

## **A GENDER–NATURAL RESOURCES TANGO: WATER, LAND, AND FOREST RESEARCH**

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**G**ender relations shape identities, norms, rules, and responsibilities for women and men, and mediate access to, use, and management of water resources, as well as ownership, tenure, and user rights to land and forests (and related infrastructure, services, technologies innovations and interventions). Natural resource management (NRM) interventions thus have important implications for women’s labor, time, decision-making, and transformational gains.

In the current context of fluid economic and political changes, together with changes to climate, the gendered dynamics of natural resource use, allocation, and management are also evolving. There are rapid shifts in livelihoods, mobility, and migration for women and men, as well as differing vulnerabilities and capacities for resilience in climate change processes and emergencies. Gender in its intersections with class, race, religion, ethnicity, age, disability, and other dimensions of difference determines who gains and who loses “in the rapid restructuring of economies, ecologies, cultures and politics from global to local levels” (Rocheleau et al. 1996, 3). These intersecting inequalities point to the complex and dynamic character of spaces of assumed common interest, such as “the community” and “households,” as well as to the plurality in interests, needs, vulnerabilities, and agency of diverse groups of women and men (Elmhirst 2015).

The upcoming decade of 2021–2030 is dedicated globally to restoring the ecosystem: “to scale up the restoration of degraded and destroyed ecosystems as a means to fight the climate crisis and enhance food security, water supply and biodiversity.”<sup>1</sup> The Sustainable Development Goals (SDGs) indicate a broad policy consensus among development actors that the ecological resilience of the planet is not disassociated from people’s well-being.

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1 <https://www.decadeonrestoration.org/>

This narrative is mirrored in several other international agreements and conventions, for example the United Nations Declaration on the Rights of Indigenous Peoples, the International Labour Organization Convention Concerning Indigenous and Tribal Peoples in Independent Countries and more recently the Voluntary Guidelines on the Governance of Tenure of Lands, Fisheries, and Forests.

These declarations and guidelines all draw some attention to equality and inclusion—and call on nation states to ensure more equal access to natural resources. Since the first United Nations Summit dedicated to the environment (1972), which marked a turning point in the development of international environmental policies,<sup>2</sup> there has also been progress in articulating the links between gender and who engages, benefits, or is excluded from processes of natural resource governance and management. While this is a hard-won gain, we discuss below the enormity of tasks that still remain in ensuring inclusive natural resource governance.

This chapter tackles the question: *How has NRM research for development (R4D) contributed to gender equality?* In addressing this, the converse question inevitably surfaces: What impacts has gender theory and discourse had on natural resource management? However, the former is the main focus—drawing on an extensive review of natural resource-related research.

The first section looks at how and why gender came to matter in the management and governance of natural resources. It offers an analytical positioning for the chapter and explores the confluence of several bodies of work that have informed the gendered dynamics of natural resources, from political ecology analyses of nature–society intersections, to the political economy of environmental agendas and mandates, to feminist analyses of environmental change processes. Together, these insights help explain the connection between the two questions posed above.

The following three sections each provide an in-depth analysis of how innovative thinking and action on natural resources—forests, water, and land, in particular—was crucial vis-à-vis impact on gender equality. These three natural resources have shared as well as distinct characterizing features. Forests are geographically and also administratively contained, and land is a fixed asset, with easy-to-define dimensions of ownership. Water, on the other hand, is fluid and dynamic because it is inherently mobile and transitory (Meinzen-Dick et al. 1997, 1307). Analyzing the gendered nature of the

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2 See [https://www.un.org/ga/search/view\\_doc.asp?symbol=A/CONF.48/14/REV.1](https://www.un.org/ga/search/view_doc.asp?symbol=A/CONF.48/14/REV.1)

management, governance, and rights to these natural resources makes for an interesting comparative analysis.

Approaches to NRM and governance and recognition of agriculture–environment intersections have grown in promising directions, providing opportunities to address gender equality and inclusion. However, we need to critically reflect: Are we doing enough? Are complex and intersectional gendered inequalities in rapidly changing social, political, economic, and ecological contexts understood and addressed? This is a pressing concern, especially given the peripheral mention of gender in the upcoming Decade on Ecosystem Restoration, which aims to “prevent, halt and reverse the degradation of ecosystems worldwide” (Elias et al. forthcoming). Gender and the environment (or natural resources) still tend to be treated as distinct and parallel agendas across R4D institutions, with simplistic understandings of “nature” as an “economic resource” and “gender” as being mostly “about women.” This explains why gender power imbalances persist in the economics and politics of NRM.

In the conclusion of this chapter, we critique progress on gender equality in relation to natural resources, and highlight challenges for transformative change, as well as the potential for forward-looking research agendas.

## **How gender came to matter in the management and governance of natural resources**

Overlapping processes laid the foundation for unpacking gender dimensions of natural resources, bringing attention to “gender and other forms of social difference as relational, dynamic” and making links “between environment, human and nonhuman others across scales and spaces” (Clement et al. 2019a, 5). Breakthroughs included seminal research on plural (von Benda-Beckmann 1979, von Benda-Beckmann et al. 1997, 1998), customary usufructuary rights (Fortmann and Bruce 1988, Fortmann 1990) to land, water, and other natural resources; and polycentric governance, collective action, and management of the “commons” (Ostrom 1990–2007). These trajectories are discussed at length elsewhere. Here, we discuss the cross-fertilization of these ideas with the CGIAR System-wide Program on Collective Action and Property Rights (CAPRI) (see Meinzen-Dick 2017, Meinzen-Dick et al. 1997).

Another strategic milestone was the critical review of irrigation design, infrastructure, management, and outcomes in South Asia. This body of work helped shape water policy discourse from “management” to “governance” of water, consequently demonstrating the gendered nature of access to, use of, and decision-making in irrigation systems and services (van Koppen and

Mahmud 1995, Zwarteveen 1997, Meinzen-Dick and Zwarteveen 1998). Similar socio-political interventions helped change the focus from forests as commercial timber harvesting sites, to forests as environmental resources to be conserved as collectively owned and used natural resources (Agrawal and Ostrom 2001, Otsuka and Place 2001, Colfer and Capistrano 2005, Larson et al. 2010). Attention to the voice and agency of marginalized communities and rural women in forest management significantly highlighted the gendered dynamics of forest access and use (Jackson 1995, Leach et al. 1999, Leach 2007, Mwangi and Dohrn 2008, Mwangi et al. 2009, Mwangi et al. 2011, Colfer 2011).

Work is emerging around intersectional inequalities in the case of forests and of water (Locke et al. 2017, Clement and Karki 2018, Colfer et al. 2018, van Koppen 2018, Clement et al. 2019a, Elias et al. forthcoming). This research, influenced by political ecology scholarship, highlights environmental politics: how environmental changes and challenges are not mere by-products of biophysical changes to the ecosystem but rather outcomes of economic, political, and social interests and mandates (Haraway 1991). The distinctions between the terms “environment,” “nature,” and “natural resources,” and how we use them, have long been recognized as neither casual nor without implications (Harvey 1993). In other words, in the framing of NRM, “values entered [and significantly impacted] processes of scientific reasoning” (Lapniewska 2016, 143).

After the 1992 United Nations Earth Summit, natural resources were defined as “natural assets” (raw materials) that can be subject to economic production or consumption.<sup>3</sup> The intent to *manage* nature (land, water, forests) as a *resource* with ascribed economic values and implications is an outcome of deep-rooted economic and political agendas (Harvey 1993). This narrative, an outcome of a “partial perspective,” is precisely what Haraway (1988) said needed to be critically reviewed as the “Science Question in Feminism.” Policies, strategies and interventions to manage water (as well as land and forests) have historically been guided primarily by managerial and economic perspectives (see Mosse 1997, 2002, 2008). It is only relatively recently that nature–society interrelations—that is to say, how ecosystem functioning is an outcome of multiple uses, knowledge/s, and social relations between diverse groups of people—have questioned natural resource mandates, innovations, investments, and technologies.

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3 See <https://stats.oecd.org/glossary/detail.asp?ID=1740>

A focus on gender equality and inclusion helps connect environment and natural resources, as well as agriculture and food security agendas. CGIAR—the largest agricultural innovation network globally and framed as “food commodity-centric”—started more than two decades ago to unpack agriculture–environment intersections and reverse environmental degradation. This shift to addressing the agriculture–environment interface was critical in understanding how addressing poverty and vulnerability required looking beyond agriculture to understand diverse rural livelihoods that rely on a wider subset of natural resources.

Recent reforms in CGIAR have been shaped by growing critiques of a narrow focus on *developing* land and water resources to *intensify* production of certain commodity crops (Rockström et al. 2017). The links between poverty, hunger, and intensification have long been questioned outside CGIAR but not necessarily with a focus on gender (Sen 1980, Chappell 2018). It is in this context that we draw attention to CGIAR research analyzing women’s empowerment through sectoral lenses: agriculture and women’s empowerment (IFPRI 2012), women and irrigation management (IWMI 2017), or women–forest relations (CIFOR 2016).

In sum, diverse bodies of work across multiple disciplines and diverse trajectories enabled a shift in focus within CGIAR agriculture–natural resources. These change processes brought women’s agency and empowerment—more than simply engagement and participation—into the frame. In analyzing these trajectories, we point to how innovations geared toward improving the functionality of natural resource interventions have contributed to broader goals of gender equality and inclusivity—despite this not always being deliberate. These trajectories have been influenced by feminist analyses of masculinities, patriarchy, and exclusions in natural resource policies and interventions.

This chapter does not aim to delve into the scope and breadth of these feminist analyses of NRM and governance processes; however, to very broadly set the context here, ecofeminists put “women” on the NRM agenda and pointed out that women’s inherent wisdom and commitment to nature had been overlooked in the patriarchal and neoliberal design of natural resource appropriation and accumulation. Engineered by male-dominated institutions and mandates, such an approach to natural resources was identified as detrimental to the well-being of both women and nature (Mies and Shiva 1993). Feminist political ecologists have critiqued the singular focus on women—pointing out that gender was but one construct of difference, divide, and inequality in the politics and economics of natural resource access, use, and governance (Agarwal 1995, Rocheleau et al. 1996, Jackson 1993), and that tying nature to women

was often detrimental to them (Leach 2007). Feminist researchers argued that the focus should be on reversing structural inequalities and not just on “fixing women” (Mies 1986, Jackson 1993, Kabeer 1999, Leach 2007).

Recent echoes of this argument by mainstream institutions (WEF 2020) are promising but we should not overlook the differences between academic, activist, and R4D scholarship on the topic of natural resources and gender. In other words, the synergies have not always been deliberate and this is precisely why a depoliticization of gender–power dimensions of commons management persists (Clement et al. 2019a). The point we make here, is that, without the essential cross-fertilization of thinking between natural resource interventions and feminist analyses, there would have been little progress on gender and natural resources. Gender researchers within the CGIAR system have represented a conduit, facilitating these critical intersections. However, much remains to be done.

### **From management to governance**

The first shift in natural resource thinking we highlighted above concerns Ostrom’s work on environmental governance. Post-World War II, structural adjustment interventions promoted nationalization and a corresponding state accumulation of natural resources across the global South (Bromley and Cernea 1989). In this context, Ostrom powerfully argued that water bodies, forests, and pastoral grounds were essentially common pool resources and thereby best governed and managed by plural institutional arrangements of and by local communities (Ostrom et al. 1994). Unsurprisingly, these ideas met considerable resistance, as collective property and actions or collectives themselves were perceived as obstacles to efficient development of natural resources (de Soto 1986, 2001).

Ostrom’s work, which demonstrated how the flow and benefits derived through plural politico-legal arrangements and collective action improved efficient and equitable management of, access to, use of, and control over these resources was useful in influencing NRM policy and practice. The importance of plural rights and norms, asset endowments, and politico-legal arrangements of natural resource governance made a strong business case for going beyond technocratic approaches to natural resources.<sup>4</sup> This entailed

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<sup>4</sup> While there was feminist critique of technocratic and narrowly econometric NRM interventions, Ostrom’s work focused more on alternatives: the “why and how to” of plural decision-making and control of natural resources, so as to enable commons, communing, and collectives for NRM (see Clement et al. 2019a). For a review of environmental governance, see Lemos and Agrawal (2006); for a review of water governance see Roth et al. (2015); for a review of forest governance see Arts (2014).

a pivotal discursive from state management to more shared governance of natural resources (McCulloch et al. 1998, Lemos and Agrawal 2006).

Ostrom's Institutional Analysis and Development Framework provided strategic entry points for CGIAR researchers, working under the broader umbrella of CAPRI, to examine the gendered dynamics of natural resources, including collective institutional arrangements of NRM (Knox and Meinzen-Dick 2001, Meinzen-Dick et al. 2011, 2014, Doss and Meinzen-Dick 2015). Ostrom's work had far-reaching outcomes—as water, forests and large areas of land in the global South were (and are still) managed under plural management and politico-legal arrangements (Zwarteveen and Meinzen-Dick 2001, Mwangi et al. 2011, Wily 2011). Most prominent of these was the setting-up of community-based natural resource user groups and associations, which expanded the scope to consider gender in decision-making spaces (Lemos and Agrawal 2006).

Through the various overlaps discussed above, gender is today an important variable in the structure and functions of NRM collectives; and “good governance” of natural resources has come to be associated with principles of inclusion, participation, transparency, and accountability—as opposed to the earlier focus on effectiveness and efficiency. These shifts in inclusive natural resource governance have also been widely acknowledged as essential to achieving co-determining social, economic, and environmental outcomes (UNDP 1997, FAO 2012, Davis et al. 2013, Arts 2014).

However, while Ostrom's work transformed the dynamics of natural resources from technocratic management interventions to more “polycentric governance, collective action and commons management... creating legitimate space and authority for grassroots structures to self-govern the commons” it blurred the heterogeneity and inequality that characterize “commons,” “collectives,” and “communities” (Clement et al. 2019a, 2). This, too, is changing slowly but surely as we write, with increasing attention to rights, recognition, power relationships, and norms that shape gender inequalities (Badstue et al. 2018). The focus on gender within CGIAR itself today concerns not only who does what in terms of roles and responsibilities at the household and community levels but equally how gender dynamics are at play in natural resource institutional arrangements and policy directives, as well as natural resource investments and innovations (CGIAR GENDER Platform 2020). The latter especially are key strategic gains.

### **From governance to the plurality of rights**

The second discursive shift we discussed above related to how rights to natural resources are defined by institutional arrangements—who are rights-holders, the scope of rights, and the types of responsibilities and benefits one may obtain from resources (Agrawal and Ostrom 2001, Schlager and Ostrom 1992). Rights to land, forest, and water resources are plural and diverse—and determined by informal more than the formal rules and norms that authorize the exercise of these rights (Schlager and Ostrom 1992, Meinzen-Dick et al. 1997). Rules are institutional arrangements that sustain claims and legitimize rights at different levels. For instance, the nation-state can establish formal rules through legal regulations on land, water, and forests while communities or resource user associations may have local rules concerning who gets to use which resources, and how (Zwarteveen and Meinzen-Dick 2001, Meinzen-Dick and Mwangi 2009). These rules, however, may or may not be recognized by statutory or customary law, and different sets of regulations often overlap, and can even be contradictory. In other words, what is the rule is not always the outcome, in practice.

A groundbreaking body of work showed how plural and often co-existing politico-legal frameworks and arrangements shape social differentiation; it opened new windows to analyzing gendered disparities in relation to natural resources (von Benda Beckman and von Benda Beckman 2009; von Benda Beckman et al. 2006). Research along these lines showed how nature–society relations are continuously subject to negotiation and contestation, often marginalizing certain groups of resource users in diverse local contexts (Perreault 2014, Roth et al. 2015). Power struggles, conflicts over resources, and exclusions from access to and use of natural resources are essentially about the recognition of rights—and issues related to agency or voice often have an impact on this.

Legal pluralism, which explains the relevance of why and how of the co-existence of multiple legal arrangements in legitimizing claims over resources, proved crucial to understanding the social dynamics of NRM (Meinzen-Dick and Pradhan, 2002). CAPRi work on natural resource research showed how women’s rights or their exclusions from rights to resources are entangled with their ability to participate in, and their agency to inform, natural resource decision-making (see Were et al. 2008). This work continues to analyze, inform, and monitor inclusivity in natural resource interventions with particular attention to women’s individual and collective agency.



### **Do rights to natural resources contribute to gender equality and women's empowerment?**

There is a great deal of discussion and differing opinions on whether and to what extent clear, secure rights to natural resources are key in addressing poverty and food insecurity (Agrawal 1994, Larson et al. 2010, Sunderland et al. 2014, Meinzen-Dick 2017, Bose et al. 2017). On the one hand, nuanced studies on natural resource governance and institutional arrangements show that understanding people's choices, their ability to benefit and decide on how to use these, and the outcomes derived from these resources is as key to understanding and achieving women's empowerment as is securing formal rights (Kabeer 1999). This argument is supported by analyses that show that rights to natural resources are not dependent only on formal recognition but also embedded in social relations that legitimate claims over resources (von Benda-Beckman and von Benda-Beckman 2000). Our intent here is not to further analyze these arguments but to simply state that the focus on natural resource governance, institutional arrangements for NRM, and rights to natural resources have all been central to analyzing the socio-political dynamics of natural resources, and thereby to drawing attention to gendered inequalities, as well as intersectional vulnerabilities—nested in kinship, community, and other social relationships (Li 1998, Kabeer 2005, 2017).

The issues discussed above, coupled with feminist analyses of natural resource policies, institutions, and outcomes, significantly influence the current transformative agenda of “fixing the system” and not just attempting to “add in women, and stir.” This shifts the focus from “only” monitoring the extent to which women benefit from natural resource access, to critically analyzing issues of power, politics, and difference, including participation and representation in natural resource governance institutions, policies, and narratives at scale. This was precisely the feminist agenda for change in development policy and practice (Mies 1986).

The focus on natural resource governance, institutions, and rights has thus been a game-changer not just for women but equally for diverse marginalized groups. In the next sections, we discuss in more detail how these conceptual shifts took root in forest, land, and water policies, strategies, and interventions. In doing so, we discuss how institutional arrangements unfolded at different levels, from policy decisions to institutional arrangements of planning, implementation, and practice at the community and household levels—and how all of these were in turn informed, as well as reiterated, by gendered norms, behaviors, opportunities, challenges, choices, and redefining values.

## Forest governance and the recognition of rights: contributions to gender equality

The diverse value of services and goods that forest ecosystems provide to both humans and non-humans, as well as the relational value of these ecosystems to local communities, were largely invisible in early programs on forest management (Scott 1998). Management approaches that focused on the economic returns from timber commercialization were promoted by colonial administrations, and even facilitated by scientific forestry institutions. Additionally, agricultural intensification facilitated by the mechanization and modernization of agriculture resulted in increasing deforestation (Angelsen and Kaimowitz 1999). These approaches led to rapid and widespread loss and degradation of forests<sup>5</sup> in the global South.

In the late 1990s, there was an overwhelming call for alternative solutions, driven by two key arguments. First was the need for a sustainable forest management paradigm that emphasized not commercialization but rather conservation of forest resources (Sayer and Palmer 1994, Noble and Dirzo 1997). Second, there was a strong call to involve local people in collaborative governance of forests—enabling different perspectives, plural rights, and shared roles and responsibilities of diverse stakeholders to define forest management (Colfer et al. 2005, Sunderlin et al. 2005, Porter-Bolland et al. 2011, Arts 2014, Seymour et al. 2014). Today, the vast majority of the world's forests are under state *custodian* ownership, with overlapping customary user rights and tenure regimes. This has been a significant change, even though it needs to be acknowledged that these two legal systems are far from harmonized in most cases (Meinzen-Dick et al. 1997, Agrawal et al. 2014).

In the case of forest governance, much more so than for land and water, grassroots initiatives that led to community collectives were significantly impacted by feminist movements. The women-led Kenyan Green Belt movement in sub-Saharan Africa saw the award of a Nobel Peace prize for its proponent, Wangari Maathai. Similarly, in India, the famous Chipko (“to get stuck to”) movement, where local communities protested and prevented state-led commercial logging by *hugging* trees, is said to have been essentially led by women—that is, the ecofeminist discourse of women nurturing nature<sup>6</sup>

5 We use the term “forests” following the definition provided by Sunderlin (2005, 1386) including “all kinds of forests, ranging from relatively untouched “natural” ones to those with high levels of intervention and management. ‘Natural’ forests are the focus of most conservation concern, though highly managed forests can also be an important source of biodiversity.

6 There are contested opinions around this claim of predominantly female leadership in this movement (Guha 2000).

(Shiva 1988). However, as we discussed above, there are feminist critiques of this narrative.

The consideration of gender in forest management was significantly influenced by shifts toward collaborative governance of forests, which called for the recognition of the plural rights of forest-dependent communities, including indigenous and customary groups (Agrawal and Ostrom 2000, Larson et al. 2010, Agrawal 2014). As discussions around forest governance policy and practice began to translate to interventions that favored decentralization of authority over large forest areas—and shifting responsibilities from central to local governments—several questions needed answering. Who should manage forest lands and resources? Who should be involved in which activities? Who should have the right to govern forests and who should set the rules for governance (Ribot and Larson 2005, Ribot et al. 2006, García-Ferández et al. 2008)?

An analysis of 290 forest user communities in Kenya, Uganda, Bolivia and Mexico highlighted the importance of involving forest-dependent, often marginalized, communities in technical and policy discussions, and called for interventions based on the participation of resource users (Colfer 2011). Several other analyses showed that enabling spaces created for local communities—initiatives that built the skills of both men and women in adopting new technologies, monitoring practices, managing conflict, and enhancing cooperation—were more likely to contribute to sustainable practices and more effective management of forests (Mai et al. 2011, Mwangi et al. 2011, Sun et al. 2011, Seymour et al. 2014, Notess et al. 2018).

The importance of clear tenure rights to forests is increasingly an important precondition in the implementation of currently popular interventions related to Payment for Environmental Services (van Noordwijk and Leimona 2010, Blundo-Canto et al. 2018) and Reducing Emissions from Deforestation and Forest Degradation, or REDD+ (see Duchelle et al. 2017, Sunderlin et al. 2014, 2018). Recent analyses of these interventions both within and outside CGIAR highlight the need to critically review potential impacts of such interventions on diversely unequal local communities, including negative implications for local people's livelihoods and strategies, institutions, and socio-cultural systems (Elias et al. forthcoming). These analyses draw attention to gender power issues in relation to unequal benefit-sharing, food insecurity, introduction of new powerful stakeholders, illegal land acquisition, unfair free prior and informed consent, and the introduction of monoculture plantations (Bayrak and Marafa 2016).

In local communities, gender, social status, and membership are significant determinants of who can benefit from acquired forest rights and influence perception around rules, tenure security, and livelihood outcomes (Colfer 2011, Larson et al. 2019a). Having a voice in the management of forest or other common pool resources increases women's recognition in their community (Colfer et al. 2015), although the converse may also be the case—that is, women with more recognition in the community are more likely to have a voice in the management of common pool resources (Meinzen-Dick et al. 2019; Balasubramanya et al. 2019). Additionally, securing tenure rights of forest resources for women can provide security in cases of loss of rights to privately owned assets (land) through death of or separation from their spouse (Quisumbing and Otsuka 2001a, Doss and Meinzen-Dick 2018); enhance their engagement in public processes of negotiation and thereby their self-determination (Larson 2010, Larson et al. 2015); and improve their agency in collective rule-making processes.

Attention to how reforms are being implemented provides not only the opportunity to address inequalities in resource access and participation in decision-making but also insights on gender equality in general. For instance, in Burkina Faso, forest regulations that prevent grazing in forests and customary rules and regulations around land have resulted in serious constraints for women, minorities, and migrant groups (Coulibaly-Lingani et al. 2009). Alternatively, there are many examples of how formalizing community rights to forests has allowed women to be recognized in communal by-laws, usually by establishing mechanisms for their participation in collective decisions around forest resources (Larson et al. 2019b).

For instance, Uganda's Forest Policy (2001) is explicit about increasing tenure security for women, encouraging their active participation in decision-making, resource management, and benefit-sharing. It also goes a step further in initiatives to promote changes in attitudes and organizational cultures in order to break down gender barriers (Banana et al. 2012). Similarly, in Peru, the National Forest Law and the Law of Subnational Governments adopts equity and social inclusion as important principles—although the guidelines to monitor these changes are missing (Larson et al. 2019b).

Social forestry initiatives have thus provided an opportunity to review how collective action in forest management has paved the way to open the institutional spaces for women to engage in forest decision-making processes (Agrawal and Ostrom 2001, Colfer and Capistrano 2005, Colfer et al. 2005, Ribot and Larson 2005, Coleman and Mwangi 2013). The combined outcomes of ecofeminist discourses and grassroots-led forest management

interventions have resulted in better understanding and addressing intersecting inequalities.

In sum, rethinking forests as communal, shared spaces has been instrumental in reshaping gender equitable rights to forests, and, in some cases, broader gender equality gains for women. Rights have proved important preconditions for effective management and inclusive governance—that is, collective action and institutional arrangements, processes of rule-making, provision and allocation of resources, monitoring, enforcement of compliance, and decision-making arrangements at scale.

Yet caution is needed in integrating gender into these studies and interventions. Gender stereotyping—that men are the public face for decisions relating to forests management—is pervasive and entrenched among official, non-governmental, and private actors (Nightingale 2011, Elmhirst et al. 2017). This is also evident in the way extension services prioritize men and address limitations. It calls for reviewing the way training, capacity-building, and extension services are being organized to ensure different needs are being addressed at the local level (Nightingale 2006). Similarly, there has long been feminist critique of positioning women as formidable environmental stewards (Jackson 1995, Leach 2007) and a call for more nuanced analyses of women's relations with forests (Gururani 2002).

## **From water management to water governance: the outcomes for gender equality and women's empowerment**

In 2000, the Global Water Partnership referred to the world water crisis as an issue of governance. This did not imply that the availability of accessible water was not an issue or that the technical and financial aspects of service delivery were unimportant. Rather, it emphasized that, the distribution and allocation of water and related services reflected distribution and allocation of power in society. Therefore, addressing water problems required paying attention to issues of power, politics, and inequality (UNDP and SIWI 2005, 3). This shift in focus from water *development or management* to water *governance* significantly paved the way for looking at issues of gender inequality and empowerment in relation to water.

Here, we discuss how CGIAR research informed the shift to water governance from the planning and implementing of water development interventions informed (only) by economic or engineering perspectives. Looking more critically at the complexity of water–society interrelations at scale, in

other words, “Who gets what water, when and how, and who has (what kinds of) rights to water and related services, and their benefits” (UNDP and SIWI 2005, 3) has contributed to furthering gender inequality. We also look at how scholarship on legal pluralism has helped raise attention to gender inequalities.

### **Water’s legal pluralism**

Research on the legal pluralism of water surfaced the incoherence between *what is said*—that is, outlined in policies, formal laws, and institutional approaches vis-à-vis *what actually happens in practice*—how diverse local communities accessed, managed, and governed water through pluralistically informal ways. This scholarship helped address the ambiguity on the rights to water in state-led irrigation interventions, and challenged the narrative that managing irrigation systems effectively and ensuring agricultural productivity required intervention by engineers to “modernize” water development—its capture, transport, allocation, and delivery to farmers (Roth et al. 2015). The framework for interdisciplinary, legal anthropological approaches made the “legal pluralism” around everyday water access, use, and management visible. In time, it became very evident that a co-existence and interaction between multiple legal orders such as state, customary, religious, project, and local laws were what determined and influenced claims to water rights and the use of water locally (Meinzen-Dick and Pradhan 2002).

In parallel, research at the International Water Management Institute (IWMI) demonstrated different dimensions of the gendered dynamics of water’s legal plurality. Research in Bangladesh showed how groups of poor, landless women managed water boreholes to sell water to other water users (van Koppen and Mahmud 1995). While the source of water might determine its accessibility, ownership does not disable water use or its asset value. Those driven by sheer need and poverty, like poor landless women in Bangladesh, had found ways to access and use common pool water resources. Similarly, research in Nepal pointed out that the exclusion of women from irrigation water user associations was not necessarily negative for the women (Zwarteveen and Neupane 1995). The excluded women actually informally accessed (as “free-riders”) the irrigation water, which they used for multiple purposes, without having to abide by the financial obligations of association membership (*ibid*).

In sum, water’s fluidity and legal plurality make negotiations on access, use and control dynamic, as well as spatially and temporally contextual (Bruns and Meinzen-Dick 2000). The growing recognition that water access and use is somewhat disassociated from ascribed formal rights not only helped reshape

water management and governance in development policy and practice but also set the stage to focus on gender. More recent research on the plurality of interconnected land and water rights in sub-Saharan Africa has helped define approaches that reconcile customary law and formal water regulations in new tools for equitable water allocation (van Koppen et al. 2017; van Koppen and Schreiner, 2019). This work proposes combining customary rights with formal permits to prioritize water access and use in South Africa and Zimbabwe to ensure water to vulnerable groups.

### **Engendering water governance**

Even if inherently fluid, water has also been managed and governed historically and traditionally through centralized approaches (Joshi 2015). Colonial governments appropriated traditional and autonomous governance structures for water resources, for centralized management and control to meet economic agendas across the global South (Agarwal and Narain 1997, Shiva 1988, van Koppen and Schreiner 2018). These changes—especially evident in relation to water for irrigation and urban, industrial use—have persisted post-colonization, and are exacerbated by neocolonial liberal agendas of growth and development involving powerful outside actors and forces (Verzija et al. 2017). Water policy reforms in the 1980s transferred management from government agencies to community-based governance initiatives, and widely promoted the creation of water users’ associations as alternatives to centralized management.

Research led by IWMI in the 1990s assessed the viability and functionality of these shifts, and showed how these interventions were shaped by policies that did not “explicitly consider the possibility that women are water users.” They also proved to be based on assumptions that “all users are equally able to pay for water” and consequently, “impact studies” did not assess the links between inclusivity and functionality (Zwarteveen 1998, 301). Such assumptions were challenged by the earlier mentioned studies paying attention to women’s irrigation work, and the exclusion of women from irrigation management led to women becoming ‘free-riders’—practical realities which, among other things, affected irrigation management performance (Zwarteveen and Neupane 1995). Further research pointed out that, while women might informally access and use (irrigation) water, their lack of formal rights and the mediation of their access to water through relationships with male rights-holders—husbands, fathers, or other male relatives—could reinforce structural gendered inequalities (van Koppen 1990). More importantly, initiatives to involve women in water management did not address complex intersectional inequalities (Joshi 2011).

Research conducted by IWMI in Sri Lanka in the 1990s also showed the mismatch between interlinked domestic/productive water needs of rural communities and sectorally planned and designed water services (Bakker et al. 1999). Because women's roles and responsibilities vis-à-vis water span domestic and productive sectors, the mismatch has implications especially for women's health, nutrition, and gendered social relations (van Koppen and Hussain 2007, van Koppen and Smits 2010, van Koppen et al. 2017, Mitra and Rao 2019). The alternative, Multiple Use Water Services (MUS), is now an established policy intervention and strategy for water resource planning in several countries and inspires further innovations. For example, in remote, rural Nepal, MUS-informed micro-hydropower projects meet electricity, irrigation, and domestic water supply needs of local communities, targeting lower-caste Dalit households and poor, marginalized women (Shah 2016).

CGIAR researchers have analyzed how policy shifts and financial investments in irrigation system rehabilitation and decentralization in Africa, Asia, and Latin America to find that, "Rights to irrigation land and water were rarely vested in poor men, and even less in poor women" (van Koppen 1998, 361). This work on irrigation and gender is continuing in interesting ways in evolving socio-political and socioeconomic landscapes (Balasubramanya 2019).

Unresolved water-gender-poverty links have impacts on health, nutrition, and food security for women and marginalized communities and households (Hussain and Giordano 2003). For the poor, including women, to be counted in and gain from these interventions, it was necessary to include poverty and gendered barriers to land and water rights early on (van Koppen 1998, 361). However, this was easier said than done. "Entrenched masculinities" in the water sector are a key reason for persistent gender water inequalities, and lack of attention to these issues in water planning, implementation, innovations, and investments. That water management organizations in most countries are almost entirely staffed by men is an outcome of deep-rooted social inequalities, and is the reason water infrastructure and technology are not geared to address gendered patterns of water roles, rights, and responsibilities (Zwarteveen 1994, 2008). Gender equality outcomes are not achieved merely by focusing on women, without addressing how increasing their participation in water management, implementation practices, institutional arrangements, and policy- and decision-making is nested in cultures of masculinity (Shrestha et al. 2019).

CGIAR-led research that critically engaged with the dynamics of water access, use, and control, especially in relation to irrigation, has had strategic implications for gender equality. The focus on multiple-use water resources



has not only exposed the limitations of sectoral water interventions but also, and more importantly, the fact that these limitations have by far the greatest impacts on the poorest and most marginalized of women. On another note, the focus on institutional arrangements beyond the community—looking into masculine structures and cultures of organizations implementing irrigation projects—has led to an emerging body of work on masculinities in relation to water. Going forward, water is key to achieving the SDGs of sustainable agriculture intensification and ecosystem restoration. The work described in this section challenges interventions to seriously reconsider narrow, sectoral technocratic framings and perspectives, calling for more nuanced understandings of the complexities of gender-power inequalities informed by feminist perspectives (Joshi et al. 2018).

## **Land and gender—a contested terrain**

Unlike forests and water, which are essentially common pool resources, land is a fixed asset and can be classified as public, private, common, and communal property (Bromley 1992). The formalization of private land rights makes land less likely to be a common pool resource. However, as we discuss below, this is not always the case.

Nonetheless, much of the discussion on land in terms of agriculture is in terms of formal ownership. In this section we look critically at narratives and interventions related to women's formal ownership of land—identifying that these interventions do not simplistically lead to equitable outcomes, increased empowerment, or improved agency. This is especially so because gender and the intersection of other social identities—for example race and ethnicity—determine entrenched inequalities, which are deeply nested in institutional structures and cultures and therefore governance systems (Joshi et al. 2018, van Koppen et al. 2017).

Historically, restructuring ownership of and control over land, together with agricultural production, was a key driver of the colonial agenda. In India, for example, colonialism set in place land reforms, new revenue systems, and processes of taxation that irreversibly altered its agrarian economy and society—in the process also creating different types of disparities along ethnicity, caste, and religious lines (Baviskar 2005, Datar 2017). However, in India and elsewhere, land dispossessions through accumulation and appropriation of “common lands”—land not demarcated as private—have been widespread and raised challenging questions. The colonial appropriation of land resulted in unequal rights to and use of land in both the global North

and the global South, and led to large-scale displacement and marginalization of local people (Frankema 2010).

North America and sub-Saharan Africa in particular saw wide-scale dispossession of customary, traditional rights to land and the forced displacement of indigenous communities. In areas where feudal and patriarchal histories had already established disparities in ownership and control of land, colonialism further entrenched exclusionary systems. In Africa, the severity of land scarcity is linked to the colonial appropriation of land, promotion of commercial agriculture, and urban sprawl (Whitehead and Tsikata 2003). All these impacts were also distinctly gendered. While this is not discussed in great detail, there is evidence that colonialism resulted in irreversible changes to more equitable traditional practices and systems of inheritance that recognized women's land ownership and use (Akinola 2018).

Land tenure thus refers to larger bundles of highly dynamic land rights, including rights not only to land but also to trees, irrigated lands, water, and woodlands.<sup>7</sup> CGIAR research in the early 2000s on the evolution of land tenure institutions, in Ghana, Indonesia, Uganda, Nepal, Viet Nam, Japan, and Malawi, provided evidence on factors that enabled an understanding of the impacts that changes in land tenure institutions have on NRM (Otsuka and Place 2001). CGIAR research has also paid attention to the gendered impacts of changes in customary land systems. In Indonesia and Ghana, land inheritance systems evolved from matrilineal systems to systems in which both daughters and sons inherited (Quisumbing and Otsuka 2001a).

These studies show that gender-land interrelations are complex and contextual. In Indonesia, women's ability to improve their incomes was impacted by their educational levels, regardless of their inheritance of land (Quisumbing and Otsuka 2001a). Nonetheless, these insights do not dilute concerns—that, regardless of the contextual nature and meaning of land ownership, globally women not only own disproportionately less land in comparison with men (15:85 percent) but also own smaller and less productive pieces of land. Women are also reported to be less able to capitalize on other gains from the ownership of this fixed and vital asset; for example, they have disproportionately less access to agriculture extension services, institutions, credit, and value chains.<sup>8</sup>

In 1994, Bina Agarwal's research in India observed the lack of access to, ownership of, and control over property as the most critical influence on the

7 <http://www.fao.org/3/y5744e/y5744e0a.htm>

8 <https://wle.cgiar.org/content/gender-and-agriculture-infographic>

gender gap, along with how it affects women's ability to improve well-being, social status, and empowerment. This work was key in shaping development interventions to secure women's rights to land, through both individual and joint land titling initiatives. Later analyses of statutory and customary land tenure systems demonstrated that it was not only women in Asia who were disadvantaged in their access to and control of land but also women in Africa and Latin America (Lastarria-Cornhiel 1997, Deere et al. 2012, Kieran et al. 2015).

A broad consensus has since then emerged that strengthening women's property rights over land and resources is important for both poverty reduction and equitable growth (Kieran et al. 2015). To address the need for accurate and reliable statistics to monitor these rights, gender researchers from the Policy, Institutions, and Markets (PIM) program developed an analytical framework to assess landownership, in order to expand the statistical content of the Gender and Land Rights Database. They used five indicators: distribution of agricultural holders by sex; agricultural owners by sex; incidence of male and female agricultural landowners; distribution of agricultural land area owned by sex; and distribution of agricultural land value owned by sex.

The application of this framework in different ecological and socio-political contexts is beginning to show large and complex gender gaps in landownership across countries (Doss et al. 2015). While there is wide variation across countries and regions in women and men's ownership of land, the value of land owned by women is disproportionately lower than that owned by men or that owned jointly (*ibid.*). In Bangladesh, Tajikistan, Viet Nam, and Timor-Leste, gender gaps in land ownership exist, and they vary, especially across the diversity of land tenure systems (Kieran et al. 2015, 2017).

In general, the ownership of cultivated land, including irrigated land, evolving toward more individualized, mainly private forms of property, has had different gendered impacts. A growing body of work is showing that increasing women's ownership of land is unlikely to narrow and reverse the gender gap or deliver empowerment of women (Jackson 2003). First, with women less likely to be listed on ownership documents, and more likely to hold fewer land titles in cases where joint ownership is promoted, a simplistic focus on "title" to land misses much of the reality regarding land tenure, access, and use (Doss et al. 2013, 77). Second, transferring ownership of land to women on its own does not increase productivity if other structural constraints, such as access to and use of other inputs, technology, and credit, are not addressed (Quisumbing et al. 2001b). Landless poor women, who rely on agricultural labor as a means of livelihood, are more likely to benefit from

improved wage labor and work conditions as opposed to land ownership *per se*, especially because a small parcel of land by itself is adequate neither for subsistence nor for productive agriculture (Whitehead and Kabeer 2001).

The allocation of separate land titles for women has also been found to be problematic in patriarchal contexts, as this can result in a loss of social capital for women (Rao 2010). A case study from Kenya showed how formalization of customary rights, through individual titling, resulted in new forms of exclusion, because plural, multiple claims to different types of rights were reduced to singular rights (Meinzen-Dick and Mwangi 2009).

Many other questions remain unanswered around uncultivated lands or “resources” that are dangerously ambiguous—sometimes under communal property regimes as “commons” but more often as land (with resources) to be developed. These were lands that were historically appropriated and colonized to form plantations of tea, coffee, cotton, sugarcane, etc. (Ely 1918). This trend of appropriation of ambiguously co-owned lands continues and is precariously linked to a so-called “development” of natural resources, or what is known as “carbon colonialism” (Lyons and Westoby 2014). This is precisely why Ahlers and Zwartveen (2009, 409) question the agenda for “individualization and privatization of resource rights as offering possibilities for confronting gender inequalities” *vis-à-vis* “challenging the individualization, marketization and consumer/client focus of the neo-liberal paradigm.”

Recent research in Africa explores the challenges of implementing reforms to ensure gender equality in land governance, including access to services (Ghebru 2019). This work highlights the need for analyses that consider how gender, in conjunction with age, ethnicity, religion, and other factors, affect both individual and joint land ownership, as well as how these intersecting social categories, in turn, influence access to government services, relate to empowerment, and are linked to domestic violence. The pro-WEAI tool (see Chapter 9, this volume) is an attempt to capture some of these dimensions (Malapit et al. 2019). This tool includes 12 indicators that measure three types of agency: intrinsic agency (power within), instrumental agency (power to), and collective agency (power with) in relation to a wide subset of resources (including land). As such, it captures important dimensions of the diversified assets and livelihoods of women, either individually or collectively.

However, standardizations in measures of empowerment can be challenging (see Chapter 9, this volume). Data from Bangladesh, Nepal, and Tajikistan, using WEAI illustrate further questions that need to be considered in relation to gender and land (Clement et. al. 2019b). For example, how can dynamic and evolving changes be assessed? How to assess local meanings and values of

gendered norms, roles, and identities? How to analyze structural barriers at scale that keep both marginalized women and men unequal and food-insecure (ibid.)?

In sum, “the land question” in relation to gender, while strategic to women’s empowerment, is complicated, and calls for nuanced and transformative analytical frameworks that go well beyond looking at what happens within households and communities (Jackson 2003). In other words, these analyses will need to “articulate with wider political-economic structures and historical dynamics [as well as how these are] characterized by new ways of capitalist expansion” into natural resource regimes (Ahlers and Zwarteven 2009, 409).

## **Conclusion: collectives, commons, rights—what next?**

CGIAR-led research on NRM has been instrumental in demonstrating the limitations of managerial approaches that see local communities as being composed of rational individuals who are driven by economic necessities and compulsions; they focus on income or livelihoods. Research that distinguishes *management* from *governance* of natural resources has helped capture the plurality of rights and the lived experience of diverse local communities. It underlined the fact that NRM landscapes are multifunctional spaces that cannot easily be compartmentalized into binary categories such as public/private, rich/poor, biophysical/social, material/intangible, human/non-human, or masculine/feminine. Today, it is no longer possible, at least within CGIAR, to conceive natural resource initiatives without attention to gender equality: a significant achievement.

We now stand at a pivotal time in development history where there is increasing consensus to “fix the system” rather than “fix women” (WEF 2020). It is now well acknowledged that securing access rights for women and calling on their participation in NRM does not automatically translate into improved agency and material, political, and social gains to women—that is, to women’s empowerment. Research on forest tenure reforms, water user associations, and land reforms shows that, while changes in laws and provisions may provide the basis for more equitable access, use, and management, they do not always guarantee the ability to exercise these rights. Research increasingly shows that natural resource policies and reforms are nested in colonial legal systems and in institutional structures and cultures and driven by neoliberal agendas (Ahlers and Zwarteven 2009; Joshi et al. 2018, van Koppen and Schriener 2018, Elias et. al. forthcoming).

While it is important to continue to analyze gender and land ownership, tenure, and outcomes (Doss et al. 2015) and, in general, the efficacy of natural resource interventions and investments (Banana et al. 2012, Colfer et al. 2018, Shrestha et al. 2019), the writing is on the wall: we need to go well beyond popular women–environment narratives. Rights and access to, and control over, natural resources have the greatest impact on the poorest and most marginalized women and men: simply “adding in women and stirring” will not achieve the SDG of reaching the furthest behind (Harding 1995). As we move ahead with much more political agendas of transformative change, it is important to acknowledge that we need to push for approaches that will tackle root causes and the systemic and structural barriers to gender inequality (Hegde et al. 2017, World Fish 2018, Elias et al. forthcoming).

## **Moving forward and pushing the boundaries**

Addressing inequalities across scale, incorporating intersectional approaches, and addressing systemic barriers to gender inequality are all integral to pushing the boundaries toward a next generation of gender and natural resource research. Natural resource governance must speak to and address interconnected and structural dynamics of gender inequality in rapidly changing social, political, and environmental contexts. Nuance as to these complexities needs to continue to inform the study of property rights and collective action, and of formal and informal networks, including social arrangements. When the ground reality is complex, solutions can hardly afford to be simplistic.

This requires a more conscious and deliberate synergy between natural resource R4D agendas and feminist approaches. While instrumental in sharpening the focus on the meanings of gender equality and inclusion, feminist approaches have, until recently, exerted influence only from outside of the R4D arena. Our analysis shows that research findings, data, frameworks, and/or guidelines alone do not easily make a dent in the entrenched cultures, practices, and values of policy and practice related to NRM and agricultural R4D. Masculinities persist not only in social relations but equally in institutions at scale, and in the very definition of what constitutes science (Haraway 1988). And, intersectional inequalities are scalar and deeply entrenched too (Joshi 2011)

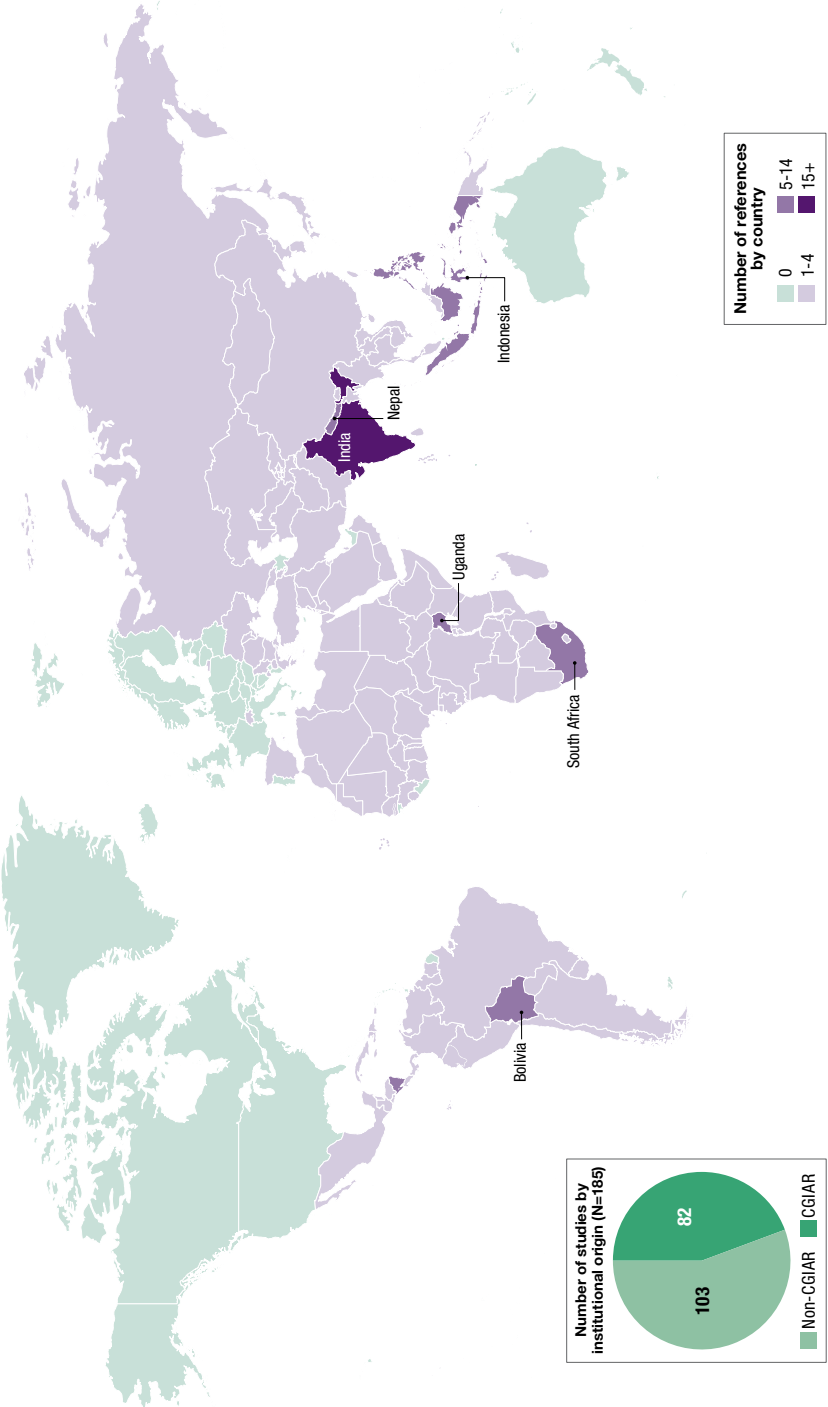
The challenge of tackling change in the structures and cultures of organizations engaging in R4D remains, alongside resistance to feminist approaches. That said, several CGIAR centers and research programs now

focus on analyzing ways to “transform” complex, dynamic, and resilient social and gender norms at scale (see Chapter 10, this volume). This is the start to synergizing natural resource R4D agendas and feminist calls for “re-politicizing” the power structure and political order of change (Batliwala and Dhanraj 2004) in “integrating power and politics in the analysis of the commons” (Clement et al. 2019a, 1). These shifts are aligned with the “transformative” implications of the SDG agenda, and with calls to “fix the system” rather than just “fixing women” by the drivers of the systems themselves (WEF 2020).

It is promising that recently published work and work in progress within CGIAR explains why the process of “integrating” gender by way of statistical and technocratic solutions that “tackle only the symptoms” of inequality is not enough (Arora-Jonsson and Basnett 2018, Elias et al. forthcoming). Ensuring a focus on gender equality is now well embedded in natural resource agendas. This may work to prevent “gender evaporation,” whereby gender priorities are lost in the articulation of wider development goals and sectoral interventions, and between the formulation of a promising policy and its implementation. However, without intersectional analyses, gender policies are still likely to be diluted. To address systemic constraints, we must continuously rethink our framing of gender equality and empowerment, and avoid instrumentalist interpretations. This requires mediating the focus from being just on women and binary framings of inequalities between women and men.

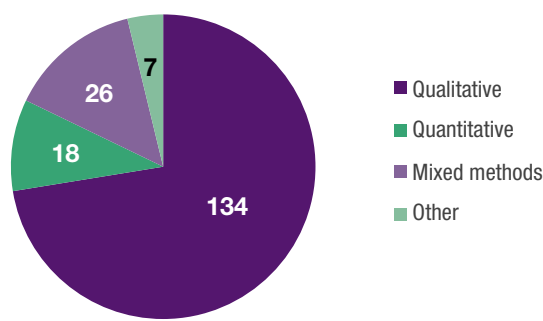
To conclude, natural resource governance is inherently political. Most contemporary interventions—like Payment for Environmental Services and REDD+—tend to commoditize nature, blur complex social differences and disparities in overtly simplistic narratives of “local communities,” and reduce multiple, plural rights and access to natural resources through convenient project framings of “rational, technical” institutional arrangements (Rodríguez de Francisco et al. 2013). Feminist scholarship and research asserts that no substantive progress can be claimed unless gender, power, and inclusion are synergistically and systematically incorporated in the design and implementation of natural resource programs and reforms (Sweetman and Ezpeleta 2017, 363). We note with optimism that, given the long and entwined history of gender and natural research within CGIAR organizations, the network is in a good position to rethink politically and strategically how to embrace feminist agendas and “fix the system.” First and foremost, this needs to begin by looking inward at our own institutions, research programs, and agendas.

Geography of study sites for publications cited in Chapter 6

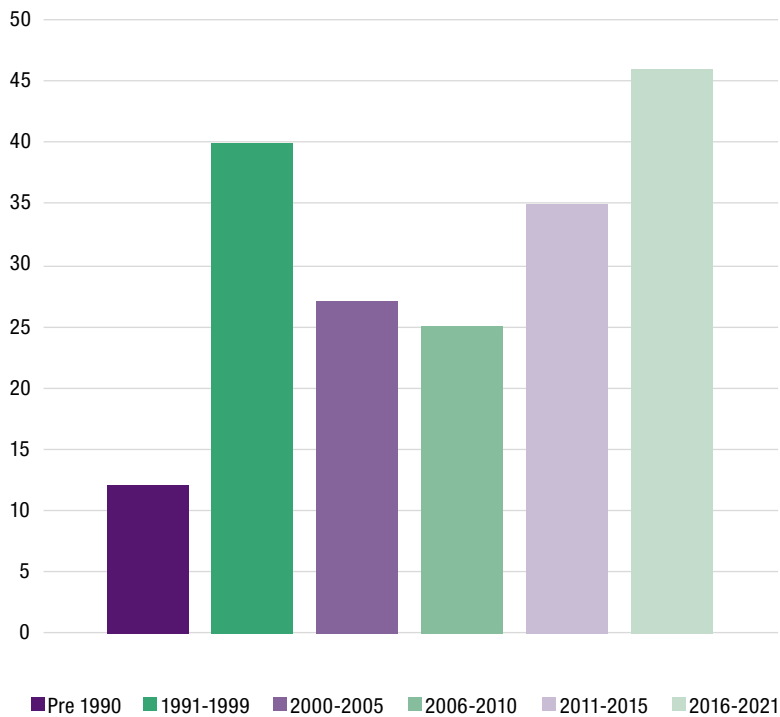




Number of cited studies by research methodology (N=185)



Timeline for references cited



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