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CHAPTER

Toward Gender and Climate Justice: Women, Climate Action Projects for Accelerated Transition, and Transformative Change in the Global South

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Abstract

In the context of accelerated climate transitions, this chapter examines climate action projects in South and Southeast Asia, across the sectors of agriculture, energy, and disaster risk reduction. The chapter identifies enablers and barriers toward addressing climate justice and gender equity in an integrated manner toward transformative change. Focusing on women, its critical assessment uses the framework of a Continuum of Approaches on Gender and Climate Action to understand the integration of gender transformative goals at local, national, and/or regional scales. Findings show that social and climate injustice creeps in or gets exacerbated through projects which by design or oversight exclude some groups or communities, follow siloed project designs, adopt infrastructure- and technology-centered approaches rather than people-centered, and lack capacity, financing, and adequate data. Conversely, enablers toward transformative change include factors such as inclusion and promotion of gender-equitable norms via the project design, investing in promoting women's leadership, and community mobilization toward gender inclusion in climate action.

Keywords: gender injustice, accelerated energy transitions, climate change, disaster risk reduction, South Asia, Southeast Asia, Global South

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Introduction

The United Nations Economic and Social Council (ECOSOC) (2022) reports that climate and environmental crises, combined with gender inequality, are a major hindrance to sustainable development. The global goal calls for faster, deeper, and scaled-up climate actions. Unsustainable land use and energy use have contributed to net emissions and biodiversity change—climate change is adversely impacting agricultural productivity and growth. However, land- and energy-sector-related responses can also lead to climate adaptation, climate mitigation, food security, and sustainability. Both adaptation gap reduction and adoption of low-emission technologies need to happen at an accelerated rate in the Global South with adequate financial flows (IPCC, 2019, 2023).

The Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6)—Working Group II report (IPCC, 2022), the IPCC synthesis report (IPCC, 2023), and Roy et al.(2022) detail numerous, intersecting, and compounding gender and climate vulnerabilities across sectors and social groups. Among women, geographical location, cultural norms, and social stratification by age, class, caste, race, and/or religion intersect and deepen vulnerabilities. Further, the needs and vulnerabilities of those of diverse genders and sexual orientations (e.g., LGBTQ+ communities) in the context of climate action continues to be a research and data gap (Kilpatrick et al., 2023; Roy et al., 2022; Sultana, 2010). In climate change literature, the latter challenge is compounded when approaches continue to use the terms “gender” and “women” interchangeably, collapse terminology of sex (biological difference) and gender (socially constructed roles and identities), and/or perpetuate gendered data gaps by limiting data and interventions to a binary/heteronormative understanding of gender and society (Chatterjee et al., in press). It is thus time for climate change experts and gender experts to come together to strengthen the literature and effective intervention assessment by addressing climate justice and gender equity in an integrated manner.

We conceptualize climate justice and gender justice as the realization of human rights and equity for all—ensuring that we address power relations and imbalances not only between men and women but going beyond the binary, heteronormative/cisgender paradigm to recognize the diversity and plurality of sexual orientation, gender identity, gender expression, and sex characteristics (SOGIESC) in social contexts with due cognizance to historical injustice. This also aligns with moving from a procedural justice paradigm to distributive justice and retributive justice paradigms in a climate justice context (Hayward & Roy, 2019). Further, transformative social change requires attention to how diverse gendered identities and marginalizations intersect with other structural marginalizations (such as race, class, caste, and ableism) to create multifaceted and unique systemic challenges for disparate groups (see also chapter by Alvarez and Norton-Smith in this volume). In this chapter we specifically focus on climate action projects that have attempted to address women’s inclusion and empowerment within the broader domain of gender justice and transformative change in the context of the escalating climate crisis. We limit the scope both for a deeper understanding of this specific domain but also due to practical challenges and the continued paucity of data and interventions focused on diverse SOGIESC groups.

The regions of Southeast Asia, East Asia, and South Asia are experiencing frequent and intensive climate impacts and are identified as highly vulnerable regions due to climate-induced disasters (Future Earth et al., 2024). The adverse impact of these disasters has been extensively documented, especially for marginalized or vulnerable groups, including pregnant women and children (Future Earth et al., 2024). The Asian continent faces temperature increases at a rate that is double the global average, resulting in intensifying natural disasters (UN Women & UNEP, 2023), including typhoons, super cyclones, and tsunamis. In 2022, floods accounted for 74.4% of the disaster events in the Asia-Pacific region, and the region accounted for 88.4% of disaster-related total global deaths (UN Women & UNEP, 2023, p. 2). In the ranking of total fatalities related to extreme weather caused by climate change across the globe, India is first, Bangladesh is seventh, Myanmar is twenty-fourth, Vietnam is twenty-fifth, and Thailand is thirty-sixth (Eckstein et al., 2021, pp. 37, 39, 40–42). In

2024, there were approximately 600 typhoon-related deaths across Thailand, Laos, the Philippines, and Vietnam (Center for Disaster Philanthropy, 2024, para. 4).

Concurrently in climate change literature, researchers continue to underline the persistence of discriminatory gender norms and slow progress toward the realization of gender equity in the region and globally (ASEAN Secretariat, 2021; Future Earth et al., 2024; Goodrich et al., 2022; Han et al., 2022; Prakash et al., 2024; UN Women & IUCN, 2022; UN Women & UNEP, 2023). Patriarchal norms and structural barriers for women's workforce participation, restrictions on mobility, lack of access to land ownership, capital (assets and finance), education, and entrenched gender hierarchies continue to be challenges in the region which have ongoing implications for climate interventions and climate justice (Goodrich et al., 2022; Han et al., 2022; Khan, 2023; UN Women & UNEP, 2023). These gendered disparities and forms of discrimination experienced by women are evidenced in two of the most important climate-change-inducing and impacted sectors: the energy and land sectors. In the energy sector in India, women historically have had less access to clean energy sources, appliances, and technical knowledge than men (Khosla, 2021). Similarly in Vietnam, women, the economically poor, and ethnic groups experience energy inequality and energy poverty (Nguyen et al., 2019; Son & Yoon, 2020). In the agriculture sector in Bangladesh, women are found to be more reliant on homestead agriculture, and they lack land ownership and access to financial and infrastructural resources, as well as access to training, technology, and decision-making roles. All of these exclusions place women at a disadvantage in dealing with the impacts of climate change (UN Women & IUCN, 2022).

Gender inequality is rife in the region. The Organisation for Economic Co-operation and Development (OECD) and Association of Southeast Asian Nations (ASEAN) Secretariat (2021, p. 9) report that, excluding Singapore, an estimated 50% of working-age women in ASEAN countries are living in rural areas with experiences of multiple and intersecting social and economic issues. The Food and Agriculture Organization (FAO) (2023b) reports that half of the countries in Sustainable Development Goals (SDG) Indicator 5.a.2—"Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control women's land rights" are not legally well protected. Even in more developed Taiwan, where women have comparatively higher political and social status, inequality between men and women is evidenced in disaster risk reduction (DRR), such as in the existence of guidelines for gender awareness but which in application were found to be gender neutral and determined by individual leaderships (of mostly male leaders) rather than an institutionalized process (Lee et al., 2022). Other contemporary examples from the region include the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation's (BIMSTEC) Sectoral Objectives on Environment and Climate Change in which gender and social development goals are absent (Goodrich et al., 2022).

A review of climate change and gender-based violence and sexual reproductive health commitments in the nationally determined contributions (NDCs) by the United Nations Population Fund (UNFPA) and Queen Mary University (2023) found that multiple countries in the Asia and Pacific regions recognize or mention elements of gender-based violence and sexual reproductive health. However, while some had detailed solutions, they lacked meaningful implementation in their programs. Almost all the countries of South, Southeast, and East Asia have NDCs that address gender and vulnerable groups. The exceptions are Mongolia with no NDCs for gender and Japan with no NDCs for vulnerable groups. Further, only Cambodia, Laos, Nepal, Sri Lanka, and Vietnam have NDCs that address gender-based violence (UNFPA & Queen Mary University, 2023).

Examples of intersectional vulnerabilities experienced by women are also evidenced in other geographical areas, such as in sub-Saharan Africa. Awiti (2022) found that women across the continent disproportionately experience negative impacts in relation to food security, agriculture, disaster, migration, health, and conflict. Further, climate justice and gender-based responses of the region face difficulties from the shortage of appropriate gender disaggregated data and limited research on the topic overall. Likewise, in the Global North, women experience greater climate impacts, such as in Europe, where women account for 56% of heat-related deaths (Tandon, 2023, p. 1857).

The United Nations (2022) reports that despite some progress and multiple interventions, with the current trajectory, Sustainable Development Goal 5 on gender equality will not be met by the target date of 2030. An examination of the implemented projects specifically on gender and climate intervention reveals mixed results with shortcomings, especially in sectors of coastal and mountain ecosystems, poverty, livelihood, and sustainable development (Roy et al., 2022). Women of the regions are both affected by vulnerabilities but are also simultaneously potential drivers of change. For example, across ASEAN, it is found that women are responsible for household energy management, thus possessing the knowledge and skills that could make them agents of change for green energy development (ASEAN Centre for Energy, 2022).

The need for intervention projects is greater than ever as the threat of climate change escalates and social inequities widen, demanding immediate and effective responses from all levels (Awiti, 2022; IPCC, 2023). Therefore, this warrants discussion on the factors behind shortcomings of gender and climate interventions and the need for course correction (Roy et al., 2022) by including aspects of gender inequity in NDCs is being suggested in newly published reports (Queen Mary University of London, 2024).

Climate action planning is multilayered and driven by multiple actors—that is, they happen at national, subnational, and project levels with diverse priorities and frameworks. Further, it is well accepted in the literature that climate action is not detached from wider social, economic, political, and non-climate environmental goals (Honegger et al., 2021; IPCC, 2023; Prakash et al., 2022; Roy et al., 2018). Here we focus on the energy- and land-based agriculture sectors, as it is anticipated that these two sectors are among those that experience the most rapid transitions. Additionally, we also cover equity issues in the context of DRR programs as disasters are increasingly exacerbated due to climate change, and research demonstrates that developmental outcomes are not gender neutral in the case of planning and response to catastrophes (Queen Mary University of London, 2024).

To critically analyze the interventions and identify the emergent barriers and enablers on transformative change from these selected climate projects, we use the framework of a Continuum of Approaches on Gender and Climate Action (Chatterjee et al., in press) to classify actions across a continuum ranging from exploitative to accommodating to transformative (see Figure 1). The framework recognizes that some climate-specific interventions (and policies) may unintentionally or blindly exacerbate gender-related climate vulnerabilities and inequities and further widen gaps among genders, communities, locations, and nations (exploitative). Interventions can maintain the structural causes of gender-related climate vulnerabilities and inequities, even though they might procedurally acknowledge inequalities and to varying degrees work to be gender inclusive (accommodating). Actions and interventions can be designed to lead to systemic and sustainable change, addressing the root causes of gender-related climate vulnerabilities and inequities (transformative). A transformative approach we envision addresses gender and climate challenges in an integrative and systemic way so that the outcome is *both* greater gender equity and greater climate resilience (Chatterjee et al., in press). This approach is also in line with the 28th United Nations Climate Change Conference (COP 28)—United Arab Emirates (UAE) or the COP28-UAE Framework for Global Climate Resilience.

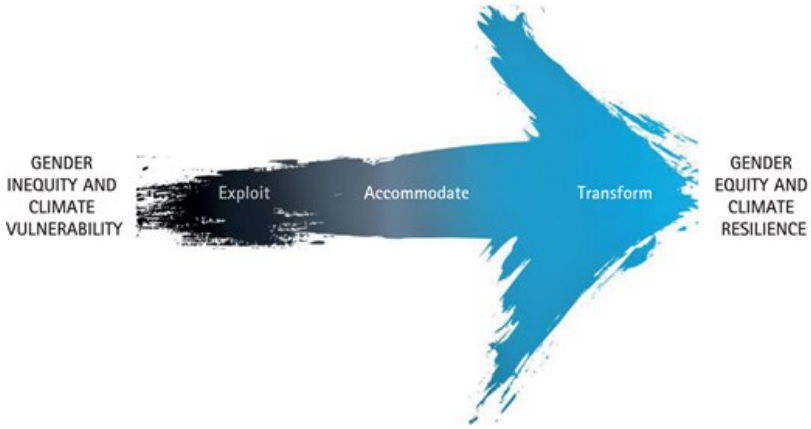

Figure 1. Continuum of approaches on gender and climate action.

Applying this conceptual framework, this chapter analyzes how gender equity has been dealt with in climate intervention projects that have attempted to address women's inclusion and empowerment in South, Southeast, and East Asia since 2021. We identify and draw exemplars from both academic and other secondary sources (e.g., published reports from nongovernmental organizations [NGOs] and quasi-government bodies) focusing on studies/projects across regional, national, and local scales. We also concentrate on specific sectors —namely energy, agriculture, and DRR—where there has been a strong focus on climate adaptive and climate mitigative action and sustainable transition. Our goal is to understand gendered climate justice implications and enablers and barriers toward gender transformative climate goals, especially in these sectors where transitions are occurring at an accelerated pace. This chapter also covers equity issues in DRR programs because catastrophes are happening with greater frequency due to climate change, and developmental outcomes in such situations are not gender neutral (ESCAP, 2023; Goodrich et al., 2022; Han et al., 2022; Khan, 2023; UN Women & IUCN, 2022; UN Women & UNEP, 2023).

Methodology

For this review we conducted a purposive search to identify examples of contemporary climate action projects (since 2021) having a specifically designated gender component across the three chosen sectors of agriculture, energy, and DRR. These identified interventions were geographically in South and Southeast Asia and could have been at the local, national, or regional scale. Both Google Scholar (for journal articles) and Google search engine (for project reports) were used. A supplementary targeted search was conducted across organizational websites of the UN Women and UNEP's EmPower project, the International Centre for Integrated Mountain Development (ICIMOD), FAO, Care Evaluations, and Carbon Brief to ensure that each sector was represented. Examples of keywords used for search include "climate change," "energy," "disaster," "agriculture," "climate change and gender," "women," and "project evaluation." Supporting information was also gathered from academic literature databases like Science Direct through searches with a more expanded time frame to provide national and regional context.

All 39 projects and policies identified matched our sectoral, geographic, and thematic criteria for use in our analysis (see Table 1 for a list of project/policy names). Table 2 provides an overview of the range of projects across sector and scale. For the local scale, we focused on selecting examples which were locally situated and led and implemented by an international development organization or international development programs—that is, UN bodies and projects such as EmPower or regional organizations like ASEAN or ICIMOD. The national scale is represented by domestic projects or policies operating at the federal level, including case studies of

national projects conducted at the local scale. Similarly, the regional-scale projects are those which were multicountry (and some also multisectoral) and designed for regional application.

Table 1 List of Projects/Polices Reviewed

No.	Project/Policy Name	Sectors	Country	References
1	Impacts being and lacking ASEAN agricultural policies overview	Agriculture	ASEAN in general	Han et al., 2022
2	Bangladeshi Agriculture Extension Policy 2021	Agriculture	Bangladesh	UN Women & IUCN, 2022
3	Cambodian energy policies overview	Energy	Cambodia	Han et al., 2022
4	Clean and Improved Cooking program	Energy	Cambodia	(Han et al., 2022; SNV, n.d.
5	Closing the STEM gender gap: Training women in Earth observation and geospatial information technology	DRR	Pakistan, Nepal, Bhutan, Bangladesh	Tripathi et al., 2022
6	Filippino energy policies overview	Energy	Philippines	Han et al., 2022
7	Gender Resource Group	Multisectoral	China, India, and Pakistan	Khan, 2023
8	Indonesian energy policies overview	Energy	Indonesia	Han et al., 2022
9	InfoAct	Agriculture	Vietnam	CARE, 2021b
10	Koshi Gender Portal	Multisectoral	China, Nepal, and India	Khan, 2023
11	National Agricultural Extension Policy, 2020	Agriculture	Bangladesh	UN Women & IUCN, 2022
12	EmPower: Women for Climate Resilient Societies solar-powered goat farming projects	Energy	Bangladesh	Islam, 2023; Zinc & Mills, 2022
13	EmPower: Women for Climate Resilient Societies solar energy project	Energy	Bangladesh	UNEP, 2018, 2020
14	Thailand's Climate Change Action Plan on Agriculture (CCAPA 2023–2027)	Agriculture	Thailand	FAO, 2023a
15	The ASEAN Agreement on Disaster Management and Emergency Response (AADMER) Work Programme (2021–2025)	DRR	ASEAN in general	Han et al., 2022
16	The Cambodia Horticulture Advancing Income and Nutrition (CHAIN)	Agriculture	Cambodia	Han et al., 2022; SNV, n.d.
17	The Ide dan Analitika Indonesia (IDEA) and YAPPIKA-ActionAid's DRR projects in general	DRR	Indonesia	Han et al., 2022; YAPPIKA-ActionAid, 2022
18	The Sindh Emergency Service Rescue 1122	DRR	Pakistan	Khan, 2023
19	The Woman Champion in Disaster Risk Reduction and Climate Change	DRR	Cambodia	ActionAid Cambodia, 2021; Han et al., 2022
20	Vietnamese energy policies overview	Energy	Vietnam	Han et al., 2022; Nguyen et al., 2019

21	WeCaN's Gender-Responsive Pasture Management Practices	Agriculture	Mongolia	FAO, 2024
22	YAPPIKA-ActionAid Tsunami Emergency Response and Recovery Program in Central Sulawesi Indonesia	DRR	Indonesia	Lacasna & Wardani, 2020
23	Islamabad's urban DRR readiness and policies	DRR	Pakistan	Saad, 2021
24	Global Platform for Disaster Risk Reduction 2019	DRR	India, Pakistan, Bangladesh, Philippines, Sri Lanka	Duryog Nivaran & Asian Disaster Preparedness Centre, 2021
25	Overview of DRR policies from India	DRR	India	Chaiya et al., 2022
26	Overview of DRR policies from China	DRR	China	Chaiya et al., 2022
27	Overview of DRR policies from the Philippines	DRR	The Philippines	Chaiya et al., 2022
28	Overview of DRR policies from Thailand	DRR	Thailand	Chaiya et al., 2022
29	SEWA CSR Gujarat Solar Park CSR policies	Energy	India	Stock, 2021
30	Bhadla Solar Park impacts	Energy	India	Stock & Sovacool, 2024
31	Micro-Hydro Power projects of West Java and East Java	Energy	Indonesia	Hermawati et al., 2023
32	Thailand Climate Change (CC), Gender, and Social Inclusion (GSI) into Planning and Budgeting in Thailand	Agriculture, Energy, DRR	Thailand	Suriyasarn & Talerngsri, 2024
33	Climate Change Benefit Analysis in Maha Sarakham province	Agriculture, Energy, DRR	Thailand	Suriyasarn & Talerngsri, 2024
34	The SAARC food bank	Agriculture	SAARC in general	Goodrich et al., 2022
35	The SAARC seed bank	Agriculture	SAARC in general	Goodrich et al., 2022
36	The SAARC Energy Centre (SEC)	Energy	BIMSTEC in general	Goodrich et al., 2022
37	ASEAN RE-Gender Roadmap	Energy	ASEAN in general	Han et al., 2022
38	Market Access Through Digital Innovation in India (MANDI)	Agriculture	India	Johnson, 2021
39	Women's Economic Empowerment and Equality, Land Rights, and Agricultural Engagement in the PepsiCo Potato Supply Chain in West Bengal, India	Agriculture	India	Johnson, 2021

DRR, disaster risk reduction.

Table 2 Overview of Sectoral and Implementation Scale of Selected Projects

Sector Scale	Agriculture	Energy	DRR
Local	5	3	4
National	5[*+]	10[*+]	11[*+]
Regional	5[#$]	4[#$]	5[#$]

* Thailand climate change (CC), gender, and social inclusion (GSI) into planning and budgeting in Thailand.

\+ Climate change benefit analysis in Maha Sarakham province, Thailand.

\# Gender resource group (multisectoral—energy, agriculture, DRR; multi-country—China, India, and Pakistan).

$ Koshi Gender Portal (multisectoral—energy, agriculture, DRR; multi-country—China, Nepal, and India).

After the selection of the climate action projects (Table 1), we extracted and analyzed the gender-related information from the project's policy designs, integration, and, where available, its results. Using the gender equity continuum (see Figure 1) framework, the project elements were classified into the continuum stages to identify the features and elements which either create barriers or are enablers toward gender transformative climate action. Finally, the results of this analysis were synthesized and are presented in the discussion section in Table 3.

Findings

Assessment on degree of gender transformative climate action in implemented climate action projects since 2021 in the region demonstrates that not all climate action projects have features to deliver gender transformative outcomes. The following section first presents empirical exemplars from varied projects drawing from the selected three sectors on barriers and then discusses enablers toward gender transformative climate action. This information is synthesized and the identified factors mapped onto the continuum in Table 3.

Barriers Toward Gender Transformative Change in Climate Action

Despite the recognition in multiple frameworks and policies of the need for gender and social inclusion in climate action, which is a positive step toward transformative change, in general ASEAN member countries face the challenge of gender being siloed to its own sector separate from climate initiatives or having weak coordination and mainstreaming in sectoral climate initiatives (Han et al., 2022). Lack of gender disaggregated data as well as monitoring and evaluation mechanisms on the integration of gender perspective emerge as overarching challenges across sectors and countries.

Even in policies or guidelines where gender is explicitly centered, there continue to be gaps in implementation and realization. The ASEAN Renewable Energy Gender Roadmap to promote gender equity and climate change in the renewable energy sector has four phases—awareness and creating a database for gender in renewable energy; gender integration into policies; frameworks for monitoring and evaluation; and implementation and oversight of policies (ASEAN Centre for Energy, 2022). However, gender awareness was found to be poor and participation of women was low in the sector, despite such guidelines and roadmaps being in place (ASEAN

Centre for Energy, 2022). Possible causes identified for these include lack of training, capacity building, and opportunities for women. More importantly, there is a lack of guidance for gender integration in the policies and an absence of budget allocation for women to be addressed in the sectoral initiatives, highlighting some of the barriers toward structural changes even in the presence of policy or goal toward inclusive change (ASEAN Centre for Energy, 2022).

Traditionally in the energy sector, a male-dominated sector, there is a popular assumption of gender neutrality, and almost all focus is on the economics of productivity. On a national scale, the main issue is the exclusion of marginalized groups or communities. For instance, in Vietnam, the government's renewable energy initiatives are large-scale projects targeted at businesses and traditionally male-dominated sectors, such as construction, industry, and commercial agriculture but lacking support for decentralized renewable energy grids, that is, solar mini-grids (Han et al., 2022). This is problematic because economically poor Vietnamese, including lower class women and ethnic groups, rely on coal and biomass which have negative health and environmental impacts. These groups would benefit from access to micro-grids (Nguyen et al., 2019). Similarly, in Indonesia and the Philippines large-scale renewable energy projects are popular while smaller scale projects, which are of greater benefit to local/marginalized groups, are fewer and their planning has no references to gender, resulting in the inequality in the distribution of resources and budget toward materials and infrastructure but not toward social development and potential empowerment of women and other minority groups. Likewise, Cambodia has multiple ethnic groups, but it is reported that they were absent in the renewable energy decision-making process, leaving their demands and contributions unheard (Han et al., 2022).

Trends of gender and social exclusion were also found in the DRR sector with a lack of attention to the role of women, including reporting on the gendered impact of disasters. For example, in Pakistan, Islamabad's urban DRR readiness and policies were found to miss out on the slum population, and first responders did not have adequate training in disaster response with limited knowledge on early warning systems (Saad, 2021). More significantly, there was a lack of female representation or participation in disaster planning and women lacked attention in situation reports prepared during disaster situations (Saad, 2021).

In the *agriculture sector*, looking at examples of national-level policies, the Bangladeshi national policies such as the Agriculture Extension Policy have raised awareness and recognition of the importance of women's participation in agriculture and climate interventions, with the promotion of women-based agrarian groups and small and medium-sized enterprises (UN Women & IUCN, 2022). However, they also evidenced lack of comprehensive gender analysis and related challenges in understanding gendered impacts of climate change.

Exemplar of Interventions With Barriers Leading to Exploitative Outcomes

Examples of challenges and inequitable outcomes across marginalized groups were found in the Gujarat Solar Park (GSP) in India (Levien, 2018; Stock et al., 2019). Farming lands were taken away from local communities who were dependent on them (Stock & Birkenholtz, 2021), including sites for women to gather firewood (Stock & Birkenholtz, 2020). In their place, low-paying labor and technical jobs were made available, but mostly to men (Stock, 2021). Stock (2021, p. 4) surveyed four villages and only found six women who earned income via the initiative. The corporate social responsibility scheme put in place to redress such identified imbalances, however, reproduced pitfalls from development approaches that focus on women's productivity and ignore existing gender power relations. Only women of middle and upper classes and castes were able to benefit from their scheme, while people of lower social status and those without land missed out on the benefits despite being the numerical majority in the area (Stock, 2021). This phenomenon is found in other Indian solar park projects such as the Bhadla Solar Park, where it was found that the acquisition of land increased women's burden because they needed to travel further to gather firewood (Stock & Sovacool, 2024). In effect, such outcomes therefore reproduce, reinforce, or even intensify existing social inequalities and do not result in *just* green energy transitions.

Enablers Toward Gender Transformative Change in Climate Action

In contrast to the barriers and challenges discussed earlier, promising trends, positive outcomes, and multiple examples of enablers toward transformative change across sectors are also identified. Success emerged where platforms and opportunities were created for multisectoral initiatives, and multiple stakeholders were engaged to share gender and climate insights, including sex disaggregated data, information on vulnerabilities, and success stories used to inform policies and development efforts (Khan, 2023). In general, across sectors interventions by nongovernment and civil society organizations show more successful integration of gender perspectives. Intervention especially at the local level, including support by local governments toward green microfinance, could empower women and support eco-friendly enterprise (Atahau et al., 2021). Examples of gender-sensitive and gender-inclusive intervention designs which showcase transformative changes typically also include strong components of continuous monitoring and evaluation throughout the project cycle, capacity building, and leadership training for women with features such as building of soft skills, networking, knowledge development, providing mentorship from multiple disciplines, and post-training/intervention engagement (Tripathi et al., 2022). Further, initiatives with multisectoral engagement and integration and alignment among regional, national, and local priorities and frameworks helped enhance momentum toward transformative change.

For instance, CARE International's InfoAct project in Vietnam is a multisectoral project aimed to build climate resiliency for economically poor ethnic women through creating a climate information system alongside a village loan program to enhance livelihood opportunities, and this also acts as a safe space and networking platform for the women (CARE, 2021a). The project takes inputs from men and women while coordinating with local communities and authorities. All projects under CARE include gender-sensitive indicators such as tracking the percentage of ethnic women and men who received the disseminated information and are able to apply it, local (tailored) language use in intervention materials, use of appropriate communication channels for the intended audience, reduction in their household expenditures, and so on—these types of indicators extend to monitoring in budgeting processes, collaborations with other NGOs and intergovernmental organization, and in externally conducted evaluation (CARE, 2021b).

Sectoral examples of intervention from the *energy sector* include Indonesia, where under the Micro-Hydro Power of West Java and East Java, multiple local NGOs and cooperatives were able to conduct development

projects, enable access to power from the plants, and provide knowledge and skills, which helped women earn higher incomes and as a result receive greater recognition from their community peers signaling transformative change (Hermawati et al., 2023). Additionally, the powering of streetlights and public infrastructure such as health centers increased perceptions of safety at night and allowed communities to engage in communal activities beyond the hours of daylight. However, the complexity of outcomes when considered from the twin perspectives of gender equity and climate resilience is highlighted with the project also evidencing how such social and infrastructural changes concurrently create shifts in demand toward more consumerist and materialistic lifestyles (Hermawati et al., 2023).

Similarly, in the agricultural sector, examples of projects with enablers toward gender transformative climate outcomes are the projects under the Cambodia Horticulture Advancing Income and Nutrition (CHAIN) initiative. Here, women were among the main beneficiaries and received recognition for their contributions to the project and their households, with enhanced skills and knowledge in climate smart farming technology and techniques, including the use of solar pumps and drip irrigations and increased climate coping capacity (Agrifood Consulting International, 2022). Their successes derived from a consistent monitoring system that (despite critiques of its indicator being too complicated and incomplete at times) covers the entire work process from start to finish, including the engagements with stakeholders. This resulted in early identification of challenges and course corrections as needed. Active collaboration with NGO partners on the ground led to increased learning and networking capacities among the beneficiaries with local agricultural and market networks. A notable strength was the successful alignment with the Cambodian government's goals, particularly in line with the Strategic Plan for Climate Change Adaptation 2019–2023 and Gender Mainstreaming Policy and Strategic Framework in Agriculture (Agrifood Consulting International, 2022). However, the project also noted that not all categories of farmers participated/benefitted equally with semicommercial and commercial farmers being more involved compared to homestead farmers. Gender-inclusive planning and implementation are also evidenced in Mongolia, where the pastoral herders have felt the effect of climate change with extreme weather, and less rain and plants, reducing their productivity. The Environment and Development Association JASIL empowers women pastoralists for leadership by taking account of their perspectives and needs and developing guidelines that aligned with national environment laws for the women to get legal recognition and co-management of their natural resources (FAO, 2024).

Likewise, an example from the *disaster risk reduction* sector which demonstrates enablers toward gender transformative climate action is ActionAid Cambodia's The Woman Champion in Disaster Risk Reduction and Climate Change project on providing resiliency for women by creating women "champions" for DRR leadership. The project started by identifying potential candidates from varied backgrounds, including local women, women community councilors, and committee members through the help of NGOs and local organizations. The women underwent skill trainings in DRR and advocacy resulting in them becoming leaders in DRR for their local communities (ActionAid Cambodia, 2021). The project also provided insight on the challenges in women's participation due to their multiple productive and reproductive burdens, noting that it may take a long time and the necessity of engaging and involving male household members toward enacting normative and transformative societal change (Han et al., 2022). Another transformative example is from Pakistan in the Sindh Emergency Service Rescue intervention, which was a multistakeholder effort with international and local entities involved in enhancing local disaster response efforts and capacity. Here women were trained as first responders and emergency call center operators (Khan, 2023). Their presence, participation, and effort challenged biased gender norms and negative perceptions of women's strength and dedication (Khan, 2023). Participants reported gaining recognition in the family and community and a sense of pride for their service and in representing the organization (Khan, 2023).

Exemplar of Interventions With Enablers Leading to Transformative Outcomes

An example on a national scale of multisectoral, gender, and climate change interventions includes the Thai national effort to integrate gender and social inclusion into climate projects (called the CC-GSI), which comes with extensive guidelines that include definitions of gender and climate change, checklists for identification of issues and resolution, data collection and analysis, stakeholders and related climate impacts, and mechanisms of budgeting, monitoring, and evaluation (Suriyasarn & Talerngsri, 2024). The plan recognizes intersectional gender roles and inequalities in land, forestry, and natural resources usage driven by intersectional marginalizations (Suriyasarn & Talerngsri, 2024). Sectoral departments of the Thai government, such as the Thai Ministry of Agriculture and Cooperatives (MoAC), have also made efforts to integrate gender mainstreaming and social inclusion into their national- and local-level planning (e.g., ensuring the presence of women in climate-smart agriculture projects) (FAO, 2023a). Further, part of the initiative is a climate change benefit analysis in the Maha Sarakham province where a multistakeholder team identified issues at multiple levels from youth to local leaders and state agents; provided training workshops on gender and climate change; and gave postintervention reporting and evaluation to government agencies and community (Suriyasarn & Talerngsri, 2024).

Discussion

Worldwide there are efforts to push gender equity into national policies with a declaration of commitment toward gender, but what follows nationally and subnationally varies or has mixed results (Han et al., 2022; UN Women & IUCN, 2022). Applying the analytical framework of *the Continuum of Approaches on Gender and Climate Action* (Chatterjee et al., in press) across initiatives in our three chosen climate action sectors, we observe that many are limited to the exploitative end of the continuum (being either gender blind or insensitive—including projects with no gender lens which were excluded from this review), some are toward the middle and in the accommodating stage, and some positively moving toward the transformative end of the continuum. Additionally, across the Asian region (and globally) foundational gender disparities remain unresolved with constricting and patriarchal gender norms limiting women's property and land ownership, consumption of renewable energy, participation, and skills related to climate and political activities, among other issues (Duerto-Valero et al., 2021; Han et al., 2022; Tan & Uprasen, 2021; UNDP Bangladesh, 2023).

Table 3 summarizes the enablers and barriers toward gender transformative change in climate action identified through our review before explicating on the synthesis of our findings. Some common challenges we identify which move climate action project interventions toward the gender and climate inequity end of the continuum (either exploitative or moving closer toward accommodating) relate to governance and conscious implementation of policies. Governance is traditionally technocratic and top-down oriented. A consequence of this seen from the energy sector, for example, is that local and marginalized groups may have less voice while powerful stakeholders may take all the benefits (Han et al., 2022). As found in Bangladesh, local government agencies are not able to impact the implementation of climate policies that are designed at higher levels (Mahmud & Roy, 2021, 2023; Stock et al., 2021). This type of lack of vertically integrated governance system and decision making is more likely to support unjust transitions (Johnson et al., 2020). Evidence from Indonesia and Fiji reveals that climate finance goes to large-scale projects with the fewest risks that are highly bankable (Anantharajah & Setyowati, 2022). In some Thai climate and social development plans that were criticized for not delivering their policy goals, problems included having an ambiguous definition for "vulnerable groups," gender disaggregated data were only available on household heads, and no data were available on resiliency

and impact; there was also a lack of participation of national social development agencies and no budget or plans for gender and social equity (Suriyasarn & Talerngsri, 2024).

Table 3 A Summary of Enablers and Barriers Toward Gender Transformative Change in Climate Action: Summary Results of Key Features Identified Through Review of the Projects Reports

Barriers Leading to Exploitative Outcomes	Enablers Leading to Accommodating (Incremental) Outcomes	Enablers Leading to Transformative Outcome
Work in silos: siloed approach to gender and climate change	Addresses gender data gap: Initiation of actions for sex/gender disaggregated data to be collected, information on vulnerabilities and success stories to inform policies and development efforts	Promotion of gender-equitable norms: Engagement of both men and women to enable acceptance of gender equitable norms, new technologies, and better environments
Gender-neutral/invisible approach: Gender neutrality assumed (especially common in male-dominated sectors) or lack of any gender analysis/assessment	Inclusion of women: Designing projects to enable participation of women and building knowledge and skills	Women's leadership: Connecting women with businesses, community leadership, and public centers to enable the acceptance of women leadership and women supportive technologies. Building capacity and creating women role model to be leaders with expertise in their relevant areas
Lack of attention to gender roles: Project designs fail to account for women's multiple burdens—productive and reproductive—which limit their participation capacity and/or further burden them	Consistent gender-sensitive implementation monitoring throughout all phases and coordination with all stakeholders	Community mobilization: Cooperate with local communities, practitioners, nongovernmental organizations, and religious leadership, to promote gender equality and to help finding and legitimizing capable women to be leaders
Gender data gap: Lack of gender disaggregated data as well as data on women's activities and practical and strategic needs such as land and asset ownership	Initiation of processes to identify the minimum categories to be included in database	Multisectoral engagement integrating gender and climate action
Lack of intersectional approach: Women treated as a homogenous group and needs and disproportional impact on women in minority/marginalized communities overlooked compounding social health and environmental impact		

Securing long-term solid financial foundation is important for integrated gender activities to be carried out in a climate intervention. For government agencies, the IPCC (2022) recommends institutionalizing the project into the budget and policy planning cycle. This ensures that there will be a baseline funding dedicated to the projects as seen with The Women Budget from the Philippines (Philippines Commission on Women, n.d.). Additionally, there must be mechanisms to ensure that the budget and resources are spent correctly and not overly spent in one area (Han et al., 2022). Thus, there should be gender and climate sensitive monitoring and evaluation mechanisms that would run from the inception of the project to its conclusion (Goodrich et al., 2022; UN Women & IUCN, 2022).

Multiple reviewed projects have suffered inconsistent staffing in quality and retention, so it is critical to have dedicated staff that are capable of carrying out multidisciplinary projects across their areas of expertise—that is, professionals from gender and climate disciplines who can execute gender-climate projects (Allwood, 2014). In one example from Bangladesh, the government agricultural extension unit was found to be male dominated, which limited social interactions due to cultural gender barriers and missed the demands of women agriculturalists (UN Women & IUCN, 2022).

Likewise, national projects in the ASEAN region have similar patterns: The application of gender and climate change in national projects is sporadic and not systemic (ASEAN Secretariat, 2021; Han et al., 2022). Across sectors many policies are not gender responsive, women lack access to knowledge and skill training in the sectors considered in relation to climate change knowledge, and there is poor staff retention and insufficient budget allocation, among others (ASEAN Secretariat, 2021; Duerto-Valero et al., 2021; Han et al., 2022). Additionally, policies are nonbinding by nature, and as a result, the application of gender and climate change depends on the individual state and can lead to mixed results (Han et al., 2022).

The most common issue encountered by projects and policies is the siloing of gender and climate change or weak linkages. Therefore, there is a need for institutional arrangements enabling and incentivizing interdisciplinary cooperation and intersectoral linkages. For example, the Philippines' Gender and Development budget (GAD), a result of the Republic Act 9710: The Magna Carta of Women, mandates that all government agencies and departments dedicate 5% of their total annual budget toward gender actions and plans (Philippines Commission on Women, n.d., p.1). At the national or regional scale, it is recommended that to avoid siloing of gender, state entities and their stakeholders should work through a nexus approach where a platform like a regional organization helps facilitate multidisciplinary cooperation (Goodrich et al., 2022; Khan, 2023).

Conclusion

In all sectors within the multilevel climate governance architecture (Roy et al., 2019), any local action is embedded in a hierarchical policy structure where local and national policies are intricately related and flow top-down from national policies to local policies. In such scenarios, sometimes national climate policies and interventions are insensitive to local voices, demands, and needs due to various intranational political power structures, social stereotypes, and social stratification that serve vested interest groups. Therefore, it is important to identify a lack of alignment between vertically linked policy frameworks and social and political actors at various levels to identify sensitive entry points for accelerating transformative change in relationships of power and social structures through synergies between gender equity outcomes and climate action goals. To be transformative, project designs need to incorporate the voices of marginalized groups, ensuring equal access, use, and distribution—all of which requires local voices and input (Han et al., 2022; Roy et al., 2019).

At a local scale, international NGOs appear to have multiple successes that engage women and aim to make transformative changes. The driving factors for successes of these local-scale projects include inclusive, bottom-up approaches, and identifying and working with community and women's groups and authorities to facilitate the project—the latter (working with local stakeholders) is critical as women's participation is affected by local gender-specific cultural and social norms and the power structure in the community.

Finally, maladaptation must be avoided such as relying on and reinforcing gender stereotypes that women should be included in development work because of their pure and altruistic nature (rather than focusing on inclusion, social justice, and rights). In such cases, the consequences include increasing the burden of work and responsibilities on women and/or creating unrealistic multitasking expectation from them (Chant & Sweetman, 2012; Davids et al., 2014; Goetz, 2007). Additionally, in the context of increasing burdens of women, there needs to be more mitigation-based intervention instead of merely adaptation-based because the latter

relies on women to be the main labor for changes; this is not inherently beneficial because women typically deal with multiple productive and reproductive burdens to begin with. Lack of an intersectional approach is also an aspect of maladaptation, for instance, where low-carbon energy intervention may negatively impact gender inequities not only between men and women but also among different communities of women (Han et al., 2022; Johnson et al., 2020).

The current chapter strengthens the need for action and policies for upscaling and accelerating gender transformative action programs. We must go beyond SDG5 goals (Roy, Prakash, et al., 2022) and move from a procedural justice paradigm to distributive justice and retributive justice paradigms. These can be the guiding principles for developing indicators for the UAE framework for climate resilience and the UAE—Belém work program on indicators. However, the foremost important step in this direction is the necessity of joint research efforts with equal roles of communities and those with specialization on climate change and gender mainstreaming. COP 28 has provided a strong spotlight on the need to address these concurrently, and this cannot be another missed opportunity. The research outcomes on indicators need also to be taken to the communities and practitioners for piloting and refining so that substantive progress can be made on building relevant indicators on gender and climate action over the next 2 years with a long-term vision for just and equitable (i.e., transformative) change.

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