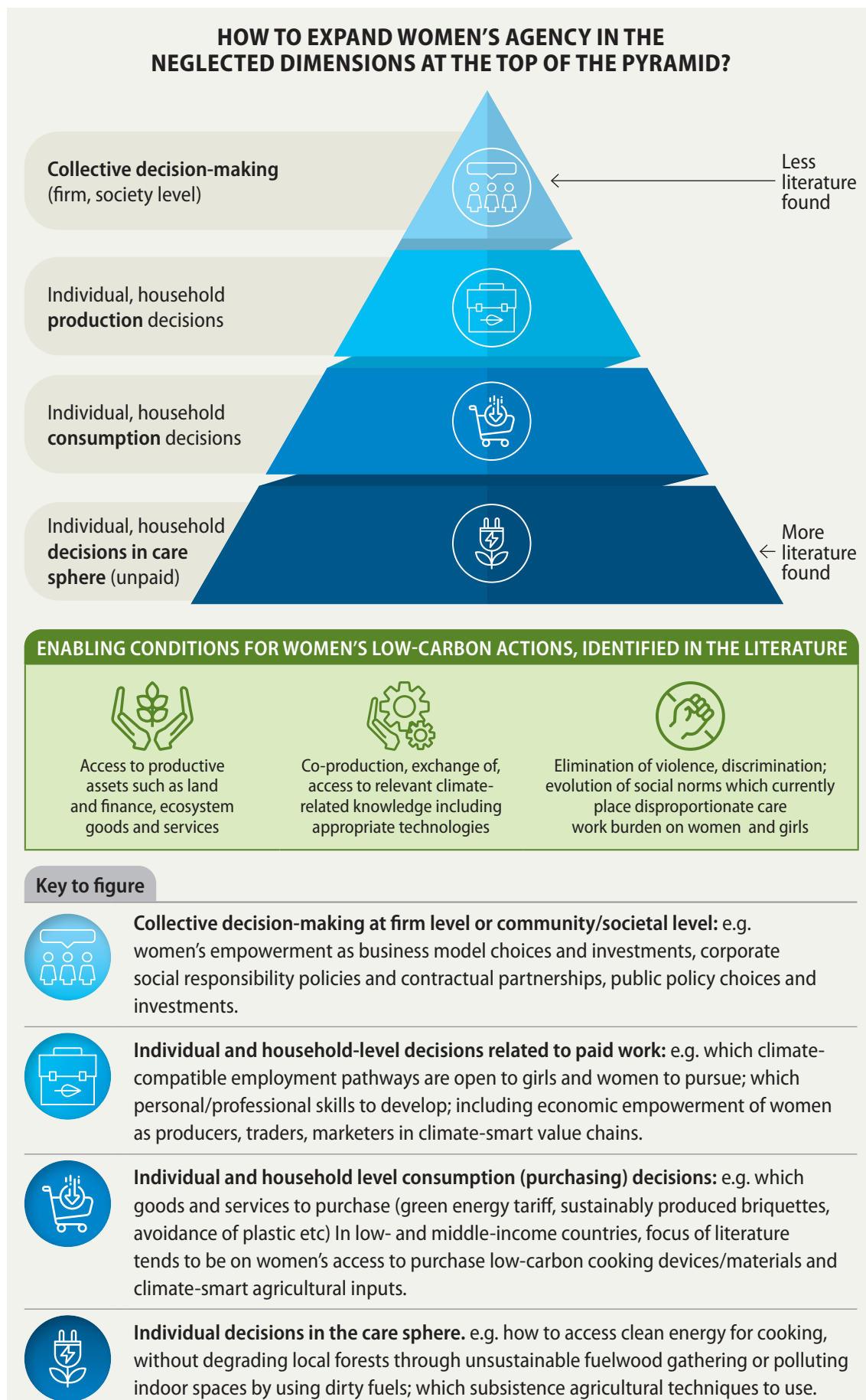
The Katowice Just Transition Work Programme has now published a guide that advances tools and methodologies by calling for gender and age disaggregated analyses of who will be affected by decarbonisation/low-carbon transitions and how (UNFCCC, 2020). However, commentators noted, at the conclusion of COP27, that gender equality should be headlined in governments’ collective statements on climate ambition, not buried in the fine print (Dupar, 2022).

The new just transition work programme to be convened by the UNFCCC in 2023 – which promises to incorporate a high-level ministerial segment – provides, nevertheless, an opportunity to raise the profile of gender and other forms of social disadvantage (UNFCCC, 2022b).

A summary of how the literature addresses women’s agency in ‘just transitions’

Based on this review, the authors summarise how the literature covers women’s agency (as one aspect of economic empowerment) in ‘just transitions’, and which structural barriers and enablers are identified as affecting women’s agency.

FIGURE 7: Dimensions of women’s agency described in the literature on ‘just transitions’



Source: Authors’ original analysis.



University students. © Kelley Lynch/World Bank

TABLE 1: Summary of sectoral evidence on gender and low-carbon action found in the literature review

LAND-BASED SECTORS: AGRICULTURE, FORESTRY, AGROFORESTRY	BLUE ECONOMY SECTORS: FISH AND SEAWEED PROCESSING, COASTAL PROTECTION AND RESTORATION
<ul style="list-style-type: none"> ● Fairly strong focus on gendered roles in managing natural resources sustainably, for both subsistence agriculture and forest product use (as part of care economy and household consumption). ● Emergent focus on women’s climate-smart and/or sustainable production methods ● Emergent focus on firm-level and community-level decision-making (especially in programmatic practice) ● GLOW projects will especially contribute to robust peer-reviewed evidence on firm-level enterprise and women’s roles in carbon-sequestering and low-carbon value chains. 	<ul style="list-style-type: none"> ● Emergent focus on firm-level and community-level decision-making ● Emergent focus on production ● GLOW projects will especially contribute to robust peer-reviewed evidence on firm-level enterprise and women’s roles in carbon-sequestering and low-carbon value chains.
ENERGY SECTOR	TRANSPORT SECTOR
<ul style="list-style-type: none"> ● Strong focus on women’s use of clean energy alternatives in unpaid care work ● Strong focus on consumption ● Emergent focus on production ● Emergent focus on firm-level enterprise (especially in programmatic practice) ● Some GLOW research is looking at deployment of low-carbon and renewable energy technologies, women-owned and maintained, to increase productivity in other sectors such as agriculture. 	<ul style="list-style-type: none"> ● Strong focus on consumption (women as transport users) ● Little investigation of low-carbon transport as a source of secure jobs for women or implications of mobility via low-carbon transport for women’s broader economic empowerment ● A GLOW research project on women’s leadership potential in sustainable tourism is looking at how low-carbon transport contributes to the sector’s climate compatibility, with intersections for women’s management roles in the sector.

Source: Authors’ original analysis.

CHAPTER 8

THE GENDER ACTION PLAN (GAP) DID NOT ARISE FROM NOWHERE – IT WAS THE PRODUCT OF ACTIVIST FEMINIST ENVIRONMENTAL ADVOCATES AND ORGANISERS, SCHOLARS AND POLICY CHAMPIONS.

COUNTRIES' CLIMATE PLANS

This chapter summarises how gender has been addressed, specifically, in countries' climate plans, including low-carbon transitions, and in what regard. The chapter concludes by noting a few outstanding and pioneering efforts of governments to integrate women's economic empowerment and low-carbon transition agendas.

One year before the Paris Agreement was signed, at the 24th Conference of Parties of the UNFCCC in Lima, Peru (COP20), Parties to the UNFCCC signed on to the Lima Work Programme on Gender, followed two years later by its associated Gender Action Plan (GAP). These instruments of the Convention were then renewed as the Enhanced Lima Work Programme and GAP for 2019–24.

The GAP did not arise from nowhere – it was the product of activist feminist environmental advocates and organisers, scholars and policy champions. From 2015, we start to see the Lima Work Programme and GAP beginning to have a material influence on selected countries' climate action plans, to the extent that some national plans become more progressive than the academic literature. Indeed, this review observes that policy and practice start to pull noticeably ahead of the academic literature from this point. Considerably more sophistication and depth begin to emerge at the intersection of women's economic empowerment and low-carbon transitions in policies and practices during this period, compared to the academic literature, which starts to feel as though it is lagging behind.

However, it is worth saying that while good practices in the integration of women's economic empowerment and low-carbon transitions emerge in pioneer projects and movements in certain countries and localities, they are far from a universal phenomenon and require adoption at scale.



Box 5: The Lima Work Programme on Gender and the Paris Agreement

The Lima Work Programme on Gender

The Lima Work Programme on Gender (UNFCCC, 2014) aims “to achieve gender responsive policy and action” and is so called because it was agreed at the 20th Conference of Parties to the UNFCCC in Lima, Peru. It was initially established for four years but was renewed and renamed the Enhanced Lima Work Programme (2019–24) and its Gender Action Plan. This enhanced suite of activities was adopted with the intent to: “integrat[e] gender considerations into all activities concerning adaptation, mitigation and related means of implementation (finance, technology development and transfer, and capacity-building), as well as decision-making in the implementation of climate policies” (UNFCCC 2017).

These instruments of the Convention are the basis for regular reporting from governments and observer organisations on progress (UNFCCC 2022a). The UNFCCC Secretariat considers the Lima Work Programme, its successor, and related action plans, to have been influential, noting:

“[an] increase in the number of new and updated NDCs [Nationally Determined Contributions] and NAPs [National Adaptation Plans] that integrate gender as evidence of activities under the GAP [Gender Action Plan] catalysing national climate policy and action.” (UNFCCC, 2022a: 5)

Through the Lima frameworks, there is a ‘soft’ system of mutual accountability. It is ‘mutual’ because Parties and multilateral agencies report progress to each other and to the UNFCCC Secretariat. It is ‘soft’ because reporting is voluntary, not mandatory. Nonetheless, the significance of the Lima frameworks cannot be underestimated (Blomstrom and Burns, 2015: 52).

Furthermore, persistent efforts by observer organisations (e.g. NGOs and networks such as WEDO and GGCA) have played key roles in

scrutinising policies and investment flows, and sustaining calls for more gender mainstreaming in countries’ climate actions.

The Lima Enhanced Work Programme on Gender calls for:

- long-term, open-ended action
- a Secretariat for regular functions
- a gender action plan as an annex
- a review of progress and discussion of further actions to be undertaken in November 2024.

The Gender Action Plan has:

- 5 priority areas with objectives
- 20 activities
- 35 outputs
- an intermediate review of implementation in June 2022.

The Gender Action Plan sets out, in five priority areas, the activities that will drive the achievement of its objectives. The objectives of each priority area are as follows:



A. Capacity-building, knowledge management and communication

- To enhance the systematic integration of gender considerations into climate policy and action and the application of understanding and expertise to the actions called for under the Lima Work Programme on Gender and its Gender Action Plan, and facilitate outreach, knowledge-sharing and the communication of activities undertaken to enhance gender-responsive climate action and its impacts in advancing women’s leadership, achieving gender equality and ensuring effective climate action.

B. Gender balance, participation and women’s leadership

- To achieve and sustain the full, equal and meaningful participation of women in the UNFCCC process.

Box 5: The Lima Work Programme on Gender and the Paris Agreement

C. Coherence

- To strengthen the integration of gender considerations within the work of UNFCCC – constituted bodies, the Secretariat and other United Nations entities and stakeholders towards the consistent implementation of gender-related mandates and activities.

D. Gender-responsive implementation and means of implementation

- To ensure the respect, promotion and consideration of gender equality and the empowerment of women in the implementation of the Convention and the Paris Agreement.

E. Monitoring and reporting

- To improve tracking of the implementation of, and reporting on, gender-related mandates under the Lima Work Programme on Gender and its Gender Action Plan” (UNFCCC, 2014).

The Paris Agreement

The Paris Agreement of December 2015 was a watershed moment in the story of low-carbon transitions and the potential for women’s economic empowerment within that context.

All 197 members of the United Nations Framework Convention on Climate Change have signed the Paris Agreement and 192 countries, plus the European Union, have become parties to it. The Agreement’s long-term goal – its temperature target – was a monumental recognition of climate science, which projected unmanageably severe impacts of climate change if the world reached 1.5°C or 2°C of average global warming or beyond. It was also a moral triumph for the small island states, and especially the atoll

nations merely metres above sea level, for whom greater climate change imperils their very existence. The Agreement commits its Parties to “Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change” (UNFCCC, 2015: Article 2).

The Paris Agreement is incomplete when it comes to acknowledging the need for inclusion of women and other marginalised groups in climate action and related decision-making:

- Its preamble refers to the Parties’ need to account for gender equality and the rights of women and disadvantaged groups when taking overall action on climate change (UNFCCC, 2015: 2).
- Article 7 on climate change adaptation acknowledges that: “adaptation action should follow a country-driven, gender-responsive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems” (UNFCCC, 2015: 9–11).
- While it refers to women and disadvantaged groups under adaptation, it does not discuss the gendered implications of mitigation action in its mitigation articles (UNFCCC, 2015: 4–8). The articles on mitigation are principally concerned with Parties’ mutual, intergovernmental accountabilities and carbon trading arrangements.

The Paris Agreement also refers explicitly to people’s jobs and the need for them to be reorientated to meet climate goals, in a short passage on ‘just transitions’ for workers, as discussed in Chapter 7.

National action to implement the Paris goals

In the Nationally Determined Contributions, and other national instruments for implementing the Paris Agreement, we see some outstanding examples of gender-equitable approaches begin to emerge nearer the present day, which incorporate multiple aspects of women's economic empowerment. In this, we see that the academic literature has lagged considerably behind grey literature and selective national policy texts (by the most ambitious or 'feminist' country governments). Real-world policy is ahead of research. We explore these trends below.

While the Paris Agreement has an overarching temperature goal of limiting global warming to 2°C, and as close as possible to 1.5°C, its mechanism for reaching this goal relies on a bottom-up approach: countries' NDCs. Achieving the targets of the NDCs is voluntary for governments, while the reporting of progress against them to the UNFCCC is mandatory.

The UNFCCC invited governments to submit a first round of intended NDCs (iNDCs) in the run-up to the Paris climate summit in December 2015 – with some countries also submitting shortly after, in 2016. The Paris Agreement also calls for NDCs to be enhanced on a five-yearly cycle, so the next round of enhanced NDCs was due in 2020 (this time frame was extended into 2021 because of the global pandemic). The Agreement's 'ratchet' mechanism requires that Parties cannot reduce ambition, but each subsequent NDC submitted must be more ambitious than the last.

The iNDCs are all intended to contain climate change mitigation actions – which, self-evidently, in the case of heavily polluting countries, involves significant cuts to their greenhouse gas emissions. For many of the poorest and most climate-vulnerable countries with diminutive carbon footprints, the NDC and related national strategies encourage them to avoid emissions, as they meet their populations' development needs – emissions which they would have otherwise produced, if following a business-as-usual pathway. That said, a handful of least-developed countries and small island states are already net emissions negative. The storage of carbon and other greenhouse gases from ecosystems in their jurisdiction, such as forests and wetlands, is greater than the emissions these countries release from other activities. Bhutan and Comoros are cases in point.

A standard template for NDC submission requires governments to elaborate on how they will curtail or cut greenhouse gas emissions and by which baseline year. A section requests them to outline how different social groups will be empowered to contribute to climate change mitigation. It is for this reason that the scrutiny of NDCs for gender approaches is an important way to understand how well women's needs and concerns are integrated in plans for low-carbon transitions.

Notably, when the term 'gender' is mentioned in NDCs, it is almost always about the roles of women; relatively seldom are the roles of men or comparative gender roles or status of non-binary people/third gender mentioned. This has the potential to change in the future. The remainder of this section describes efforts to track the landscape of gender approaches in NDCs.

THE WEDO GENDER CLIMATE TRACKER METHODOLOGY ANALYSED THE NDCs BY MEASURES OF:



GOVERNANCE



PLANNING



IMPLEMENTATION AND ENHANCED CLIMATE POLICY INSTRUMENTS

WEDO has analysed NDCs for the inclusion of gender since 2016 (Siegele, 2020: 4). Rolling updates on the strength of gender approaches in the NDCs are published on the website <https://www.genderclimatetracker.org>.

The round of new and enhanced NDCs in the years 2020–21 have increasing numbers of gender mentions, at the most general level. Whereas a keyword search by IUCN (2021) found that 40% of the first round of NDCs submitted by Parties to the UNFCCC in 2016 mentioned the word ‘gender’, almost double that proportion (78%) of the new round of enhanced NDCs submitted by 2021 mentioned ‘gender’.

CARE International also applied the WEDO Gender Climate Tracker methodology to an analysis of updated and enhanced NDCs (December 2020; updated June 2021). This analysed the NDCs by measures of governance, planning and implementation and enhanced climate policy instruments:

1. *Governance*: Reference to gender or women in the ratio of female estimated contributions to the NDCs review and policy; context for the reference (e.g. commitments to mitigation (M), adaptation (A), addressing loss and damage (L&D), capacity-building, implementation or whether the gender reference is cross-cutting); the ways in which women are positioned in the NDC. This includes positioning women as a group that is vulnerable to the impacts of climate change; as beneficiaries of projects or policies; as agents of change; or as stakeholders i.e. as having a stake in climate-change-related decision-making.
2. *Planning*: The existence of gender-responsive budgeting in the NDC and the existence of a participatory planning process for the NDC.
3. *Implementation and Enhanced Climate Policy Instruments*: The existence of a mechanism or process for monitoring or implementing the NDC. (CARE, 2021:3)

CARE’s analysis of 22 NDCs found that even when countries’ plans include explicit references to women or gender then “most of these only mention gender in the context of broad cross-cutting issues and not specifically in relation to different areas of climate change policies e.g. adaptation, mitigation, loss and damage etc” (CARE, 2021:3). Furthermore, by far the most common reference to women in NDCs is as the most climate-affected or vulnerable group, rather

than identifying them as key agents for positive change. Nepal and the Republic of the Marshall Islands were singled out as being ‘role models’ for gender integration in national climate plans, on the basis of the multifaceted treatment of gender issues in their NDCs. Jamaica and Chile also received high ratings with only Norway among the high-income countries rated strongly for meaningful empowerment of women in their NDC (CARE, 2021); all the other gender leaders are low- and middle-income countries.

FIGURE 8: Country scorecard of gender and mitigation ambition in NDCs

Country	Analysis (score for gender-responsiveness across six indicators of governance, planning, implementation and enhanced climate policy instruments, in each country's NDC)			Gender trend (compared to 2015 NDC)	Group rating	Mitigation ambition (out of ranking)
	Progress	Moderate	Laggard			
Nepal	6	0	0	↑	Role model group 6 greens	
Marshall Islands	6	0	0	↑		
Chile	5	0	1	↑	Progressive group 5 greens	Improved but still insufficient/<3°C pathway
Jamaica	5	0	1	↑		
Moldova	5	0	1	↑		
Norway	5	0	1	↑		Improved but still insufficient/<3°C pathway

Source: CARE, 2021. Reproduced with permission.

Remteng et al. (2022) analyse the gender equality and women’s empowerment content of African NDCs. Similar to CARE (2021), they look at how deep or meaningful such gender mentions are. Of all sub-regions in Africa, they find that West African countries most often mention gender equality.

Notably, they find that the NDCs of Angola, Comoros, Liberia and Mauritius make reference to “gender in decision-making in mitigation and adaptation actions” rather than women purely as beneficiaries of climate-smart development (Remteng et al., 2022).

Remteng et al. looked for evidence to establish whether African countries’ scores on the Gender Development Index (WEF, 2017) mapped to gender-responsive content in their NDCs. However, they found no obvious correlation (Remteng et al., 2022: Table 1 in Annex). This finding may indicate the need for very intentional, targeted gender-mainstreaming efforts in climate policies and investments. Perhaps one may not assume that a relatively more gender-equitable country environment necessarily spills into climate policy.

THE DOCUMENT
[NEPAL'S NDC] EXPLICITLY
CALLS FOR THE
EMPOWERMENT OF WOMEN
AND MARGINALISED GROUPS
SUCH AS LOWER CASTES
AND ETHNIC MINORITIES
IN CLIMATE-RELATED
DECISION-MAKING.

Box 6: Nepal's NDC: Beyond gender-equal processes to gender-equal realities?

Despite being classified as a Least Developed Country at present, with considerable poverty and energy access deficits to tackle, Nepal has pledged to work toward net zero carbon emissions by 2050. The NDC includes a range of specific climate change mitigation targets for 2030, such as 15% of energy to be provided from 'clean' sources, 90% of new private vehicles sold to be electric and a range of clean cooking measures, which together add up to a 23% reduction from business-as-usual emissions by 2030 (Government of Nepal, 2020: 2). With a population that is highly dependent on the climate-sensitive land-use sectors of agriculture and forestry, climate change adaptation and resilience also feature heavily in the national climate plan and related policies.

Nepal's updated NDC of 2020 integrates gender and social inclusion as a cross-cutting element in all climate goals and activities. The ambition is well integrated in governance processes and structures. The document explicitly calls for the empowerment of women and marginalised groups such as lower castes and ethnic minorities in climate-related decision-making:

"By 2030, develop an Action Plan for integrating gender and social inclusion in achieving NDC targets.

- Develop specific programmes with dedicated resources (human and financial) to ensure full, equal and meaningful participation of women, children, youth, Indigenous Peoples and marginalised groups in climate-change-related policy development; and during the planning, monitoring and implementation processes at local, provincial and national levels.
- Promote the leadership, participation and negotiation capacity of women, Indigenous Peoples and youth in climate change forums.
- Ensure gender-disaggregated data when reporting on progress and achievements." (Government of Nepal, 2020: 8)

Forests are an important land use in Nepal. Nepal's overall NDC ambition is to retain 45% of land cover as forest land; as an indicator of gender-related ambition in climate and forest governance, NDC calls for forest management committees to have "50% representation by women, and proportional representation of Dalits [lowest caste] and Indigenous People in key posts" (Government of Nepal, 2020: 5).

The forest part of Nepal's NDC also goes beyond gender-equal processes and strives toward gender-equal outcomes – surely a correct level of ambition, but one seen by few, if any, other countries:

"Ensure fair and equitable benefits (carbon and non-carbon) from sustainable forest management, watershed management, and biodiversity conservation among Local Communities, women and Indigenous People" (Government of Nepal, 2020: 5).

Such boldness could explain why Nepal's NDC won 'role model' status in the CARE International scorecard (CARE, 2020).



Box 7: Republic of Marshall Islands: A cross-cutting gender and human rights approach in mitigation action

As an atoll nation in the Pacific Ocean, with a large extent of its land mass only barely above sea level, the Republic of the Marshall Islands (RMI) has every stake in constraining human-induced climate change. Thus, it has for years been a policy of the RMI government to be a leader in low-carbon development and climate change mitigation policy, in spite of the country's minuscule emissions profile. RMI committed early to net zero greenhouse gas emissions and 100% renewable energy by 2050. The latest version of its NDC (Republic of the Marshall Islands, November 2018) "commits to a gender-responsive and human rights-based approach in all NDC-related planning, programming and implementation" (RMI, 2018: 8).

This commitment is not only gender-focused but intersectional, calling for disaggregated data collection and monitoring of climate impacts upon "women, men, youth and marginalised and vulnerable groups to address gender and social inequities, particularly in rural remote communities" (RMI, 2018; 16–17). The plan further calls for participation of women, men, young people and marginalised groups in climate decision-making. Social groups' differential and targeted capacity-building and climate-related educational needs are also flagged (RMI, 2018: 16–17; RMI, 2018: 57). As an example of integrating social inclusion in mitigation action, the NDC commits the government to enhancing walking, cycling and non-motorised transport and to studying and addressing the social implications of the policy.

The NDC of Antigua and Barbuda (2021) is also outstanding for the degree of women's empowerment described across all of the components this study was assessing: *Labour market participation* (low-carbon jobs); *Quality of work* (secure low-carbon and climate-resilient jobs); *Skills development* (for secure, low-carbon, climate-resilient jobs); *Care economy* (stabilising access to reliable, clean energy in the home); *Agency* (participation of women in household, business and public decision-making); *Resources* (capacity development and financial resources offered equitably to women) (see Box 8).

Box 8: Antigua and Barbuda's NDC foregrounds gender equality in the context of climate action

Antigua and Barbuda, a small island state in the Eastern Caribbean published its 'Updated Nationally Determined Contribution' in September 2021. The NDC dedicates a separate subsection to gender as an "area of additional targets" since its initial NDC in 2015.

'Women' are mentioned 37 times in the document, compared to no mention of gender or women in the 2015 document. The NDC opens with messages from senior officials who emphasise "adequate policies to ensure sustainable and socially inclusive growth for all citizens, particularly women" and building "climate action plans [that] are focused on building the entrepreneurial capacity of women, youth, and [micro, small and medium enterprises] MSMEs' (Government of Antigua and Barbuda, 2022: 7, 9).

Of the five main targets of the NDC, two mention women specifically, with one target area calling for "... an inclusive, gender responsive approach to the energy transition with special focus on women fully participating in the new economy ..." (Government of Antigua and Barbuda, 2022: 11).

The section on gender acknowledges Antigua and Barbuda's commitment to achieving SDG5 (gender equality) by "promoting low carbon development where men and women's

contributions to climate change mitigation and adaptation are recognised and valued, existing gender inequalities are reduced and opportunities for effective empowerment for women are promoted" (Government of Antigua and Barbuda, 2022: 15).

To achieve this, the plan calls for gender-sensitive and -differentiated policies and access to resources, "in line with the gender responsive targets for mitigation, adaptation and just transition[s]"; with the following goals:

- 100% of female-headed households have all barriers removed to access back-up renewable energy generation and storage systems (i.e. 20,000 homes); 20% increase in the number of women-led businesses implementing renewable energy and adaptation interventions
- 100% of community businesses and organisations that support women in their post-extreme weather event recovery are identified and provided with support for their efforts to facilitate women's ability to resume work/livelihoods
- Develop a gender-responsive approach to the just transition of men in the energy and construction sectors (Baseline: Currently approximately 95% men in these sectors) (Government of Antigua and Barbuda, 2022: 15).

The leading-edge NDCs in terms of gender ambition (e.g. Nepal, Marshall Islands, Antigua and Barbuda) benefited from strong partnership efforts between national government officials and civil society stakeholders and the support (technical, financial) of regional and multilateral partnerships. These intensive partnership efforts may explain how the world of climate policy may – at least on paper – have leapfrogged the academic sphere in terms of its innovation in gender-integrative climate mitigation thinking.

Challenges for measuring and implementing gender integration in national climate plans

A synthesis report of the UNFCCC Secretariat, released in July 2022, celebrated considerable strengthening of gender content in NDCs between the 2015–16 period and the present. However, it also documented difficulties in measuring the progress of true gender integration. It said:

“Assessing progress is challenging because submissions were the key inputs for the assessments, and the rate of response from Parties and observers to the call for submissions was relatively low. Furthermore, in the absence of indicators or a reporting structure, the information provided by Parties and observers was not easily comparable.” (UNFCCC, 2022a: 5)

Nevertheless, the UNFCCC’s report documents several shifts in commitment to women’s empowerment that have been achieved at scale, via the NDCs. They report:

- 53 countries committed to promoting women’s empowerment in the new round of enhanced NDCs (2020–21), up from just 7 countries in 2015 (UNFCCC, 2022a: 7).
- The UNDP’s Climate Promise and NDC Support Programme has supported 109 countries to integrate gender equality and women’s empowerment into their NDCs (UNFCCC, 2022a: 7). 96% of the countries participating in the Climate Promise initiative that had submitted new or updated NDCs had integrated gender equality considerations, compared with 48% in 2015 (UNFCCC, 2022a).
- 37 countries held broad consultations to define core climate and gender considerations in their NDCs compared with 2 countries in 2015 (UNFCCC, 2022a).

The gap between countries’ intentions and their implementation can be significant, even when political leadership on gender-responsive climate action is strong. NDCs are statements of intention. Just because priorities are outlined in the NDC, it does not mean that they will be, or have been, carried out. Finance, technology and capacity-building are all cited in the Paris Agreement as the key “means of implementation”, and these are notoriously lacking for climate action across low- and middle-income countries, as well as in small island states.

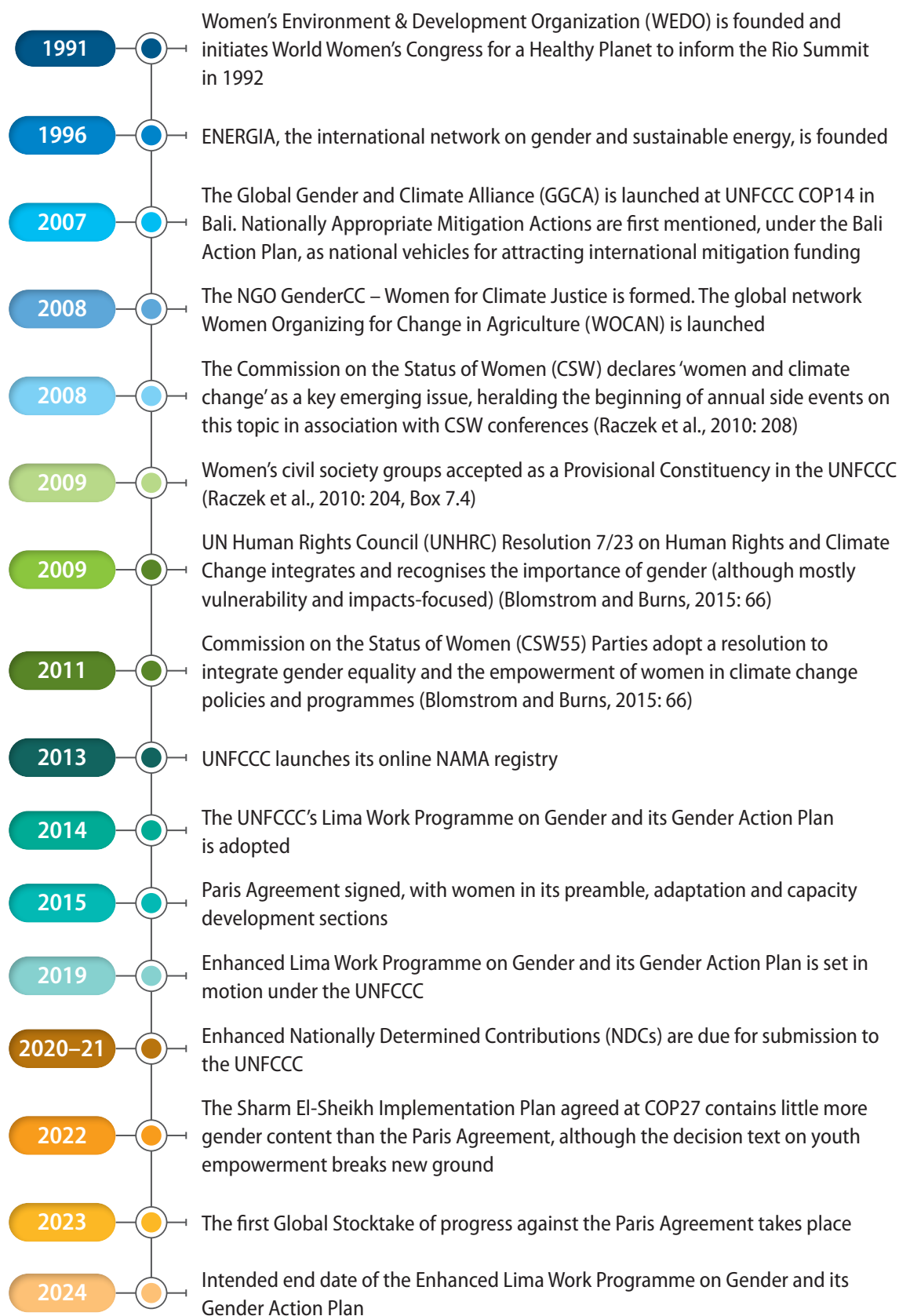
The UNFCCC’s 2022 *Synthesis Report* cited the foremost challenges to gender integration in climate action as being:

- the continuing lack of dedicated financial support;
- the negative impact of the pandemic on the implementation of the Gender Action Plan and more generally on gender equality; and
- the need to build the capacity of government officials and other key stakeholders to integrate gender in climate policy and action. (UNFCCC, 2022a)

Government work in sectorial silos can also be an impediment to progress. NDCs are not always, but frequently, prepared by Ministries of Environment, and there is variable buy-in from other line ministries and arms of government, including finance ministries and gender equality institutions within government (youth, disability, Indigenous affairs). Many countries have addressed silo-isation and have created cross-government climate change committees with Prime Ministerial or Presidential oversight (as in the case of Chile, one of the higher performers on CARE’s scorecard, 2020), to drive accountability and action. Where silo-isation persists, the fine intentions of NDCs may not be supported across government, further stymying implementation.

Likewise, downward accountability from leaders to civil society cannot be assured in all countries. Where consultation and participatory decision-making is weak or absent, women’s concerns (in all their diversity) may not be adequately reflected or taken forward.

FIGURE 9: Timeline of milestones for evidence and action on women in low-carbon transitions



Source: Authors’ original analysis; literature sources, where relevant, are cited directly above.

The global economic shocks of 2020–22 and their cascading impacts

Covid-19 is expected to knock more than US\$ 12.5 trillion off global economic output. It has cast a “long shadow” over developing economies, in the words of the UN Secretary General António Guterres. It has erased decades of women’s economic gains (Guterres, 2020). Since then, the Ukraine war has contributed to rising food, fuel and fertiliser costs worldwide, creating shocks, especially in Africa and least developed countries. Meanwhile, communities are increasingly affected by the shocks and stresses of climate change, including extreme weather events.

Covid-19 and its cascading shocks deeply affected development progress and the gendered dimensions of development and wellbeing. They drew deeply on public spending with implications for low- and middle-income countries’ indebtedness and other national economic concerns. For this reason, it is not possible to discuss the post Paris Agreement period without also discussing the combined impacts of Covid-19, climate change and other shocks on women in low- and middle-income countries and the economic stimulus spending and international support measures extended at sovereign level.

Low- and middle-income countries have been the hardest hit (ILO, 2022). This is especially the case for countries that most rely on export-led growth, tourism and remittances, where “plummeting global investment flows and commodity prices are leaving them with limited fiscal space to support their economies, protect jobs and shore up their health and social protection systems” (UN Women, 2020: 2).

Within low- and middle-income economies, there is evidence that women and historically marginalised groups have been hit the hardest (Guterres, 2020; UN Women, 2020). That is because:

- Women have the least secure jobs, which are less likely to offer social protection. “Access to benefits such as health insurance, paid sick and maternity leave, pensions and unemployment benefits need to reach beyond formal employment and be accessible to women in all spheres of work.” (Guterres, 2020: 5)
- Most women’s jobs are in the informal sector (58% globally but much higher proportions in low- and middle-income countries). (Guterres, 2020)

Furthermore, women in ethnic minorities and other historically disadvantaged social groups are even more likely to be at risk of further economic disempowerment (UN Women, 2020: 3). Women’s unpaid care work increased during the pandemic.

A World Bank study found that women have experienced more negative economic effects than men during the pandemic, with gender differences being more significant than age, education or rural/urban locality (Nieves et al., 2021, cited in Kelly, 2021).

Fiscal spending to recover from these shocks is generally not 'green'

As for the climate crisis, policies and investments should align with the ambition of the Paris Agreement. It commits countries to limiting temperature rise to 2°C and as close as possible to 1.5°C. Doing so will avoid the worst impacts of climate change – which again, fall on the most disadvantaged people. However, most governments' strategies for economic development are still not aligned with a 1.5°C world. Fiscal stimulus packages, by national governments, for their domestic economies, are largely concentrated in high-income countries (ILO, 2022).

The Covid-19 economic recovery discourse and action has been inadequate on its climate change mitigation delivery. The 'green' content of Covid-19 economic recovery plans is spotty (Vivid Economics, n.d.).

Further pressuring the global economy are the supply shocks to fuel and food caused by the Russian invasion of Ukraine. In this context, the notion of 'Covid economic recovery' is becoming somewhat obsolete and has turned into a question of economic stabilisation and management of monetary and fiscal policies to try and pull economies back from the brink of recession.

'Green' and 'women's empowerment' economic pronouncements are separate

There is a lack of conceptual intersection in the grey literature between the 'green' and 'women's economic empowerment' elements of investment and stabilisation in the current context.

Where policy statements or policy reports do call for 'green' economic recovery from Covid-19, the social inclusion mentions tend to be superficial. They do not explore the actual mechanisms for how women's economic empowerment could happen, or indeed meaningful progress of other historically disadvantaged groups, including those facing intersecting forms of discrimination or disadvantage (International Monetary Fund, n.d.; High Ambition Coalition, 2021; Georgieva and Shah, 2020).

By contrast, where academic literature, policy literature or policy statements refer to social inclusion in economic recovery, women's position is explored but not through a climate change lens (UN Women, 2020).

A report commissioned for the UK government by Kelly (2021) says: "it was not possible to find evidence on the effect of Covid-19 on women's role in the green economy and the effects of climate change (beyond calls for inclusive green growth)". This finding dovetails with the present study's conclusions.

Furthermore, with few honourable exceptions such as the pioneering countries mentioned here, governments' economic recovery and stabilisation policies have generally regressed in terms of both their 'green' and gender equality ambitions (Vivid Economics, n.d.).

Policy statements of multilateral institutions such as the International Monetary Fund (IMF), tasked with shepherding fiscal support to afflicted low-and middle-income economies, have, at times, highlighted the prerogative of socially inclusive, gender-responsive and green Covid-19 recoveries, but they have not connected these intentions in an integrated manner (Georgieva and Shah, 2020; Georgieva et al., 2022) (See lack of gender mentions in IMF, 2022). Gender and low-carbon ambitions have been presented in isolation, whereas grounded experience in communities and countries demonstrates that the two spheres of activity and impact are integrally connected.

The full version of the World Bank's *Climate Change Action Plan, 2021–25* (World Bank, 2021) discusses the importance of gender dynamics, although women and gender do not figure in the plan's widely-circulated summary or headline press release and infographics. There is considerable criticism building of the World Bank's performance on the climate crisis and lack of climate change mitigation action in its portfolio, twinned with larger criticism that the Bretton Woods Institutions more generally are not fit for purpose in addressing the climate crisis. Language in the COP27 decision text – the Sharm El-Sheikh Implementation Plan – on addressing the role of multilateral development banks, picks up on this discontent and reflects the intellectual leadership of Barbados Prime Minister Mia Mottley and her Bridgetown Initiative.

As these disruptive debates challenge established economic orders afresh, it is an open question as to whether overtly feminist perspectives will infuse these debates and any consequent reforms. Certainly, the idea of more overtly fronting gender equality and social inclusion in the conversation about reform of the international development finance order is an unexplored area of literature to date.



Shanti Tamang (19) does her day job. Her husband works abroad. © Mokhammad Edliadi/CIFOR

CHAPTER 9

WE FIND THAT THE PRACTICE BY NGOS ON INTEGRATED WOMEN'S ECONOMIC EMPOWERMENT AND LOW-CARBON TRANSITIONS IS AHEAD OF THE ACADEMIC LITERATURE. THIS MORE ADVANCED ANALYTIC WORK AND IMPLEMENTATION AT COMMUNITY LEVEL HAS TENDED NOT TO ATTRACT THE ATTENTION IT DESERVES.

SUMMARY AND RECOMMENDATIONS

This chapter synthesises the findings and provides recommendations for further research and knowledge-into-use.

The central questions of the literature review are:

- To what degree are low-carbon trajectories and women's economic empowerment integrated in the literature?
- To what degree are low-carbon development policies and their implementation being linked to women's economic empowerment in policy and practice? What is the evidence?

We identified that the 'mainstream' green economy literature is superficial in its discussion of gender equality and does not explore the central facets of women's economic empowerment that we identified. This body of literature discusses how economies may, at economy-wide level, decarbonise and shift toward net zero by mid-century – in line with what (within the UNFCCC) is referred to as countries' long-term strategies for low-carbon or low-emissions development.

This literature tends to recognise economic poverty and the social disadvantage of different groups, which constrain their access to information/education that would facilitate their participation in decent (secure, well-paying) climate-compatible jobs. However, women and others facing structural discrimination or disadvantage, including people living with different abilities, young people, the elderly, and people of disadvantaged ethnicities and castes, are mentioned superficially and generally without analysis of how their specific needs and talents are, or could be, targeted in policies and programmes. Indeed, this body of literature with superficial mentions of women in the body of the text was so large (numbering in the millions in the academic and grey literature) that it was too abundant to assess; some internationally influential publications on the low-carbon economy are cited in this study.

African solar engineers. © UN Women

The 'just transition' literature described here is especially focused on labour markets. It began with a focus on cultivating green jobs and compensating and training workers displaced from fossil-fuel-dependent industries. The 'just transition' literature has its roots in the notion that workers displaced from dirty industries are 'losers' of the low-carbon transition and require explicit, targeted policy interventions as well as those workers set to 'win' from transition investments. Particularly situated in European Union narratives, and notably championed by the Polish Presidency of COP24, this policy debate and related academic and grey literatures has only relatively recently been contested and expanded by thinkers in the Global South to consider: what does the notion of 'just transition' mean for those in non-industrial jobs, and across more diverse geographies including low-income countries? Taking as its entry point national shifts to decarbonise economies, the 'just transition' debate has a long way to mature if it is to address distributive and procedural justice, including for specific groups of women.

An explicitly feminist body of literature on gender and climate change has matured considerably since its early evolution in the early 2000s. Inspired by, and closely interrelated with, leading international NGOs and women's networks (such as WEDO, GGCA and IUCN and others active in the Women and Gender Constituency of the UNFCCC), this literature has conventionally been biased toward climate change adaptation rather than mitigation. Its particular strength is in discussing women's agency – their participation in decision-making – related to climate action; its treatment of other aspects of women's economic empowerment in the context of climate change mitigation is less developed.







Some of the most progressive work that meaningfully explores women's economic empowerment is in the agriculture, forestry and agroforestry domains. By their nature, these land- and coastal ecosystem-based interventions advance both climate change mitigation and adaptation goals. Pilot projects and related analyses have focused principally on the income generation and labour market participation of women in these sectors, together with the knock-on implications for care burdens (women and girls in the care economy).

Pilot projects and associated literature on women and energy or power sector emissions mitigation have tended to focus on women's roles as energy consumers rather than producers, but this is slowly changing. Early studies based on community-based projects are documenting the gains in women's incomes, confidence and household and community status, arising from their productive roles in energy technology production and maintenance (solar cookers or improved cook stoves, solar photovoltaic installations, etc.).

In conclusion, we find that the practice via pilot projects and the grey literature by NGOs on integrated women's economic empowerment and low-carbon transitions is ahead of the academic literature. This more advanced analytic work and implementation at community level has tended not to attract the attention that it deserves.

A summary of findings from the academic and grey literatures (excluding governments' policy documents, discussed separately below) is given here:

TABLE 2: Summary of areas of evidence describing women's economic empowerment in the context of low-carbon, economy-wide transitions

ASPECT OF WOMEN'S ECONOMIC EMPOWERMENT INVESTIGATED IN THE ECONOMY-WIDE LOW-CARBON LITERATURE*	STRENGTH OF TREATMENT IN THE LITERATURE	OBSERVATIONS
<p>Labour market participation: Do women have equitable access to, and equitable participation in, the low-carbon economy segments of labour markets?</p>	 <p>Strong</p>	<p>Although few studies drill into how women's labour market participation in low-carbon sectors should be addressed in any detail (saying only that it should be considered), of all aspects of women's economic empowerment, this one is the best covered, and particularly in ILO publications.</p>
<p>Quality of work: Is the work well-paying (enhancing income/assets) and secure (reliable/stable)? Does it include benefits, social protection wrap-around?</p>	 <p>Medium</p>	<p>The remuneration and relative vulnerability/security of work in low-carbon spheres is somewhat discussed, again particularly in ILO publications; wider labour market assessments tend to discuss gender inequalities but without convincingly integrating with the low-carbon trajectories.</p>
<p>Skills development: Do women have equitable access to, and participation in, training as a pathway to employment in low-carbon, climate-compatible work?</p>	 <p>Weak</p>	<p>There appears to be an urgent need for more research and action on developing pathways for girls, adolescents and women into secure work through low-carbon skills training and mentoring.</p>
<p>Care economy: Do low-carbon economic transitions evidence shifts toward greater equality of burden-sharing in the care economy and compensation for unpaid labour?</p>	 <p>Weak</p>	<p>Although (per Figure 7), much of the literature about women and low-carbon transitions in low- and middle-income countries frames women as household consumers and unpaid contributors to the care economy, we give a 'weak' score on economic empowerment for the literature. That is because there is little evidence to document and explain how displacing high-carbon with low-carbon activities will provide women with more productive time, more equitable burden-sharing with men, or simply more rest. These benefits are more often speculated than proven and must be better researched.</p>
<p>Agency: Do low-carbon economic transitions provide evidence of strengthening women's decision-making power, not just over their own economic assets, but their lives and wellbeing?</p>	 <p>Weak-Medium</p>	<p>Agency is a significant focus of the feminist literature on gender and climate change, but this literature has tended to be adaptation (not mitigation) focused. This aspect of women's economic empowerment is poorly discussed in most of the literature reviewed.</p>
<p>Resources: Are women offered equitable resources to enable them to enter into, or continue in, low-carbon/climate-compatible vocations, including the ability to overcome legal, financial and social barriers to economic empowerment?</p>	 <p>Strong</p>	<p>Women's lack of access to credit and tenure security as barriers are relatively well covered, in the context of climate change mitigation (and even more fully in the case of climate change adaptation), and this is reflected in the IPCC assessments.</p>

* The rating is given only for the c.50 works that met the screening test because they discussed women's economic empowerment in low-carbon, economy-wide transitions in any degree of depth beyond a passing mention. The rating excludes sectoral literature discussed separately in Chapter 6.

Source: Authors' original analysis.

In a handful of NDCs such as Antigua and Barbuda, Nepal and the Republic of the Marshall Islands, we find some of the most outstanding integrations of women's economic empowerment in all its dimensions into climate policy and programming. These leading NDCs have addressed, with specific commitments, women's potential roles as producers, consumers, care-givers, entrepreneurs, business leaders and public decision-makers in the transition to low-carbon, climate-resilient economies. Arguably, the gender equality ambition in some of these policies is far more impressive than, and has outstripped, some of the conceptual thinking in the literature.

The challenge remains for implementation of these NDCs. These heavily climate-affected countries will require external finance that is fair and concessional, in order to meet their aspirations. Furthermore, they number only a few countries with gender-equitable, low-carbon plans and strategies among almost 200. Other countries have much to learn from these pioneering examples.

Covid-19 created a massive global economic shock, exacerbated by further shocks from climate hazards, war and conflict, and other crises. The response of multilateral organisations and high-income countries/donors has been neither especially 'green' (low-carbon in nature), nor appropriately targeted to women's empowerment and gender equality. Indeed, women are documented to have borne more than their fair share of these shocks. These recent events underline the absence of a meta-narrative in global economic debates about the necessity for an unerring focus on decarbonisation and gender equality as critical requirements for government and multilateral investment. Without policies that are crafted to address the climate emergency and the gender gap in development simultaneously, there is a risk of further short- and long-term harms to all societies, not just to the low-income and most vulnerable women.

At a synthesis level across the GLOW programme, researchers will collaborate in 2021–24 to identify the transversal challenges and opportunities for advancing women's economic empowerment and climate action more integrally in countries' policies and investments. GLOW will explicitly seek to contribute to, and influence, the economic meta-narratives in these turbulent times.

Recommendations for future research

Table 2 flags areas where more research on the multiple dimensions of women's economic empowerment in low-carbon transition processes is much needed. The evidence gaps highlighted in the table imply that more research is needed on:

- Implications of low-carbon transitions for women's and men's sharing the burden of unpaid work in the care economy
- Women's empowerment across the distinct spheres of control and influence that pertain to low-carbon decision-making ('agency'), namely, differentiating between women's decision-making agency concerning their (i.) unpaid household and community labour or care work; (ii.) paid work; (iii.) collective arenas of action (e.g. firm level, community level); (iv.) public policy (see Figure 7)

- A better understanding of the drivers and barriers for cohorts of girls and women to value and to chart pathways into secure, low-carbon paid work. The role of knowledge flows, skills training, mentoring and other organised interventions in supporting girls and women's capacity strengthening and advancement into secure, low-carbon paid work, and in overcoming resistance and/or strengthening the enabling environment.

We further observe that:

- The literature states that substituting polluting energy in the home (such as kerosene lamps or unsustainable fuelwood or charcoal use) with clean energy consumption (like clean cook stoves or photovoltaic power) has the 'co-benefit' of freeing women's domestic labour for 'productive activities' (see Chapter 5). However, those 'productive activities' enabled by low-carbon energy substitution themselves are poorly described in the literature. It would be beneficial to undertake robust longitudinal studies based on daily diaries, among other methods, to document and analyse whether women's time really is being freed for productive activities, and the true implications of these low-carbon substitutions on both the paid and unpaid work of women.
- In the low-carbon transport sector, the linkages between gender responsive approaches to transport system design and women's economic empowerment are very poorly investigated: in terms of employment directly in the transport sector and (probably more significantly) the implications or co-benefits of low carbon mobility for employment in other sectors/jobs (see Chapter 6).
- The literature captures to some extent how women's movements are protecting and enhancing carbon-rich ecosystems and/or capturing carbon and avoiding emissions through agroecological practice – and have often done so for decades – and these women's movements have gradually been pivoting to capitalise on the opportunities of climate change mitigation finance or and 'carbon finance' (see Chapter 4). It would be of great practical value to undertake research on, and support reflective learning within, such women's networks, to inform their future efforts and the efforts of sister movements and networks.
- The access of women as individuals within communities and as organised groups to climate finance or, more generally, to finance for low-carbon development activities, and the outcomes thereof, is poorly investigated from a rigorous research perspective, although there is quite a lot of promotional material published by donor agencies.
- There is a *moral-ethical* and rights-based case for gender equality. New conceptual work begins to investigate the *instrumental* role of gender equality in decoupling emissions from GDP (McGee et al., 2020:11). Further testing of this finding, and investigation of how this mechanism works, is the subject for new research.

ANNEX 1

Detailed methodology of the search-screen-extract and code component of the review

For the academic and grey literature on women's economic empowerment in low-carbon transitions, from 2015–22, this review was initiated using approaches from the systematic review method, namely, the 'search – screen – data extraction and coding' method which is used in Johnson et al. (2020) and which is supported by the University College London (UCL) EPPI Reviewer Platform.

EPPI Reviewer allows researchers to screen results for relevance, extract data and code the relevant works, and create evidence maps from the findings. We used EPPI Reviewer to code and map the literature identified as having women's economic empowerment and low-carbon transition content during the 2015–22 period.

To undertake the initial review and identify the most relevant works for inclusion, we carried out a range of keyword searches on:

- EBSCO, which we mined specifically for academic journal articles. We had access to six databases: STM Source, Business Source Corporate Plus, Environment Complete, Humanities Source, Political Science Complete, and SOCIindex.
- Google Scholar, which we mined for both academic literature and 'grey' or policy literature.

These investigations revealed some important, broad directions about both research and policy debate.

We found very little literature, especially in the academic domain, at the deep intersection of women's economic empowerment (as we define it on pages 9–10) and low-carbon transitions. However, there was a vast amount of literature about low-carbon transitions that mentioned women very superficially, and therefore did not pass our initial screening test.

The key terms we identified for our search of the academic literature were:

- "women's economic" AND "empowerment" OR "development" AND "low-carbon" OR "net zero" OR "just transition"
- "gender" OR "women" AND "climate change" AND "mitigation" AND "economic*" OR "economy".

In an initial experiment, we applied these search terms to the full text of the academic articles on the EBSCO databases. This proved unsuccessful due to the vast number of results: 4,974,020.¹ This experiment is mentioned because it signals the sheer number of works in which these concepts appear concurrently, in some form, during the 2015–22 period. However, as more detailed investigation found, the mentions of gender and women within these works were also superficial.

A more focused approach was to search EBSCO subsequently for “gender” OR “women” AND “climate change” AND “mitigation” AND “economic*” OR “economy” in the abstracts only. This returned 368 results.

A version of this keyword search was also deployed to capture the Covid economic recovery literature, AB (“covid*” AND “recovery”) AND AB (“gender” OR “women”) AND AB “climate”, which returned 77 results. This search specifically targeted economic stimulus spending by governments to finance economic recovery. The keywords related to Covid-19 economic recovery were introduced because the GLOW programme itself, and this literature review, were initiated during a period when many countries were seeking to increase public spending in order to stabilise economies after the loss in growth associated with the pandemic in 2020.

SEARCH TERMS (PEER-REVIEWED JOURNALS ONLY)	RANGE	RETURNS
AB (“gender” or “women*”) AND AB (“climate change” AND “mitigation”) AND AB (“economic*” OR “economy”)	2015–22	368
AB (“covid*” AND “recovery”) AND AB (“gender” OR “women”) AND AB “climate”	2015–22	77

After initial trimming of duplicates and narrowing down by full-text, peer-reviewed articles, this search approach produced about 200 results. After looking through available PDFs (<50), the authors scored 10 articles of this batch for varying degrees of relevance (the results of which can be viewed in the EPPi mapper tool that accompanies this literature review). The authors rejected the rest for irrelevance. This approach revealed significant gaps in the literature on deep intersections between women’s economic empowerment and low-carbon transitions.

Key terms were then applied as subject terms, rather than general key terms that may appear in the abstract or full text of articles. This would filter out papers that may only generally refer to ‘gender effects’ or include women as part of a larger list of minority or target groups for consideration. The results are shown as follows:

¹ The Boolean search string, “gender” OR “women” AND “climate change” AND “mitigation” AND “economic*” OR “economy” was applied to the full text of all journal articles published between 2015–21, retrieved on 22 December 2021. A variation of this search, “women’s economic” AND “empowerment” OR “development” AND “low carbon” OR “net zero” OR “just transition” retrieved 155,655 results.

SEARCH TERMS (PEER-REVIEWED JOURNALS ONLY)	RANGE	RETURNS
AB ("covid*" OR "*recovery") AND SU ("gender*" OR "women") AND SU ("climate" OR "mitigation")	2015–22	15
AB ("covid*" OR "*recovery") AND SU ("gender*" OR "women") AND SU ("climate" OR "mitigation" OR "low carbon" OR "just transition*")	2015–22	15
SU ("gender" or "women*") AND AB ("economic*" OR "economy") AND SU ("climate*" OR "mitigation" OR "low carbon" OR "just transition*")	2015–22	247
SU ("gender" or "women*") AND AB ("economic*" OR "empowerment") AND SU ("climate*" OR "mitigation")	2015–22	254
SU ("gender" or "women*") AND AB ("economic*" OR "economy") AND TX ("nationally determined contribution*" OR "Nationally Appropriate Mitigation Action*" OR "greenhouse gas*" OR "emission*")	2015–22	329
SU ("gender" or "women*") AND AB ("economic*" OR "empowerment") AND TX ("nationally determined contribution*" OR "Nationally Appropriate Mitigation Action*" OR "greenhouse gas*" OR "emission*")	2015–22	329

Similarly, but to an even more exaggerated extent, a search of Google Scholar for a combination of academic and grey literature in the subject terms and abstracts returned a vast number of results – 14,000+. Furthermore, a spot test showed that a majority of these focused on disaster risk mitigation rather than climate change mitigation. This seemed to reflect the known bias of the women and climate change literature towards the climate change adaptation and risk reduction domains – as opposed to low-carbon transitions.

A similar result was obtained when undertaking keyword searches on Google Scholar for Covid recovery and climate mitigation: this also returned 15,500–16,000 results.



CIFOR research team in action. © Aulia Erlangga/CIFOR-ICRAF

SEARCH TERMS (GOOGLE SCHOLAR, INCLUDING GREY LITERATURE)	RANGE	RETURNS	COMMENTS
AB ("covid*" OR "*recovery") AND SU ("gender*" OR "women") AND SU ("climate" OR "mitigation")	2015–22	15,500	This search strategy was not effective because it returned a high number of results that were focused on physiological recovery from the Covid-19 disease and philosophical beliefs about Covid-19, rather than economic recovery.
AB ("covid*" OR "*recovery") AND SU ("gender*" OR "women") AND SU ("climate" OR "mitigation" OR "low carbon" OR "just transition*")	2015–22	16,000	Limitations, as above
SU ("gender" or "women*") AND AB ("economic*" OR "economy") AND SU ("climate*" OR "mitigation" OR "low carbon" OR "just transition*")	2015–22	14,300	Although too large a sample size to review, the search returned more relevant results at first view, indicating it was a more promising direction. Climate and disaster risk mitigation results were returned, also.
SU ("gender" or "women*") AND AB ("economic*" OR "empowerment") AND SU ("climate*" OR "mitigation")	2015–22	14,000	Limitations, as above
SU ("gender" or "women*") AND AB ("economic*" OR "economy") AND TX ("nationally determined contribution*" OR "Nationally Appropriate Mitigation Action*" OR "greenhouse gas*" OR "emission*")	2015–22	701	
SU ("gender" or "women*") AND AB ("economic*" OR "empowerment") AND TX ("nationally determined contribution*" OR "Nationally Appropriate Mitigation Action*" OR "greenhouse gas*" OR "emission*")	2015–22	329	
SU ("*gender*" or "women") AND AB ("climate*" OR "*mitigation" OR "*adaptation") AND AB ("development*")	2015–22	1,195	

SEARCH TERMS (GOOGLE SCHOLAR RESULTS, INCLUDING GREY LITERATURE)	RANGE	RETURNS
AB ("gender" or "women*") AND AB ("climate change" AND "mitigation") AND AB ("economic*" OR "economy")	2015–22	9,910
AB ("covid*" AND "recovery") AND AB ("gender" OR "women") AND AB "climate"	2015–22	10,400

Keyword searches for the relevant terms in the publications' titles generated a manageable number of results from the Google Scholar review. However, the accuracy and accessibility of material from this search strategy was somewhat poor. The searches for TI ("women" AND "climate change mitigation") and separately for TI ("gender" AND "climate change mitigation") returned a total of 19 results from the 2015–22 period, if the title words "disaster risk" and "United States" OR "Canada" were furthermore excluded for search results. However, once titles were rejected for being purely climate-adaptation-focused, behind a paywall, or comprising Masters theses, then only three titles remained. (Note: The abstracts of paid-for titles were however subsequently analysed, when they were relevant.)

This initial work to interrogate the EBSCO databases and Google Scholar for works at the intersection of women's economic empowerment and low-carbon transitions demonstrated the relative lack of economy-wide or cross-cutting economic narratives and analyses (beyond sectoral level) and also the limitations of this type of review methodology for such interdisciplinary subject matter.

As a result of these obvious limitations, the authors augmented the review with their own expert knowledge of work at the intersections and also employed a snowball methodology for fleshing out the review of integrative works. 'Snowball' refers to an inductive method of referring to authoritative works such as the IPCC assessments of relevant topics. Findings are enhanced by consultation and review by fellow experts to provide a landscape view of the strengths and weakness of the evidence base.

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