

Exploring Gender Equity in Ecological Restoration: The Case of a Market-Based Program in Kenya

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ABSTRACT

Payments for Ecosystem Services (PES) provide incentives to landowners to manage resources in ways that deliver ecosystem services, such as through restoration activities. Under a proliferation of initiatives to restore degraded lands, innovative institutional arrangements that promote ecological restoration are emerging. However, exclusion of the human factor is considered a limitation of restoration theory and practice, and recognition of men's and women's roles in restoring landscapes is largely neglected. As the United Nations Decade on Ecosystem Restoration commences, this study uses PES as an entry point to explore gender equity in restoration projects. Focused on the Mara North Conservancy in Kenya, the study presents a framework for which qualitative approaches including Process Net-map and intra-household interviews are applied to uncover drivers and constraints associated with processes of gender exclusion and inclusion. The results reveal that 1) power imbalances condition socio-economic outcomes of PES schemes by reinforcing historical inequities in land tenure, and that 2) governance structures exclude women from decision-making processes and from receiving direct PES benefits despite their labor contributions to restoration activities; while men incur financial costs that are not adequately accounted for under direct payments. The study demonstrates the potential to apply new methodologies and define indicators that enable the identification of complex social dimensions in ecological restoration. Critical reflection on whether the neglect of social aspects restrict the potential for ecological restoration to address the very same inequities that contribute to degradation of threatened landscapes is encouraged.


Keywords: equity, gender, institutions, Payments for Ecosystems Services


Restoration Recap

- Recognizing the roles both men and women play in restoring landscapes should not be overlooked when seeking to integrate the human factor in restoration ecology practice.
- (Re)Designing institutional arrangements that accommodate for gender differences in land ownership and resource use are required for equitable outcomes in restoration ecology projects.
- Multi-disciplinary approaches should be engaged to ensure that measures for gender inclusion are well integrated and monitored to avoid adverse and/or uncompensated outcomes for men or women resource users.

Ecological restoration refers to the myriad of processes that assist in “the recovery of an ecosystem that has

been degraded, damaged or destroyed” (SER 2004). Processes for ecological restoration range from those that reduce activities that damage ecosystems to those that rehabilitate and restore damaged or destroyed ecosystems (Gann et al. 2019). Implicit in this definition is not only the role of societies in contributing to environmental degradation but also the role of humans in addressing ecological restoration. The absence of systematic attempts to integrate social dimensions has however, been identified as an important limitation in ecological restoration research and practice (Shackelford et al. 2013, Wortley et al. 2013, Martin 2017, Cooke et al. 2019).

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2019 marked a pivotal year where the need to move beyond a focus on “the ecology of restoration” to incorporate the role of social sciences and community participation was officially acknowledged. The United Nations (UN) General Assembly declared 2021–2030 the UN Decade on Ecosystem Restoration, and the Society for Ecological Restoration (SER) introduced a new principle (Principle 1) focusing on stakeholder engagement alongside a set of guidelines to measure social benefits of ecosystem restoration (Gann et al. 2019, Fischer et al. 2020, Young and Schwartz 2020). The newly introduced Social Benefits Wheel offers six attributes of social engagement in ecological restoration practices that can be tailored to individual projects to track the achievement of social development goals (Gann et al. 2019). Among the components are indicators for stakeholder engagement and the distribution of benefits. Knowledge enrichment, Natural capital, Sustainable economies, and Community wellbeing are the other indicators included.

Despite deliberate steps to incorporate human dimensions in ecological restoration, gender equity remains an important but largely overlooked aspect. Referring to the differences associated with being a man or a woman, gender is the outcome of social process through which differences based on biological sex are “defined, imagined, and become significant in specific contexts” (Hanson 2010). Gender equity refers to “fairness of treatment for women and men, according to their respective needs” (ILO 2000). As men and women share the same landscapes as the resources under restoration (Leach and Green 1997, Elmhirst 2011, Silvestri et al. 2012), recognizing and accommodating for gender equity, are considered necessary towards achieving positive social outcomes from conservation and restoration initiatives (Pascual et al. 2014, Broeckhoven and Cliquet 2015, Kariuki and Birner 2016, Yang et al. 2018).

Ecological restoration can be supported using a variety of approaches, among them are Payments for Ecosystems Services (PES). PES are market-based mechanisms that incorporate socio-economic dimensions to advance restoration activities in threatened and/or degraded environmental contexts (Bullock et al. 2011). PES promote the restoration and conservation of degraded ecosystems through financial incentives to resource managers (e.g. rural communities) to sustain ecosystem services such as food, clean water and air and recreational facilities (Wunder 2007, Engel et al. 2008). Incentives are transferred from public or private sources to resource managers only on condition that they adopt stipulated land-use practices (Pagiola et al. 2005, Wunder 2005, Pascual et al. 2010, Engel 2016). The market-based and conditionality features of PES are claimed to help bridge the gap between global environmental goals and local social realities, especially because many ecosystem benefits accrue to people outside of the area where the resources are managed (e.g., clean air or water regulation) (Ferraro and Kiss 2002).

With some notable exceptions (Baylis et al. 2016, Börner et al. 2020) research on PES has focused on socio-economic aspects and research on ecological restoration has tended to focus on biophysical aspects; however, both approaches are inherently linked and seek to accomplish a common environmental goal (Wunder et al. 2008, Bullock et al. 2011, Yin and Zhao 2012). In the case of PES, there is considerable attention to the outcomes of, and frameworks for socially equitable approaches (Pascual 2014, Law et al. 2018; Friedman et al. 2018), and calls to analyze the institutional dynamics that mediate social outcomes are increasing (Corbera et al. 2007, Muradian et al. 2010, Sommerville et al. 2010, Peskett et al. 2011, Whaley and Weatherhead 2014). Attention to gender equity in PES and market-based conservation schemes is also gradually growing (Kariuki and Birner 2016, Bee and Basnett 2017, Bee 2019, Lau 2020).

Drawing from the experience of PES as an entry point to explore the institutional contexts influencing gender equity in restoration projects can generate empirical insights in support of the new SER principle. This paper aims to review gender equity outcomes in the Mara North Conservancy (MNC), a market-based conservation scheme located in the biodiversity rich Maasai Mara ecosystem in Kenya. We present a conceptual framework for a qualitative exploration of the institutional contexts within which stakeholders emerge and interact with men and women resource managers. Specifically, we ask “if, how and why gender outcomes are influenced by social and institutional factors in PES schemes”? We seek to demonstrate the use of a multifaceted approach to disentangle the complexity of institutional arrangements in search of a deeper understanding of gender equity outcomes in processes of implementation and delivery of conservation and restoration activities. In the next sections, we present the conceptual framework, followed by a description of the methodology. The results are then presented and discussed in the following two sections and the final section presents the conclusions.

Conceptual Framework

Institutions, Social Relations and Gender Equity in Ecological Restoration

Efforts to include social dimensions in ecological restoration research and practice generally focusses on two key areas: explicit integration of human dimensions in the “definition” of ecological restoration and incorporation of social indicators among the “measurable outcomes” of ecological restoration. Broadening the definition of ecological restoration would jointly acknowledge the embedded social context within which ecological restoration is practiced, as well as the role of social actors in shaping ecosystems through the human footprint (Davis and Slobodkin 2004,

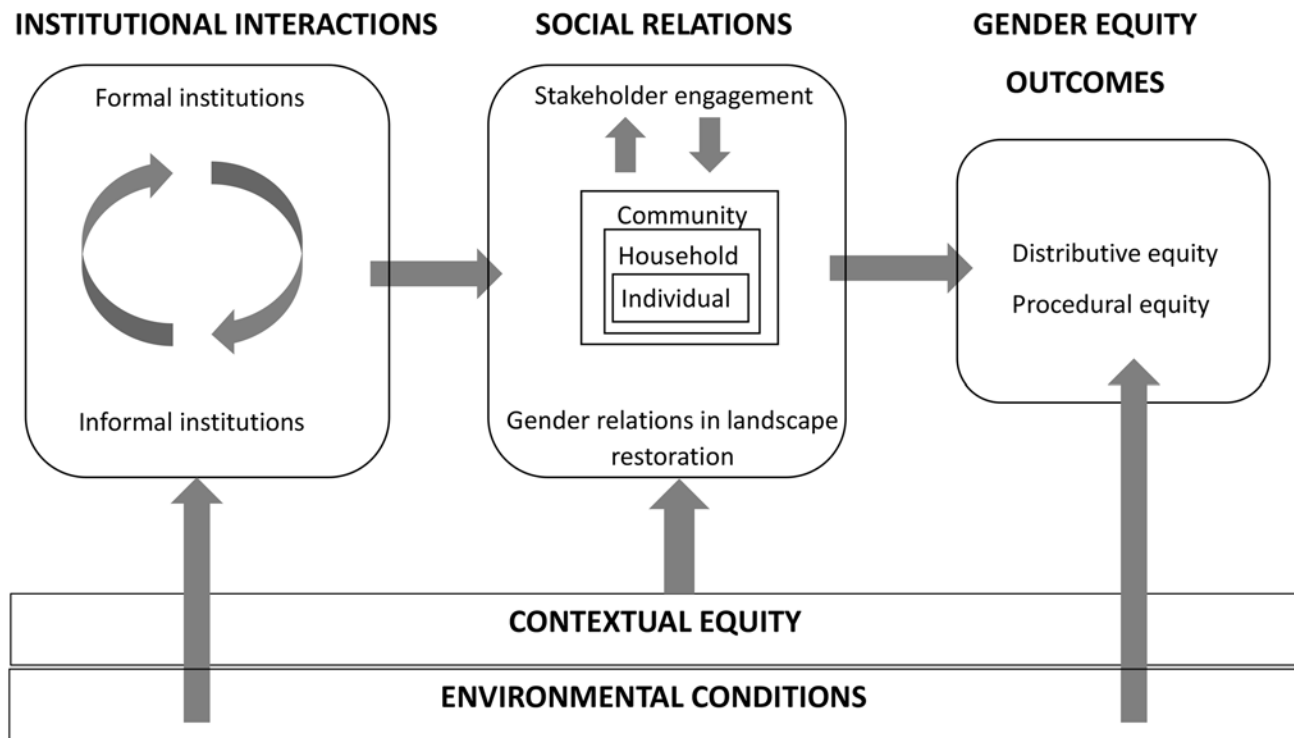


Figure 1: Conceptual framework for the study of equity in PES.

CBD 2016, Martin 2017). Shackleford et al. (2013) therefore emphasize that for ecological restoration to be appropriate for the modern world, a “new understanding” is required with an explicit focus on “the human element” whereby human agency and social aspects of restoration are systematically featured.

Ecological restoration has also been scrutinized for its overdependence on ecological outcomes, which are considered inadequate measures of success (Wortley et al. 2014, Cooke et al. 2019). The attribute-based and quantitative indicators (such as species composition and ecosystem resilience) are considered limited in their ability to capture important social values, calling for inter-disciplinary socio-ecological approaches (Perring et al. 2015, Martin 2017). New metrics of monitoring social benefits and socio-economic circumstances such as the “historical, social, cultural, political, aesthetic, and moral aspects in defining the targets for restoration” (Higgs 1997) have also been put forward by several authors (Burke and Mitchell 2007, Martin and Lyons 2018, Aronson et al. 2020). Gender is rarely referred to among these outcomes despite international recognition as an important determinant of resource use (Broeckhoven and Cliquet 2015, Okpara et al. 2019). Although emerging case studies find gender differences in PES outcomes (Dhakal et al. 2020, Bee 2019, Kariuki and Birner 2016), gender does not constitute the focus of the conceptual work on equity in PES (McDermott et al. 2013, Pascual 2014). Tailoring and/or redesigning frameworks for gender analysis in restoration activities is therefore needed. Deliberate attention on how men and women

influence and are influenced by ecological restoration does not only present a novel contribution but can provide relevant and timely insights for this new age of ecological restoration.

The conceptual framework (Figure 1) presents two inter-related domains of investigation—institutional interactions and social relations—that can be analyzed to uncover factors that influence gender equity in ecological restoration. The institutional and social domains speak to concerns for the need to expand the definition of ecological restoration, while equity and its multidimensions represents an example of a complex outcome that can be measured both quantitatively and qualitatively—the latter of which is the focus for this paper.

Drawing from Institutional theory, we refer to institutions as the systems of laws, rules, norms, and regulations that structure social, political and economic interactions (North 1990). The extent to which PES engages with societal complexities that influence and/or are influenced by ecological restoration activities depends both on formal institutions (written rules and laws) such as governance structures and property rights, and on informal institutions (unwritten rules) such as traditional norms and customs (Corbera et al. 2009, Chen et al. 2009, García-Amado et al. 2011, Kinzig et al. 2013, Berbé-Blázquez et al. 2016). The relationship between formal and informal institutions defines, constrains, and shapes actors’ interactions (North 1990), therefore affecting ecosystem services provision by regulating human activities with natural resources (Dietz 2003, Corbera et al. 2009).

Property rights are a complex fundamental institution governing “who can do what with resources” (Kirsten et al. 2009) and play a key role in this framework. These rights exist in the form of many combinations including, “use” rights, such as the right to access, consume or exploit a resource for economic benefit, and “control or decision-making” rights, such as the right to manage a resource, exclude others from accessing a resource and dispose of a resource for economic or other gains (Meinzen-Dick and Mwangi 2009). Property rights are regulated by governance structures which include the institutional arrangements to deliver and enforce contracts for resource use and benefit sharing (Williamson 1991). Governance structures are determined by the environment in which “the wider rules of the game” operate (Kirsten et al. 2009) and are characterized by formal property rights and pre-existing systems such as customs, traditions, norms, and cultures (Williamson 1991). From a gendered perspective, in contexts where women lack formal ownership rights, it is important to determine the processes that may enable secure use rights from which consuming or earning income from resources such as land, trees, and livestock is possible.

Studying social inclusion in ecological restoration contexts from a gender equity perspective therefore means accounting for the unequal playing fields that shape or are shaped by PES institutional arrangements. The second domain in the framework lends itself to the exploration of how gender relations unfold in specific institutional contexts. Gender is defined by the relationships between women and men that influence for example, who does what activities with what resources, and who has control over activities and the revenues they generate (Jackson 2003, Doss and Meinzen-Dick 2020). Through the socioeconomic relationships that must be entered into to survive, produce, and reproduce their means of life (relations of production), men and women form an essential component of the resource-rich but resource-threatened landscapes where PES schemes operate (Schneider 2013, Lau 2020). PES land-use regulations may alter gendered resource-use patterns which can affect the ability to meet household welfare needs (Russell and Vabi 2013, Dhakal et al. 2020). PES-related income streams may also adversely reconfigure gender relations, as has been experienced in previous conservation projects (Nabane 1996, Songorwa 1999). The differences between men’s and women’s ability to access, control, own, and dispose of different kinds of productive assets necessary to secure stable livelihoods—the gender asset gap—is therefore important to consider (Meinzen-Dick et al. 2011, Johnson et al. 2015). Financial benefits offered by conservation approaches may widen the gender asset gap and weaken men’s and women’s ability to manage shocks (Arora-Jonsson 2011, Okali and Naess 2013), to which women tend to be more vulnerable than men (Aboud 2011). Differences based on socio-economic status, age, or ethnicity, intersect with gender across scales

(within and beyond the household) to accentuate disadvantages among certain groups of women or men. This concept of intersectionality is helpful to understand how different social categories interact to produce equity effects that alone cannot be explained by a single category (Clement et al. 2019).

The equity domain in the framework comprises of different, but related dimensions compatible with the Stakeholder Engagement indicator of the Social Benefits Wheel. Equity refers to the fairness or just treatment of individuals and groups (Law et al. 2018). In the case of gender, equity may either include equal treatment of men and women or different treatment which is considered equivalent for man and women regarding their rights, benefits, obligations, and opportunities (ILO 2000). Drawing on McDermott et al.’s (2013) framework, procedural, distributive and contextual factors combine to determine equity. Procedural equity refers to the recognition of all people’s rights, including marginalized men and women to participate actively in decision-making processes (Fraser 2009, Di Gregorio et al. 2013). Distributive equity refers to the allocation of benefits, costs, and risks and mirrors the indicator of Benefits Distribution in the Social Benefits Wheel. Accounting for distributive equity from a gendered perspective requires one to distinguish between property rights that enable resource ownership and resource use or management to avoid women’s or men’s exclusion from conservation benefits (Bradley 1991 cited in Rocheleau and Edmunds 1997).

Accounting for the third component—contextual equity—can help explain both distributive and procedural equity outcomes. Contextual equity refers to the conditions and the different forms and levels of inequity present at the start of the PES scheme (McDermott et al. 2013). Wealth and power differences undermine capabilities of resource users which can interfere with efforts to achieve procedural and distributive equity. When using local and external institutions to manage or coordinate PES contracts, understanding (and making provisions for) contextual (in)equity can therefore inform the design of more gender inclusive institutional frameworks (Mahanty et al. 2013, Tacconi et al. 2013, McDermott et al. 2013). Identifying how institutional arrangements in PES contexts emerge and influence gender relations is a key step toward addressing the needs of all resource users—and promoting more balanced outcomes as sought through SERs newly introduced Principle 1.

Methods

Study Area: the Mara North Conservancy

The Mara North Conservancy (MNC) was established in 2009 and covers 29,947 hectares of privately owned land bordering the Maasai Mara National Reserve (MMNR) (Figure 2). The primary objective of MNC is to improve

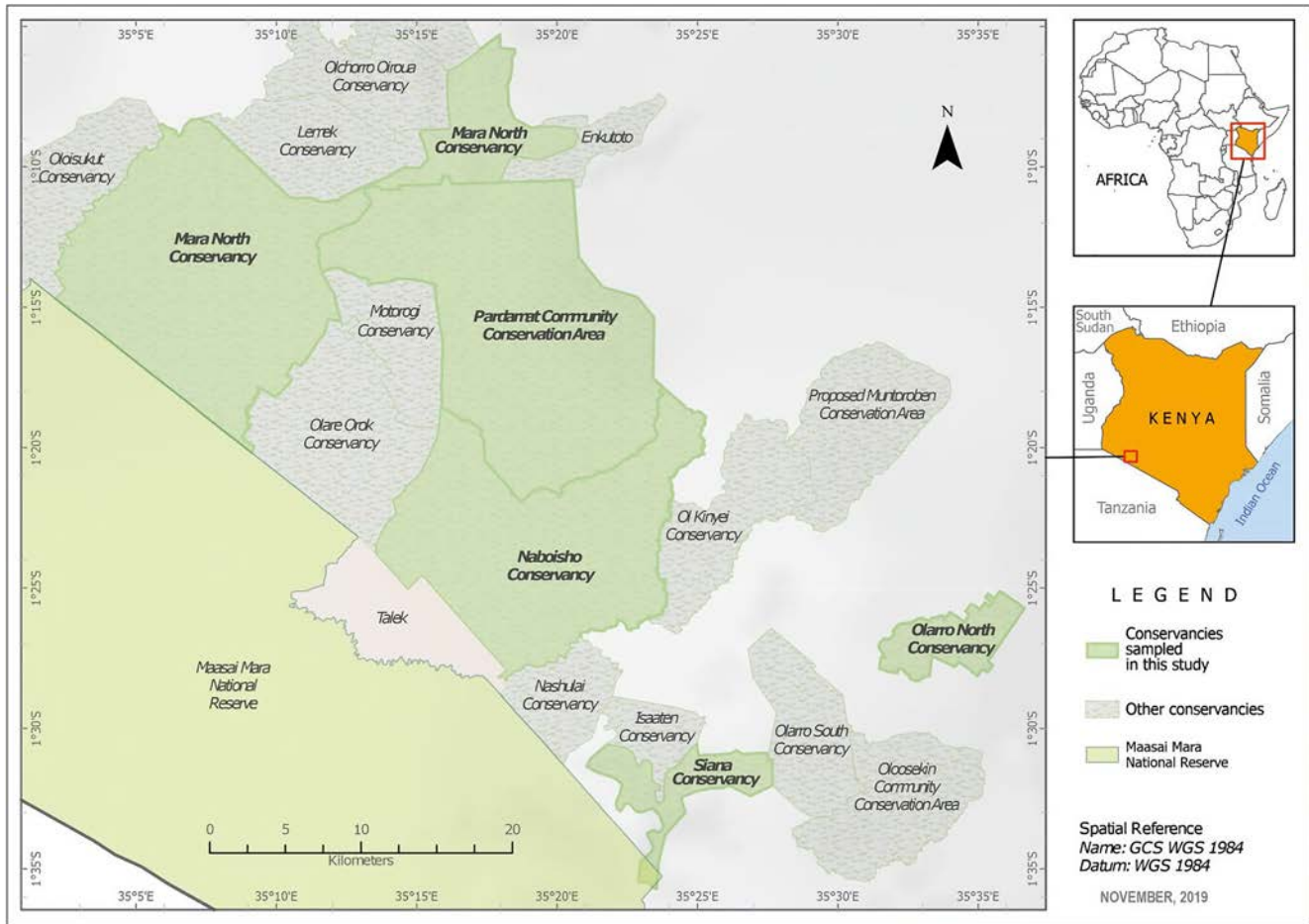


Figure 2: Mara North Conservancy Map. Source: Cavanagh, CJ et al. 2020. (Image credit: Michael Ogbe , Norwegian University of Science and Technology)

ecosystem management by rehabilitating degraded areas, restoring natural habitat, protecting wildlife, managing livestock grazing areas and responding to human-wildlife conflicts (Sante 2018). MNC is the largest conservancy in the greater Maasai Mara ecosystem regarding numbers of members (over 800) and high-end tourism lodges (12). To promote their ecosystem management goals, the tourism lodges (tourism partners) pay nearly USD 2 million annually to a private management company that acts as an intermediary. The management company is responsible for distributing this money to individual landowners with 5 or 15-year lease agreements which are held between title deed holders and a land holding company. Landowners who host a tourism facility also earn additional income based on agreements with the tourism partner (Sante 2018). The lease agreement ensures landowners a monthly payment from tourism revenues on condition that members refrain from land subdivision and human settlement in undesignated locations, wildlife poaching, deforestation, and charcoal burning. A compensation scheme for livestock predation and a livestock breeding program are additional services offered to conservancy members. Table 1 summarizes the key site characteristics.

Study Approach and Analysis

We adopted a case study approach to capture complex social phenomena (Gerring 2004, Yin 2009). We collected data across scales from the intra and inter household and community levels using a combination of qualitative methods, namely in-depth interviews, Focus Group Discussions, key informant interviews and a participatory mapping activity, Process Net-map.

We used open-ended questions for the in-depth intra household interviews to explore perceptions on resource access and control under PES regulations. To enable free articulation of sensitive issues, we interviewed household heads and their spouse(s) separately (Johnson 2002). We also held focus group discussions with separate groups of men and women and used a checklist of questions to interactively solicit information on benefits and costs experienced under the scheme. Focus group discussions are an efficient group-based approach for gathering contextual community-level information providing a wealth of data from a single discussion event (Morgan 1998). We conducted the key informant interviews with individuals holding specialized knowledge on the MNC context using a semi-structured questionnaire.

Table 1: Site characteristics.

Site Characteristics	Mara North Conservancy
Ecosystem service focus	Biodiversity
Start of project	2009–present
Number of members (at time of study)	800+
Main livelihood and ethnicity of conservancy members	Pastoral, Maasai
Payment source and delivery	Private (tourism); intermediary (private company)
Land tenure	Privately owned land
Land amount (hectares)	29,947
Land distribution	Relatively equal among majority of landowners (61 hectares)
Land use regulations/restrictions	Strict restrictions against land sale, land settlement and grazing only in specified locations
Benefit distribution	Direct (USD 1.3 per 0.4 hectares, monthly)

Given their depth of experience, key informants also participated in the Process Net-map activity. Process Net-map is a participatory visual tool which we used to collect information on the processes that led up to the establishment of MNC and to provide insights on the conservancy’s current institutional arrangement (Schiffer 2007, Lubungu and Birner 2018, Kariuki et al. 2018). To conduct the interactive activity, we first asked the key informants to trace the historical events that led to the conservancy establishment drawing on key stages that contributed to its development. We then asked informants to identify the stakeholders involved in the current MNC institutional arrangement, their roles regarding the design and implementation of MNC as well as the relationships (networks) between the stakeholders. To document the activity, each stakeholder identified was written on a card and placed on a large sheet of paper. Different colored arrows were used to connect the stakeholders and represent the nature of the relationship (flow of funds, conflict resolution, membership, licenses, other services) and direction of the relationship. Lastly, we asked the informants to identify the level of influence of each stakeholder to change (or ensure the continuation of) aspects of the MNC design and implementation by using influence towers. To visualize the influence towers, we used stacked piles of checkers game pieces ranging from one to six pieces. A stakeholder with an influence tower height of six was the most influential and one with zero, the least influential (Schiffer 2007). Throughout the process, participants discussed and deliberated on issues of contention to arrive at a consensus.

Regarding sampling, conservancy members and their spouses were selected randomly from membership lists to participate in individual interviews and focus group discussions (Babbie 2007). In total, we spoke with ten men and nine women and conducted eight focus group discussions with 10–15 male and female members. 14 Key informants were purposefully sampled with snowball methods adopted where needed, eight of whom also participated in the Process Net-map. Table 2 presents a summary of the methods and the number of sessions conducted per data collection activity.

Table 2: Summary of methods and sample sizes.

Method		Number of Sessions
In-depth Intra Household Interviews	Men	10
	Women	9
Focus Group Discussion	Men	4
	Women	4
Process Net-map	Men	2
	Women	1
Key Informant Interviews		14

Principles of Grounded Theory informed our data collection and analysis approach (Glaser and Strauss 2009); namely, the use of comparative methods (key informant interviews, in-depth interviews, focus group discussions and Process Net-map) and the principle of saturation. The principle of saturation applied when a satisfactory number of respondents offered the same information regarding issues of relevance for the study. With verbal consent from all participants, we captured the data through written notes and with a voice recorder, the data was then transcribed and analyzed using a qualitative data analysis software, NVivo (Qualitative Solutions and Research International, v. 10, Melbourne, Australia). Additionally, for the Process Net-map activity, we took a photograph of the maps which we then digitally recreated. The inductive approach we adopted involved identifying trends in the data from which we developed conceptual framings (Glaser and Strauss 2009). Grounded Theory offers a useful and appropriate method for conducting data analysis as shown by Petheram and Campbell (2010) on their study on local perceptions of PES in Vietnam.

Results

Historical Overview: Institutional and Social Interplay

The Process Net-map results show that in the 1970s, group ranches were established under collective ownership of registered community members and managed by elected

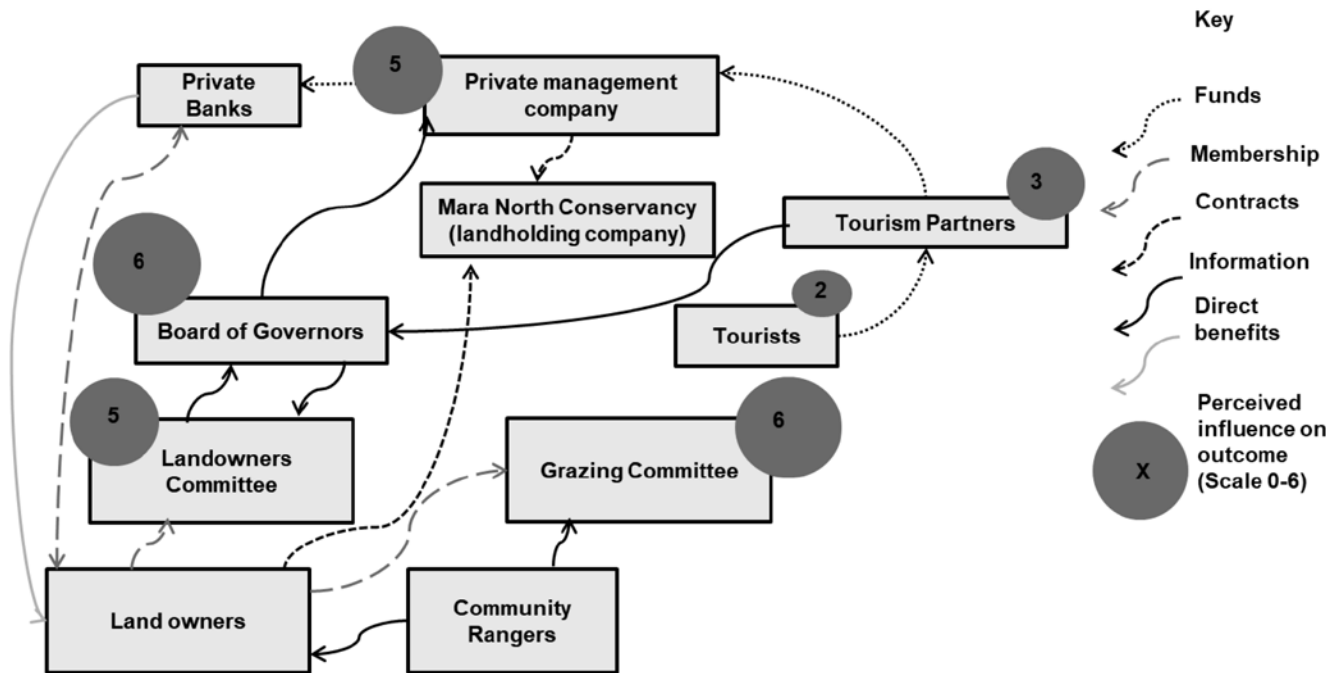


Figure 3: Process Net-map of actors, relationships and current levels of influence over equity outcomes.

committees. Membership was restricted to local men over 18 years and only widows without male descendants were eligible. Respondents explained that the ranches were impaired by weak institutional structures leading to poor accountability and transparency regarding tourism revenue distribution and leadership. Despite group ranch regulations for democratic representation, Process Net-map respondents and male discussants recalled that ranch officials were rarely elected, and local elites repeatedly exploited their positions of power for personal gain.

Membership was evenly distributed amongst ranch members (mainly male household heads), however, there was little guarantee of evenly distributed tourism revenues or inclusive decision-making processes. Discontent gave rise to the formation of the Koyiaki-Lemek Wildlife Trust by the group ranch members in 1995. The Trust was established to facilitate fairer distribution of revenues from game-viewing fees and tourist facilities located within the ranches. The key informants explained that under this new arrangement, all members received a share of revenues approximately every three months (\$50–\$300). However, discussions during the Net-map activity revealed that nepotism and patronage by local elites hindered balanced benefit distributions (key informant interviews; households 2, 7, 9–12).

The early 1990s saw a government-backed and community supported move for privatization where land was subdivided (in principle) into equal parcels of 61 hectares. Unmarried women remained excluded, restricting ownership to widows on the group ranch register (male and female discussions). Informants expressed that the subdivision process created opportunities for exploitation between surveyors and other powerful elites, leading to a lack of

funds from the Trust to remunerate landowners. Respondents explained that privatization of the Group Ranch was eventually completed in mid-1990 and to consolidate benefit distribution, the conservancy was later established on individually owned land in 2009 leading to a far more balanced and regular revenue sharing arrangement than before. Nearly half of the female respondents (household interviews and group discussions) reported the contrary as a reflection of their ongoing exclusion.

Procedural Equity Outcomes

The Net-map (Figure 3) conducted with informants and validated with community members revealed the current institutional arrangement as follows: the Tourism Partners elect The Board of Governors, who collaborate with the Landowners Committee, elected by landowners to represent their interests. Resource-use regulations are enforced by the Grazing Committee established to manage a rotational grazing program and work with community rangers. The community rangers interact with members on the grazing locations accessible throughout the year. Household and discussion respondents however lamented that access to information on contracts and mechanisms for resolving resource-use conflicts remained limited. Contrary to the expectation of annual meetings, only in 2014 was the second annual general meeting held (Households 3–6, 8, 10–12). Furthermore, although landowners agreed to contract terms read to them at a public meeting, respondents did not retain a copy of the contract (Households 5, 9) as this was not permitted (Households 4, 15). The results show that mechanisms for ensuring procedural equity were considered by respondents as largely insufficient.

Table 3: Summary of gendered distribution of costs and benefits.

Type of Benefit	Gendered Perceptions		
	Joint	Men	Women
Financial payment	Used for school fees, livestock inputs and food purchase	Diversified income portfolio; reduced impacts of drought (consumption smoothing)	Frequent (monthly) and strategic timing (to pay school fees at the start of each month)
Type of Cost			
Livestock loss (predation; disease)		Compensation not commensurate to value of lost livestock; increased livestock losses due to wildlife transmitted diseases	Poultry losses and loss of donkeys leading to increased labor; income losses due to forgone milk sales from livestock disease related mortality (uncompensated)
Access to pasture and competition	Increased labor (herding in locations further away)	Engage in risky behavior (grazing in national park); (uncompensated)	Increased labor burden reducing time availability for other activities; income losses due to forgone milk sales from livestock disease related mortality

Consensus from respondents was that women were underrepresented in decision-making on committees for land, livestock grazing and breeding. Nonetheless, given their roles as livestock managers, water and fuelwood collectors, most female respondents were aware of the grazing rules; few men and far fewer women were aware of the livestock breeding program. Respondents attributed women's limited participation to restrictions on land ownership and traditions that limited women's inclusion in male dominated spaces (male and female FGDs).

Distributional Equity Outcomes

Distributional equity from tourism revenues was considered by respondents as largely balanced between registered members and was attributed to the formal institutions established for managing disbursements (key informant interviews 1–5, 9, 13; all male group discussions; 1 female group discussion). Participants explained that contracts managed by a private company ensured a regular, fixed amount of tourism revenues was remitted to the landowners. However, informants identified that only two percent of contract holders were women—mostly widows—who often granted male relatives the responsibility for benefit collection (female and male group discussions, key informant interviews 2, 3, 5). Participants confirmed that because formal land ownership is biased towards men, tourism benefits were distributed to the male household heads, rendering most women indirect beneficiaries (Households 1–8; all female group discussions; 1 male group discussion).

The main benefit derived from membership was cash. Respondents reported that monies were used by household heads and sometimes jointly with female spouses to pay for school fees, livestock inputs and food purchases (all group discussions). Income received also helped smooth consumption during periods of stress (droughts). At the

intra-household level, respondents held divergent views regarding the use of any balance from the money (households 3–5; 7–13, 15, 19). Nearly half of the men indicated that the balance was used to hire labor, whereas nearly all of the women were unaware 'how much' money remained as payments were sent via bank transfers to male household heads and remittances from husbands to wives regularly fluctuated.

Both men and women reported on costs incurred from livestock losses and increased pasture competition but often encountered different experiences regarding the same cost. While labor costs were incurred by both genders, financial costs were incurred largely by men. Women faced increased labor burdens due to fetching water and firewood in designated locations—occasionally exacerbated due to donkey predation which was unremunerated by the compensation scheme. Both genders incurred costs from increased labor due to herding activities in distant designated locations. Both genders also felt the burden of cattle mortality caused by wildlife transmitted diseases (malignant catarrhal fever) which was not compensated by the scheme. Replacing cattle was the costly responsibility of men, whereas women incurred costs based on the loss of cattle milk incomes which they control exclusively. Participants from half of the focus group discussions (two male, two female) explained that resource use restrictions increased competition for pasture often leading to men's illegal grazing of livestock in the Maasai Mara National Reserve. The results illustrate therefore that institutional arrangements anchored to land tenure and gendered divisions of labor influenced distributional equity while informal institutions, such as culture conditioned intra-household equity, directly benefitting men. Table 3 presents a summary of gendered distribution of costs and benefits.

Table 4: Summary of the equity outcomes for men and women from MNC.

Equity Dimension	Male	Female
Distributive equity	Revenue distributed directly to male household heads	Female spouses indirect beneficiaries of revenue distribution
Procedural equity	Little meaningful participation as annual general meeting irregular and representation of landholders limited to select few	No meaningful participation and representation
Contextual equity	Formal claims to land but power imbalances in governance structure undermine representation	Informal access to land and no formal access to institutional mechanisms in governance structure

Contextual Equity: Stakeholder Influence

Contextual equity was assessed by using the Process Net-map to explore the different levels of decision-making influence held by stakeholders within the MNC governance structure. Informants allocated The Board of Governors and the Grazing Committee the highest influence level (six on the influence scale). The Board of Governors were responsible for setting the payment amounts, whereas the Grazing Committee regulated resource-use for members. Both stakeholders were therefore perceived as powerful enough to influence distributive equity specifically regarding tourism incomes and resource use. This was followed by the Private Management Company jointly with the Landowners Committee (five on the influence scale) who in principle (but not always effectively), represented landowners in decision-making processes with the Board of Governors and the Grazing Committee. Even though tourists provided income, their position of influence over equity outcomes was considered as the lowest because the contractual benefit-sharing arrangement remains in place irrespective of tourism volumes. Participants awarded the Tourism Partners slightly more influence over managing revenue distribution jointly with contract design.

When the historical events were chronologically traced as part of the Net-map, the results reveal that MNC culminated largely from community-led actions to address longstanding inequities. Land ownership ensured the achievement of distributive equity for registered members—mainly male—through the establishment of institutional arrangements. Power imbalances in the institutional arrangement however only partially addressed procedural equity whereby women were disproportionately excluded in decision-making processes. Despite the labor and financial costs incurred by adhering to the MNC rules, the customary non-recognition of women as land holders also meant their exclusion from direct benefit distribution under the formalization of property rights. Key findings on all equity outcomes are summarized in Table 4.

Discussion

As we enter the UN Decade of Ecological Restoration, some concerns are that “we have a long way to go” while others argue that this decade is an opportunity “to get it right” (Cooke et al. 2019, Young and Schwartz 2020). This

study offers approaches and concepts for consideration as a contribution to emerging discussions as we reach a new era for ecological restoration—an era in which focus on “human” aspects is gaining momentum. This case demonstrates how formal and informal institutions interact over time to both enable and constrain equitable outcomes for men and women in a PES project.

Methodologically, studying multiple dimensions of equity through a combination of approaches allowed for the analysis of complex issues encountered in environmental projects. Although equity is accepted as multi-dimensional, distributional concerns tend to dominate conservation research with much less or no attention to procedural and contextual issues (Friedman et al. 2018). The bias towards distributional aspects can not only be misleading, but also problematic. The overdependence on distributive equity can be problematic because the factors that construct inequity to begin with are overlooked (Fraser 2009). In our case, the study revealed that achieving distributive equity (especially for male landowners) through secure land tenure and tourism benefits is no guarantee for achieving either procedural or contextual equity. As such, a focus solely on distributional equity presents a biased view of the overall equity outcomes. Our findings support literature which emphasizes that procedural inequity can be (re)produced by unequal relations whereby certain voices may be strengthened or marginalized (McDermott et al. 2013). Research shows that power in leadership and representation influences how and for whom decisions are made, which has been reported elsewhere for the Maasai Mara (Thompson and Homewood 2002, Kaelo 2007), and in the context of other Kenyan market-based schemes (Bedelian 2014, Atela 2015, Chomba et al. 2016). Disproportionate attention on distribution has even been shown to worsen pre-existing imbalances (vonHedemann 2020, Nelson et al. 2020) and affect sociocultural acceptability of PES in the long term (Richardson and Lefroy 2016). A focus on distributive equity therefore masks underlying asymmetries and may jeopardize the potential for environmental projects to positively change decision-making and representation processes (Corbera et al. 2009).

The findings provide empirical evidence of gender dynamics in environmental projects, an area that is largely neglected in ecological restoration research. Women’s low membership in conservancies has however been reported

(Bedelian 2014, Bedelian and Ogutu, 2017) and linked to their historical exclusion from formal land tenure in the Maasai culture (Talle 1988) and also to the imposition of former colonial policies that mirrored patriarchal land ownership in England (Verma 2014). The results echo findings from studies illustrating that placing responsibility for environmental management under gender-blind institutions can further entrench local processes of exclusion (Corbera et al 2007, Kariuki and Birner 2016 Bee, 2019, Lau 2020). Ecological restoration projects may suffer the same fate as PES which has been shown to exacerbate gender inequalities regarding the distribution of ecosystem service benefits and costs due to the neglect of a historical understanding of power relations (Berbes-Blazquez et al. 2016) and misguided assumptions regarding gender relations (Westholm and Arora-Jonsson 2015). In this regard, an overdependence on distributional issues can be also misleading if efforts to understand dynamics of exclusion (of the marginalized) are neglected and only simple accounts of benefit distribution are reported.

Our research creates awareness on the need to investigate gender dynamics across scales—from the community, intra and inter household levels—if complex gender linkages in ecological restoration are to be understood and accommodated for. Recognizing gendered roles in resource management and differences in monetary and labor-related costs is necessary in this endeavor specially to avoid chances of conflict or resistance that may undermine the overall conservation objective (Songorwa 1999, Smith and Scherr 2003, Ogra 2011). A recent study showed that projects that neglect gender aspects may increase the potential for conflict due to differences in gendered preferences in communities living in conservancies (Keane et al. 2016). Gender blind projects can also unintentionally weaken the potential for PES payments to smooth inequalities within and across households (Corbera et al. 2007) because men and women occupy and utilize productive spaces differently in wildlife contexts (Rocheleau and Edmunds 1997, Vatn 2010, Hunter et al. 2011). To ensure successful ecosystem management therefore requires an understanding of the full uses and values of ecosystems for male and female livelihoods to support equitable natural resource management (Vatn 2010).

Given these findings, multiple barriers to meaningful integration of gender in conservation programs are apparent, however, they are not without solutions—there are indeed opportunities to “get it right”. Challenges include perceptions of gender as a “secondary issue”; a lack of empirical research on gender and biodiversity issues; ambiguities about what gender means; limitations in the number of opportunities to discuss gender equity and the tendency to “black-box” the “local” in order to render it more “manageable” by neglecting the social differences between and within households, obscuring the broader politics that control inequalities (Blaikie 2006, Ogra 2011). Suggestions to better integrate gender in ecological restoration and

contribute to fulfilling Principle 1 may therefore include introducing qualitative and/or quantitative gender (and equity) indicators for comparative use and monitoring across different studies and projects (Friedman et al. 2018, Prach et al. 2019). Such advances initiate processes to institutionalize gender into research that may inform program frameworks on “best practices” to create opportunities for men and women to contribute to and benefits from restoration activities (Broeckhoven and Cliquet 2015).

In contexts where gender inequalities are rigid, emerging evidence suggests that close collaboration with male community decision-makers can promote greater equity as has been demonstrated in the Mara where 50 women joined Landowner Committees and Boards and where one third of the Mara Conservancies have created a Gender Quota, thereby directly creating opportunities for women’s participation in decision-making (Maasai Mara Wildlife Conservancies 2018). If ecological restoration is to contribute to meeting environmental goals whilst providing equitable outcomes for men and women, institutional arrangements that confront barriers of power to reconcile between formal regulations and customary practices are needed (Shapiro-Garza et al. 2020). Streamlining environmental management projects with adaptable mechanisms that accommodate complex—and often competing—needs of all resource users in the ecosystem is key.

Conclusions

There has been growing enthusiasm from scholars and practitioners to integrate human dimensions into ecological restoration theory and practice. Focusing on the often-neglected social dimension, this paper demonstrates how gender aspects can be investigated in an ecological restoration project concentrating on a wildlife biodiversity in Kenya. Using a combination of qualitative methods including Process Net-map, we illustrate innovative ways in which complex social data can be collected and used to generate insights to inform ecological restoration design and implementation. The results highlight that interactions between formal institutions of land tenure and PES governance structures, intersect and sometimes reinforce traditional and customary institutions to sustain power imbalances. This was particularly the case regarding gender inequities in land ownership and representation at the local level. The findings suggest that it is necessary to look beyond formal regulations of land ownership and distribution if equity is to be genuinely and adequately integrated into restoration programs. Ecological restoration projects stand to gain more equitable outcomes by introducing or re-defining measures that compensate for income and labor related costs incurred by men and women and providing inclusive decision-making spaces and mechanisms. Acknowledging the historical and current institutional contexts where projects operate, mechanisms that reduce

rather than exacerbate existing inequities and imbalances of power in restoration programs can be designed. The findings presented in this case study therefore enrich the emerging literature that calls for transcending conventional ecological restoration thinking. With SER's recent introduction of a new principle focusing on stakeholder engagement, we hope this study begins to provide insights into the ways in which inclusion can be explored and utilized to inform research and program design.

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