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Multispecies triads and intersectionality of agriculture in Nepal: Gendered human-plant-bovine engagements

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Key highlights

1. Two key resources lacking for rural women in the mid-hills in Nepal are time and energy to engage in local economic empowerment initiatives.
2. It is not possible to fully understand women smallholders' relations and opportunities with plants without taking into account their relation to the bovines.
3. We use a *multispecies intersectional triad* lens (humans, animals and crops) to suggest an integrated approach that simultaneously takes into account the needs of women, bovines and crop plants, creating positive synergies for all.
4. We call for a holistic approach that takes women's own problem formulations seriously and support them in finding ways to reduce their enormous labour burdens whilst continuing to build community of social support systems.

Abstract

This paper uses an *intersectionality* approach to explore the value of using the concept of *multispecies triads–here in relation to women, bovines and plants*–to understand the varied and divergent ways that women in rural Nepal benefit, or could benefit, from an *ecosystem of support* regarding their economic empowerment in rural crop production and sales. Ethnographic and interview materials collected through Participatory Action Research (PAR) with women farmers from three rural areas of Nepal lays the foundation for our study. The analysis focuses on how various multispecies triads of women, bovines and plants at different intersections of species, gender, caste and household position are entangled in ways that shape women's possibilities and challenges for social and economic sustenance. With gender inequalities prevailing in the Nepali countryside and women's work burdens increasing due to male labour migration, it is with urgency that we address the question of developing a conceptual frame fit to understand the specific needs of women in divergent situations. Our study shows that it is not possible to fully understand women smallholders' relations and opportunities with plants (vegetables, legumes and wintergreen) without taking into account their relation to the bovines (cattle, water buffaloes and hybrid-yaks) who provide manure to their plants, suggesting a multispecies triad approach is

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of value. In line with this, we lean towards a holistic approach, suggesting that efforts to couple common place commercial solutions for women's economic empowerment with innovative non-commercial aspects of ecosystems of support, such as labour exchanges, care pooling and time sharing, could be worthwhile.

Keywords: bovines, gender, multi-species triad, plants, women's economic empowerment

1. Introduction

Climate change and challenges related to the COVID-19 pandemic have hit women engaged in crop production in Nepal with force in ways that threaten to aggravate already inequitable practices–such as those linked to gender and caste, amongst marginal groups. Further, through labour migration and petty commodity production–vegetables and milk, for example–some households in the mid-hills of Nepal have ended up in disadvantageous positions in the modern capitalist economy (Poudel et al., 2024). Bhattarai et al. (2015) argue that gender equity in climate adaptation cannot be achieved without taking into account other intersecting social differences based on class, ethnicity/race, and other cultural forms of marginalisation. They suggest considering the dynamic links between social, ecological, and agrobiodiversity systems to enhance gender equitable climate adaptation. Additionally, Poudel et al. (2024) underscore historically situated social identities tied to ecologically specific locations as crucial to understanding the possibility for changing practices. The complex and inseparable relations between forests, agriculture, and human subsistence in Nepal (Gilmour and Fisher, 1991; Acharya, 2006; Osti, 2020) call for a thorough understanding of the diverse conditions women face at the intersection of gender, caste, ethnicity and class–but also in relation to different animal species and crops tied to specific ecologies. In our field sites, bovines play important roles for the income and livelihood of people; trees, grasses and crop side products such as corn stems, provide fodder for bovines; and bovines provide milk, meat and draught power to humans as well as organic manure to crops. Throughout the paper, we aim to show the necessity of understanding gendered relations to bovines in order to operationalise an 'ecosystem of support' (Pradhan et al., 2026) to further women's gendered and economic development through crop production.

We do this by engaging intersectionality theory (Crenshaw, 1989; Mohanty, 1988) and more specifically by pushing beyond the intersections of human relations such as gender, caste, ethnicity and class, to also engage bovine species, age and sex. Inspired by a 'multispecies intersectionality' approach (Pettit, 2023), we underline how gender relations are at their core tied to and shaped by the relations of humans to other species, in our case a variety of bovines of different species and sex as well as a set of plant crops. Beyond approaching these linkages as farm systems (Das and Shivakoti, 2006; GC and Hall, 2020; Alomia-Hinojosa et al., 2018) this paper engages an adaption of a 'multispecies triad frame' (Pettit, 2023), operationalising the idea that women's interaction and relations with plants–and thus their opportunities and challenges of gendered and economic advancements through crop production–are shaped by their engagements with animals, and more specifically bovines, who provide both resources for crop production and demand resources of time and energy in return. To understand Nepalese women's gendered and economic opportunities and challenges, we suggest that we need to understand how their relation to plants is utterly shaped by their relation to bovines, and vice versa. The way that women 'become-with' plants, to speak with

Donna Haraway (2008), is shaped by how they 'become-with' bovines. With this, the 'multispecies triad' frame adds a social layer to more resource-focused farm systems approaches, by looking as species relations as social and intersectional, thus facilitating an intersectional analysis of Nepalese women's agricultural situations from an 'ecosystem of support' angle. This leads us to advance a holistic perspective, suggesting that innovative non-commercial aspects of ecosystems of support, such as labour exchanges, care pooling and time sharing, could be worthwhile.

We base our analytical argumentation on original, qualitative data from three field sites in rural Nepal where all authors have conducted field work through participatory action research. The aim of our larger project has been to co-produce, together with local women, shock-resilient business ecosystems for women-led agricultural and forest-based enterprises. This stems from an understanding that though entrepreneurship has been traditionally seen as men's preserve in the agriculture and forest-based sectors, women have been playing a key role in production, marketing at local levels and value addition, operating at the lower ends of value chains with little opportunity for value addition and business growth. With a focus on local women-bovine-plant relations in our three field sites–Ramechhap (women, legumes and cattle/water buffaloes), Arghakhanchi (women, vegetables and cattle/water buffaloes), and Dolakha (women, wintergreen and yak-hybrids)–this paper contributes with insight into opportunities and challenges regarding women's shock resilience, agency and gender-based constraints. We further aim to assess the multispecies triad framework in the context of rural development and women's empowerment in Nepal.

2. Gender, intersectionality and an agricultural 'ecosystem of support' in Nepal

There are complex and inseparable relations between forests, agriculture and human subsistence in Nepal, important for the sustainability of agricultural production and livestock rearing (Acharya, 2006). Centring bovines in our analysis of rural Nepalese women's crop production and sales, we can see the extent to which the way that women, farm animals and crop plants engage with each other is shaped by human norms and intersectional power relations.

2.1. Gender relations and intersectionality in Nepal

Farm animals of different species, commonly referred to as livestock, play important roles for the income and livelihood of rural families in Nepal. In rural regions, mostly women provide farm labour amounting to around 70% (Pradhanang et al., 2015; Kalauni and Joshi, 2019). Further, women's contribution to work related to livestock, such as feed preparation and feeding, cleaning sheds, milking and milk processing, are even higher, amounting to 85% of this type of work performed by women (Kalauni and Joshi, 2019). Roles in farming are gendered in that men engage with physically demanding tasks such as ploughing, soil levelling and thatch building, while women typically take care of, amongst other things, crop planting, weeding, applying fertiliser and harvesting (KC and Race, 2020). Gender also plays a role in decision making practices, where women are more often able to take part in decisions on the sale of small stock, such as chicken and goats, but rarely take independent decisions on the sale of larger livestock such as water buffalo (Pradhanang et al., 2015; Paudel et al., 2009; Gurung et al., 2005).

Participation of women in economic systems is moderated by intersecting power relations including

gender, caste/ethnicity, kinship, age, and economic status. Gender and species here intersect to shape women's possibilities and economic empowerment from farming value chains. The lack of control over major livestock business, trade activities and resources can be linked to women's lack of adequate capital assets and necessary information to use in decision-making (Pradhanang et al., 2015; Gurung et al., 2005), further strengthening gender inequalities in rural areas.

Young women, women from nuclear families, from so called low caste, and from poor families, face constraints in access to spaces of participation in different roles in agricultural value chains (Acharya et al., 2020; Upreti et al., 2018) where intersectional power relations compound the challenges. Access to community resources, water for irrigation is also influenced by caste, and kinship networks (Shrestha et al., 2023) as well as class and economic situation. Ownership of agricultural resources, such as land and livestock have shown to contribute to women becoming economically independent and in turn being more likely to be involved in household decision making (Pradhan et al., 2019). Gendered norms around such ownership differ between social and economic contexts, and women's possibilities to operationalise their ownership can differ depending on their position in the household (i.e., mother-in-law, wife, unmarried daughter, daughter-in-law or junior sister-in-law). In joint families, daughters-in-law often must work hard with little decision-making power and limited fructus rights (Pradhan et al., 2019; Acharya et al., 2026). Their position can improve when the family splits and they become female co-heads of households, and then mothers-in-law themselves, although this might also come with increased labour burdens and responsibilities.

In Nepal, gender roles and expectations are deeply ingrained in society, influenced by cultural and traditional norms, as women have long experienced high levels of poverty, social exclusion, and marginalisation because of their gender (ADB, 2010; Acharya et al., 2026). Gender norms and practices differ between ethnicity and caste and are, for example, more egalitarian among most indigenous groups and Dalit castes than among so-called high caste (Brahmin/Chhetri), with greater physical mobility, more flexible gender division of labour, and more widespread wage labour and contribution of cash to the household economy (Pradhan, 2014 as cited in Pradhan et al., 2019). Efforts have been made to address gender inequality through legislation, policies, and initiatives promoting women's empowerment and gender equity (ADB, 2020), including initiatives to mainstream gender in national agricultural policy, but effects are still wanting (Devkota et al., 2022). Women's access to productive assets, such as access to land, remains low, with less than 10% of women owning their own land in 2023 (CBS, 2023). Also, with regard to financing, gender disparities are stark, with mostly men having their own bank accounts whereas women mostly take membership in local cooperatives that grant small loans (Kalauni and Joshi, 2019).

Although gender inequalities remain paramount, changes in gender norms are at the same time afoot. In the Himalayan mid hills of Nepal, male out-migration has led the process of feminisation of agriculture, which has differential impacts on women in the intersection of caste/ethnicity, gender, class, and socio-economical levels (KC and Race, 2020). Male out-migration has also been known to push women to take on new agricultural duties, labour responsibilities, decision-making related to agricultural management and new cultivation practices within and beyond the household (Splanger and Christie, 2019). While it also adds household labour and community work for women overall, the participation of women in economic systems is shaped by intersecting power relations including gender, caste/ethnicity, kinship, age, and economic status (Shrestha et al., 2023). The absence of

men in households provide new spaces for women in the form of increased geographical mobility, social engagement, handling cash (Leder, 2022). Women can increase their self-confidence from negotiations with input suppliers, sale of farm products and increased recognition (Leder, 2022) and this process is shifting power relations among men and women in influencing communal spaces through negotiations. Women are increasingly more present and visible in communal spaces than before, although stark power relations remain between mothers-in-law and daughters-in-law (Gurung et al., 2020).

Devkota et al. (2022) suggest that a systemic transformation of gender roles and relations in agriculture is needed, with policies that would support rural women's empowerment through the provision of economic and political rights and entitlement to productive resources. Along with Leder and Sachs (2019), we thus argue for intersectionality as a crucial frame to understand women's empowerment possibilities in agriculture in Nepal. Notably, women's experiences of labour migration and its implications are substantially diverse, even within a particular region, such as the western parts of the country (Shrestha et al., 2023). Women's access to community resources also remains dependent on caste and kinship networks. Both Pradhan et al. (2019) and Leder (2022) call for further research including a range of intersectional relations, including household position, when analysing changing gender norms and power relations as well as women's access to assets. Building on this call, we also draw inspiration from a multispecies intersectionality and engage a multispecies triad frame (Pettit, 2023).

2.2. Multispecies triads and multispecies intersectionality

The concept of a multispecies triad came about as a response to the often dyadic species relations that make up the bulk of the research on human-animal relations (Pettit, 2023). Drawing on and building on literature that take more than two species into account (see for example Govindrajan, 2018; Hovorka 2012; Pettit 2013), the multispecies triad not only allows for contrasting of norms and ideas around a particular species, for example how humans in a particular society relate to horses and cattle differently, but also underlines how the different dyadic relations within the triad change and are shaped by the presence (physically or abstractly) of a third species (Pettit, 2023). The way that humans and cattle interact in the Rocky Mountains of Colorado, USA, for example, differ drastically depending on if they are on horseback or not. Moreover, the way that those humans relate to cattle in a broader sense– how the ranching is set up–shaping the lives of both cattle and humans, is entirely dependent on them also having horses. Humans' relations to cattle can then not be properly understood if we ignore the horses. Similarly, the horses are only there because of the ranch work they do together with humans, and the human-horse relations cannot be understood without considering their relation to cattle. In this paper, we build on this idea and extend the multispecies triad to include not only humans and other animals but also plants. Further, we adapt the concept to include the triad of humans, bovines and plants. Within those groups, we pay particular focus to women; cattle, water buffaloes and yak hybrid; and legumes, vegetables and wintergreen bushes respectively. Using this frame, we highlight species relations as social and intersectional, adding to the ecosystem of support approaches, explained below (see Figure 1).

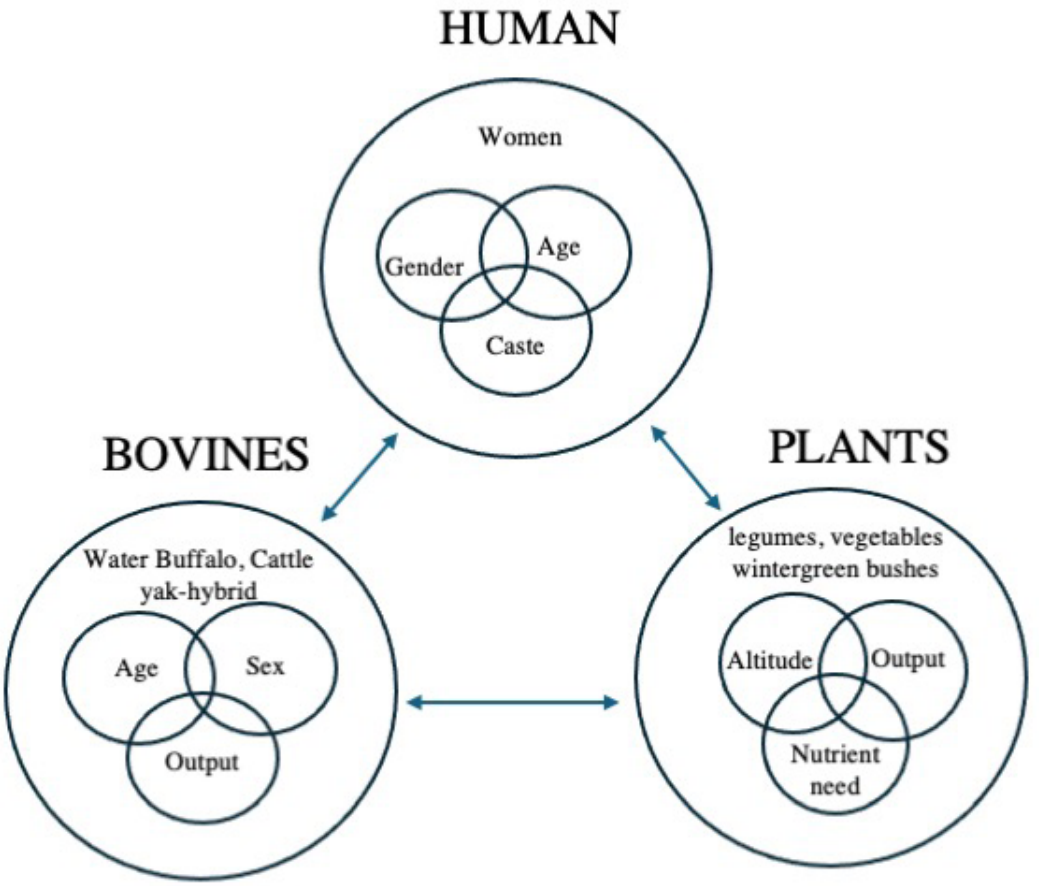


Figure 1: Multi-species triad framework with examples of intersecting power relations

Source: Authors (2025)

When relating species in a triad it becomes visible how differently individuals and groups of species relate to each other depending on sets of intersectional relations (Pettit, 2023). For example, the sex and age of bovines might shape whether or not it is appropriate for a woman to take care of them and work with them, in a particular culture. The age, ethnicity and class of women might determine what animal species she interacts with, or eats, in the first place. For example, mostly Sherpas will keep yak-hybrids. The species, breed, sex and age of animals certainly set them up for certain kinds of lives, depending also on the overall culture they end up in as well as the gender, age, ethnicity, class (and so on) of the humans they encounter. Paying attention to the intersections across species lines thus affords us nuances that helps us understand the divergent experiences, challenges, opportunities and needs of, for example, women in rural Nepal. A multispecies intersectionality approach also takes into account the agency of non-humans, and underlines the ways that also, for example, cows engage in intersectional social relations and themselves perform power (Pettit, 2023). In this paper we focus primarily on the human perspective; we let ourselves be inspired by multispecies intersectionality, although not drawing on it to its full potential.

In line with a multispecies triad and intersectionality perspective, we specifically need to also understand how women's engagement with bovines, who are crucial for their crop production, are producing opportunities and challenges for their gendered and economic developments through agriculture. Those insights then need to be integrated, as we will show in the later sections of this paper, into our model of an 'ecosystem of support' (Pradhan et al., 2026).

3. An 'Ecosystem of Support' approach for women's economic empowerment

While there is a growing understanding in the literature of what works in promoting women's economic empowerment (WEE), the evidence in relation to the financial and economic costs and benefits, and sustainability of different interventions is not that solid (Buvinic and Frust- Nichols, 2016). Thus, it has become rather important to examine which sets of interventions or kinds of support works best to create an enabling environment for WEE (Khan, 2016). From a review of earlier work and fresh insights from designing and implementing a participatory action research project in Nepal focusing on WEE, a conceptual framework for an 'ecosystem of support' approach (see Figure 2), has been proposed (Pradhan et al., 2026). This framework envisions a more conducive environment for supporting financially sustainable and shock resilient women-engaged enterprises, particularly in the context of rural areas in low-income countries.

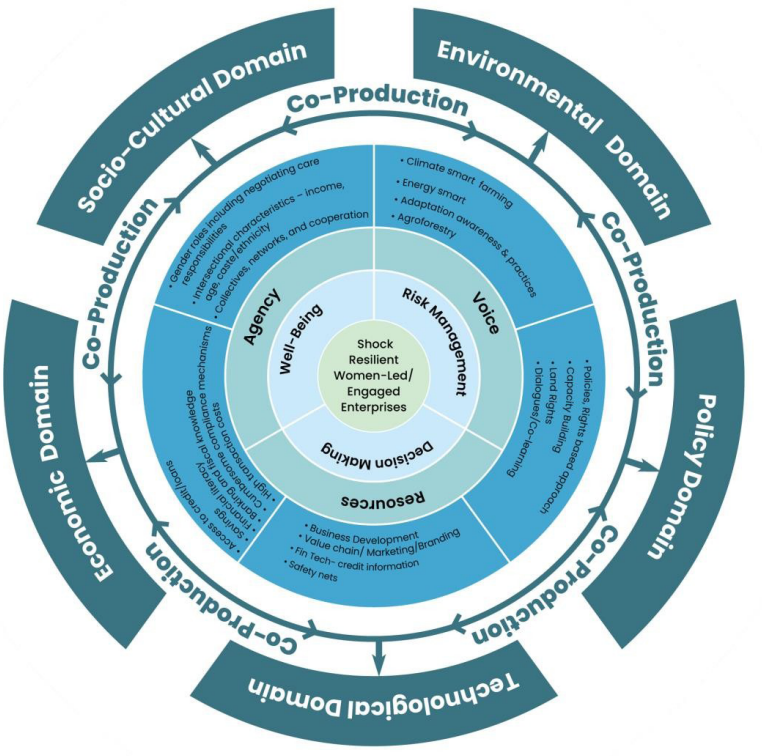


Figure 2: An ecosystem of support approach to women's economic empowerment

Source: Pradhan et al. (2026)

The framework has been designed in the particular context of agriculture and forestry-based production and marketing systems, and enterprises, where women are heavily engaged primarily as producers. The ecosystem of support approach visualises an entire ecosystem that focuses on the inter-relationship of different domains to address the need to create 'conditions' that will be favorable for the economic empowerment for women (Moseldale, 2005). In this context, the approach provides opportunities for using a multi-sectoral and multi-dimensional analytical approach to better understand how different domains are necessary, and work better to create an enabling environment for WEE, and what the gaps are. This framework for an "ecosystem of support" intends to enhance understanding and facilitate transformation, rather than predict an outcome in WEE (Pradhan et al., 2026).

The conceptual framework espouses both the subjective and objective dimensions of WEE. At the core of the framework lies women's overall well-being, decision-making capacity and risk management capabilities to build a shock resilient enterprise. In order to enhance these foundational factors, it will be essential for women to be able to access and have control over necessary resources (financial and technical), for their voices to be heard (meaningful participation and decision-making), and thus their ability to use their agency to the fullest. For these factors to be strengthened, the framework proposes five key domains that are necessary to create a conducive environment for enhancing WEE, namely, (i) positive changes in the socio-cultural domain, (ii) a favorable policy domain that responds in an equitable manner, (iii) conducive economic conditions, (iv) adaptation and management of environmental changes, and (v) the access to and use of technology. The framework suggests that the interactions between all these domains with the subjective and objective gender dimensions of WEE can lend strength to resilient women led/engaged enterprises. Further underlying this framework is the approach of co-production processes in understanding and addressing gender-based barriers and co-designing the ecosystem of support.

The application of the framework in participatory action research and implementation of WEE activities can provide a basis for analysis to refine our understanding, knowledge and applications (programs and interventions) to better understand the challenges of women's economic empowerment in the context of agriculture and forest economics. A key element of this framework is to ensure the use of an intersectional perspective when analysing the gaps and the opportunities within each of the key five domains. Such a perspective will alert researchers and development programs to the persistent gender norms and power relations, especially among the marginalised groups, which shape agricultural practices, aspirations and self-determination (Leder, 2022).

4. Research methodology and field sites

In this section, we outline our methods of data collection and analysis, as well as present the three field sites where data for this paper was gathered.

4.1. Data collection and analysis

This paper is based on material collected between February and June 2023, through interviews (20), focus group discussions (3), photo stories, and participant observation among women working with legumes, vegetables and wintergreens as well as cattle, water buffaloes and yak-hybrids in the mid-hill districts of Arghakhanchi, Ramechhap and Dolakha in Nepal. Participant observation included

overnight visits, working and cooking together, laid a foundation for a broader understanding of interviews. We also attended gender awareness meetings and women's groups meetings, markets and visited crop plantations together. The material has been thematically analysed and situated in the broader literature of gender and agriculture in Nepal, gendered human-plant relations globally and multispecies intersectionality.

4.2. Our field sites

Three research sites are distinct in human-plant-bovine interactions. This interaction is also influenced by the social and agro-ecological context of the area. In Ramechhap and Arghakhanchi, agricultural work with legumes and vegetables closely overlaps with livestock keeping, particularly because livestock are important sources of fertiliser. This overlap is not present in wintergreen collection in Dolakha, as the leaves are harvested from forests rather than cultivated. However, we observed overlap in crops–vegetables, kiwi fruits, potatoes with cattle, water buffaloes and yak-hybrids.

Our study site in Ramechhap is arid while research sites in Arghakhanchi and Dolakha are humid. Caste composition of the households in the study sites also differs as we worked with Tamangs, Newars, Magars and a few Dalit women farmers in Ramechhap; Brahmins, Chhetris and a few Dalit women farmers in Arghakhanchi; Tamangs, Newars, Sherpas and a few Brahmin and Chhetri women farmers in Dolakha. In Ramechhap, women farmers produce varieties of legumes–kidney beans, soyabeans, cowpeas, white peas, horse grams, black grams and others. These legume products are superior in quality and have high market demand. These products are sold from farmers' doors to intermediaries and also taken to local weekly markets. But the farmers' chief complaint was that they were not getting a fair price. In Arghakhanchi, majority women farmers are from Brahmin and Chhetri castes engaged in vegetables production for sale. Seasonal vegetables are grown and sold throughout the year. But their involvement in marketing is limited due to the distance to larger markets and lack of public transportation facilities. In Dolakha, agriculture and wintergreen collection are primary activities for most of the households in the mid- and lower elevations, while yak-hybrid milk production is the primary production of Sherpa households at higher elevation.

Women farmers are relatively vocal about the challenges they face. Overall, they lack access to property rights in practice due to the patrilineal system and gender-based discrimination, despite the fact that women have legal property rights. In all sites, there is high out-migration of male family members for wage labour opportunities in other cities within the country and abroad. This has left women farmers overburdened with work as they needed to fulfill traditional gender reproductive roles (including care giving), need to engage heavily in agriculture, and also need to participate in community activities (e.g., contributing to community forest conservation and management). Caste-based discrimination is quite palpable in the study sites.

To adapt to the local context, the focus of our participatory action research was also different across sites. In Ramechhap, looking at the scope of value addition and connecting them into the larger markets for better price, we focused on supporting women to take up roles in the value addition and market linkages of a variety of legumes (starting with kidney beans). In Arghakhanchi, we focused primarily on invigorating the local weekly vegetable market, the *haat bazaar* (which had been closed due to COVID), and to support small women farmers to be able to profitably make

use of it. In Dolakha, we focused on supporting the conservation, regeneration and management of wintergreen plants in community forest areas and private land, since picking wintergreen leaves and selling them to locally established essential oil distilleries. Wintergreen collection is treated by the women mainly as a seasonal spare time activity to earn cash. This activity is related to the broader agricultural context insofar as spare time is available when there is not pressing farm work to be done.

5. Gender and intersectionality in the context of our field sites

This section provides an intersectional lens to the gender-based constraints that women experience in our three field sites. We first show how gender operates in relation to education and farming, and then go on to discuss how ethnicity/caste intersects to shape gender relations, to lastly put forth the importance of also looking at household position as intersecting with both gender and ethnicity/caste.

5.1. Gender based constraints in change

In all our three field sites, women's participation in the public sphere is constrained by norms around gendered division of labor placing them as primary caretakers of children and elderly family members, and household responsibilities. We also found that women feel insecure to participate in meetings and gatherings due to the lack of education, leaving such activities to men who they perceive are more educated. A lack of education can also mean less access to information about meetings and their content, which also leads to the exclusion of women from meetings, political participation, trainings and exposure events organised by local government or other service providers. From an early age, the education of boys is prioritised over that of girls. While both boys and girls are sent to school, but if resources are limited, boys' education is prioritised and if possible, boys are sent to larger towns for better education.

Women report some changes in gender roles compared to ten years ago, with men now taking up some of the household tasks and share caretaking of children. However, women still shoulder the bulk of such work, including taking care of elderly family members, and most of the women we talked with felt overburdened with chores and care work traditionally seen as women's tasks. Moreover, whereas it was earlier unthinkable for women to plow the fields with oxen, several of the women we met now also perform this task themselves, while admitting how physically taxing it is (see Acharya et al., 2026 to know more about gender-based constraints in the study sites).

However, we have also noticed some positive changes towards gender-based roles in the study sites. Women today are to a larger extent than before engaged in income generating activities for the family and head activities such as poultry farming, goat rearing, growing vegetables for sale, in addition to subsistence farming. When women gain their own income, they do not have to depend on their husbands when they need money for personal expenses. One woman in Ramechhap told us how she earlier had to ask her husband even for very small amounts of money, and she suffered when he refused to give it to her. Now, she continued, her situation has changed and she goes to the *haat bazaar* (the local weekly market) to sell her legumes and can buy goods of her choice even if her husband does not agree with her.

5.2. Gender-caste/ethnicity intersections shaping women's constraints

The way that women in our three field sites experience gender-based constraints are not only shaped by gender but also ethnicity/caste. In our field sites, caste can be clustered in three groups based on how they intersect with gender. Women belonging to the higher caste of Brahmin and Chhetri face more gender-based constraints at the household levels, such as restrictions in, for example, entering the kitchen and temples, or touching certain fruits and vegetables, during menstruation. In comparison, indigenous groups predominantly residing in mountainous or hilly regions are relatively more flexible in their gender roles. Dalit women, also have relatively fewer mobility restrictions, especially when they engage in wage labour.

Dalit households also generally have smaller pieces of land that are often not irrigated, allowing them only seasonal vegetable farming. Further, although Dalit women report that caste-based discrimination against them have decreased compared to a couple of decades ago, some still hesitated to speak in meetings or in public, for fear of not knowing enough on the subject, due to lack of information and education. Even practices of untouchability remain, where Brahmin and Chhetri women would hesitate to share food and eat together, and Dalit farmers in Arghakhanchi had trouble selling their milk as the local dairy, run by so called upper caste people, would not accept it. When a Dalit entrepreneur started a dairy with the help of a grant, it had to shut down due to lack of customers. This was because of the commensal norms, prohibiting so-called higher caste people from consuming milk, a practice still ongoing despite being illegal (compare Govindrajan, 2018). Interestingly, such restrictions do not apply to vegetables and so selling vegetables was a more feasible option for Dalit women, despite not having enough farmland. This shows how species relations and animal sex intersect with human gender and caste/ethnicity relations to shape constraints for particular women.

5.3. Dynamic constraints as household position intersects with gender and caste/ethnicity

Whereas household position–wife, daughter, mother, daughter-in-law or mother-in-law–is tied to age and marital status, it is the woman's role and acknowledged position within the family who live together that is crucial for the way that she engages the other family members, we found through our interviews. Overall, newly married daughters-in-law faced the most gender-based constraints, both in terms of larger household work load and mobility restrictions making it difficult for them to participate in the public sphere and engaging in social/community and political activities. In Arghakhanchi, newly married daughters-in-law felt shy to take their vegetables to the *haat bazaar*. Because of this hesitation, they also miss the market-related information and missed out on learning the trade skills.

These restrictions become more flexible as daughters-in-law give birth to children, when they could start taking part in family decision making and enjoying relative financial independence. Having an education also plays in to such flexibility. While women report progressive change for gender-based constraints, daughters-in-law still reported that they need permission to engage in activities outside the household and had to hand over all the money from selling vegetables to their mother-in-law after a day at the market. However, both older and younger women were of the view that life for daughters-in-law were harder in the past. However, unmarried daughters who still live

with their family of origin enjoy larger degrees of freedom of mobility than married women, and some even plough with oxen, something that they were criticised for once married. Ploughing is however becoming more common even amongst married women after the introduction of power tiller and with increased male-outmigration. Again, we see how species relations not only intersect with gender but also with household roles. Although being a daughter-in-law, and especially a newly married daughter-in-law, is but a phase in many women's lives, there is always a large group of daughters-in-law in a society. Importantly, when women are relieved from the gender-based constraints related to the position of daughter-in-law, it often means transferring those constraints to another woman in the position of daughter-in-law. Thus, while the gender-based constraints might decrease for a particular individual, they are still present in society.

6. A triadic approach and a multispecies ecosystem of support

As seen throughout the sections above, women in our three field sites face divergent yet overlapping gender-based constraints to improving their economic status through agriculture. Some gendered norms are experienced by all women and some women feel the exponential subordination of intersecting power relations of gender, caste/ethnicity and household position. In addition to issues of access to markets, value chain possibilities and technological challenges reported on elsewhere, we now turn to one of the most recurring themes in our interviews and participant observations, which is 'lack of time'.

The most common reason that women stated for not being able to attend meetings for increasing women's economic status arranged within the frameworks of the project was a lack of time or the timing of the meeting. Household chores such as cooking and cleaning as well as taking care of children and elderly, tending to the fields and taking care of the bovines and the products from the bovines left no time for meetings. In the mornings, when meetings were initially often scheduled, fodder had to be collected, bovines fed and milked, and the milk and manure taken care of. The growing outmigration of men in all these areas led to many women having to shoulder all of these additional responsibilities by themselves. Moreover, taking on new roles in enhanced lentils/kidney bean value chains in Ramechhap, engaging further in the weekly vegetable market in Arghakhanchi, or taking up wintergreen picking in Dolakha seemed for some an unsurmountable effort, even if they found the strength and support to challenge gender norms around decision making, public spheres, knowledge acquisitions and becoming more familiar with technology use.

Being sensitive to women's formulations in interviews, asking follow up questions and engaging in participant observation with women, it became increasingly clear how central bovines were for both the success and the challenges of legume and vegetable production and marketing in Ramechhap and Arghakhanchi. We shall come back to the yak-hybrids of Dolakha below.

6.1. A triadic approach to women's economic empowerment through crop production in Nepal

What is clear from our data is that many women in Ramechhap and Arghakhanchi are responsible for, and engage in gathering of fodder for cattle and water buffaloes as well as goats. They also prepare the feed, cooking porridge for the bovines each morning and also gather much of the firewood needed for the fire they cook on. Moreover, milking and processing the milk from bovines

is often done by women, although sometimes it is a task shared with men in the household. The manure that the bovines produce is collected, transported and spread on the crop fields is also often an undertaking for women. Taking care of the cattle and water buffaloes thus often means spending hours each day, and particularly in the mornings, when fodder is gathered and prepared. However, the women that we talked to found that they had no choice in keeping bovines because they were dependent on the manure in order to get a decent crop of the legumes and vegetables they grow.

Most of the cattle and water buffaloes in our field sites were female and thus also milked. Their offspring could be either kept or sold for cash, and the milk became an important contribution to the household diet. Male bovines were sometimes used for draught power to plough the fields. While the milk and milk products, as well as draught power of the male bovines, was important for household sustenance, several women underlined the need for manure, that they mix with foliage mulch and use as fertiliser for their crops, as the main reason for them to keep bovines. Without bovines, they explained, they would not have access to enough fertiliser for their fields and they might as well quit farming. Goats do not produce enough manure and buying from other households with bovines would be too expensive.

In this way, women engaged crop plants only if they also engaged bovines, and the way that women engaged with bovines were crucially interlinked with the way that they were engaged with crop plants. The crop plants (both vegetables and legumes), engaged with bovines through their manure, because of their relationship with humans through farming. The bovines on the other hand, engaged with the crop plants through eating them, but only because humans served them. Women, bovines (water buffaloes and cattle) and crop plants thus engage in a multispecies triad where each dyadic relation is shaped by the other in the triad, both enabling and constraining women's economic possibilities through crop sales.

While this might seem unsurprising and uninteresting to some familiar with these farming systems, the triadic perspective becomes useful when contrasted to a different woman-bovine-plant triad, showcasing the divergent ways that such triads can operate. For that, we now return to the women dairy producers and yak-hybrids of Dolakha, where the project supported wintergreen picking to further women's economic empowerment.

Whereas legume and vegetable farming are common also in Dolakha, where women use manure from water buffaloes and cattle to feed their crop plants, the multispecies triad around the yak-hybrids of our field site make a contrasting and clarifying case. In the higher altitudes of Dolakha, where the yak-hybrids live, the bovines roam free. Women, who are here of Sherpa ethnicity, milk the yak-hybrids twice a day and the bovines know to come to the house at milking time–and even up on the porch–when their name is called. Milk is the main bovine product sought at this altitude and manure is left where it drops and is not used. The milk is sold for cash to a nomadic dairy that moves around the mountains alongside the families who follow the grazing patterns of their herds throughout the season. These households do not engage in crop production of any kind, and the manure from the bovines are left to dry wherever they land, throughout the mountains. While there is much to be said and explored about this lifestyle, culture and dairy production, we shall here keep a focus on how the multispecies triad enters into the project's attempts to further women's economic agency through harvesting wintergreen leaves.

In short, a number of the mountain dwelling Sherpa women in our field site who we talked with had difficulties engaging in the wintergreen picking, as they needed to be higher up in the mountains with their bovines during the time for gathering the leaves. The wintergreen bushes as well as the distilleries to which women sell the leaves that they pick (where oil is produced and sold by the distillery owners to companies producing essential oils and other products), are simply too far away for the women to reach and get back in between milking. Also, the leaves themselves grow at lower altitudes and are not easily accessible to Sherpa women engaged in dairy production. In some Sherpa families, in contrast, men, women and children all went to pick under a focused period of time during the short season at higher altitudes. Those living at lower altitudes, including Newar women who were not engaged in dairy production, could however participate in the wintergreen picking. These Newar women held that picking was their task, as men would not engage in such "rough" work. Thus, gendered relations with bovines as well as local ecologies shaped who were able to participate in the wintergreen picking initiative and not, highlighting the intersection of ethnicity/caste and species for the successful outcome of the economic empowerment project. However, some of the yak-milking women could nonetheless reach the meetings set up as part of the initiative for women's economic and gendered empowerment, provided that someone else milked the bovines.

Rather than human-bovine, human-plant and plant-bovine relations mutually strengthening each other, they here create mutually exclusive challenges for Sherpa women, yak-hybrid bovines and wintergreen plants–a 'troublesome triad' as it were. The lack of participation of these women in the wintergreen picking initiative would be difficult to understand if we did not take into account their relations with female yak-hybrids who have given birth and thus possible to milk. Interviews with women in Dolakha households keeping cattle or water buffaloes and using their manure for crop farming revealed that, in similarity to Ramechhap and Arghakhanchi, many women felt overburdened with work. As picking wintergreen was mainly seen as something to engage in, seasonally and during spare time, women's household- and farm work load can be considered to hamper their possibilities to participate in the initiative. Thus, in opposition to the reinforcing triads of women-legumes/vegetables-bovines in Ramechhap and Arghakhanchi, the wintergreen plant instead creates a 'troublesome triad' without synergies. A triadic perspective thus helps clarify how certain women, but not others, can benefit from rural development-oriented initiatives.

Women engaged in the value chain initiatives set up by the project as means for women's economic empowerment and the details of the procedures and results of the agricultural aspects of the initiative will be reported on and discussed elsewhere. Here in the following section, we focus on the issue that came up as a challenge through our ethnographical data–women's lack of time and energy for engaging in activities aimed at their own empowerment.

7. A triadic way forward

Building on the previous sections of this paper and thinking about the sustainability of attempts to support women towards increased economic empowerment, we propose considering three interlinked areas of our multispecies triad: alleviating women's time poverty; physical and social sustainability for the bovines involved; and the needs of crop plants. We dive into these issues below. Sticking with the multispecies triads of our field sites and drawing on a multispecies

intersectionality frame that takes into account not only human intersecting power relations but also those of different species, we tease out, in the following, potential ways to harness positive synergies between women, bovines and plants in the mid-hills of Nepal.

7.1. Alleviation of women's time poverty: Non-capitalist initiatives

Drawing on the angle of the women in our three field sights in the Himalayan mid-hills of Nepal, lack of time is one of the major gender-based constraints to engaging in activities to further their own gendered and economic empowerment. Beyond capitalist-based solutions of gaining access to markets and higher positions in agricultural value chains, we see a need for mechanisms that alleviate the time poverty that women find themselves in, and that are sometimes amplified by otherwise sound capitalist-based initiatives. Time poverty is likely to hit different women in divergent ways, depending on their positionality in an intersectional matrix of gender, caste/ethnicity, class and age relations, as well as their position in the household, such as mothers-in-law or daughters-in-law. Moreover, such power relations intersect with women-bovine relations and women-plant relations, where women at different positionalities tend to be paired with particular animals of particular species (see Hovorka, 2012) and sex, as well as particular care-giving practices and tasks, including milking and taking care of manure (see also Govindrajan, 2018; Pettit, 2016; Pettit and Hovorka, 2020). Women's relations to bovines are also social relations to take into account when looking at their overall position in a household and society.

With so much of women's time going to bovines (and sometimes goats and other small stock), it becomes interesting to look into solutions to time poverty and development initiatives that do not add extra tasks to women's everyday lives. Instead of fashioning yet other ways for these women to gain more money from their resources, we suggest pondering complementary initiatives investigating possibilities of resource-sharing, time-pooling and labour exchange. Being sensitive to divergent experiences and needs amongst women depending on their positionality in society and in their household as well as what kind of multispecies triads they engage in, such initiatives could explore areas of household chores, animal care (including collecting fodder) and tending to crop depending on specific and local interests and needs.

7.2. Physical and social sustainability of bovines: Towards multispecies intersectionality

Because the dung is the main bovine product for women in Ramechhap and Arghakhanchi, the cattle and water buffaloes are tied up or kept in small enclosures from where it is possible to collect the dung, depending on the local hillside topography and the resources available to the humans. In contrast, the yak-hybrids of Dolakha roam free, as the main resource extracted from them is milk, whereas their dung is left untouched. Some water buffaloes and cows are given freshly cooked porridge every morning and yak-hybrids are often given salt when they come to be milked. Water buffaloes are more likely to be sold for meat than other bovines (specifically cows), due to religion tied to ethnicity and caste. The lives and experiences of bovines are thus shaped by intersecting human relations of class and caste and ethnicity. Moreover, bovine species, age and sex clearly define their everyday lives and the way that they interact with women.

These divergent bovine situations are important to note if we want to enhance their wellbeing, important in its own right and also a way for women to ensure the health, longevity and higher

producing individuals. Moreover, the divergent and particular bovine situations are also clues to why rural women's challenges, opportunities and needs differ so greatly and might even hold unexplored potentials for resource-sharing, time-pooling and labour exchange.

7.3. Plant wellbeing: Exploring innovative manure exchanges

The vegetables and legumes in our three field sites are highly dependent on bovine manure (amongst other things) for their wellbeing. Of course, their wellbeing is crucial for women's possibilities to use them for subsistence and for selling them at local markets. As goats do not produce enough dung, and as buying dung or other fertiliser is too expensive, bovine dung is women's most valuable source of manure for their crop plants. While not explored in detail in our project, we suggest it might be worthwhile investigating new and innovative ways that bovine dung can be collected, enhanced and distributed to become manure and thus nurture the wellbeing of crop plants that will in turn enhance women's possibilities for gendered and economic empowerment. A starting point for doing this, we offer, is exploring hidden potential in the divergent practices of bovines made visible through a multispecies intersectionality perspective. Further, while wintergreen plants do not need manure to thrive, paying increasing attention to bovine practices might lessen the risk of them being eaten or trampled, and thus enhance their wellbeing and growth, before women have had the possibility to pick them.

Thus, our triadic perspective and a multispecies intersectionality frame shows how the thriving of bovines, plants and women engaged in crop production in the mid-hills of Nepal is an iterative process and when spiraled in the right direction, we venture, has the possibility to further women's gendered and economic empowerment as well as benefit bovines and plant-ecologies. The synergetic effects of formerly 'troublesome triads' might be less obvious, but alleviation of women's time poverty could allow them to engage more extensively in wintergreen picking and motivate initiatives for the plant's wellbeing at a species level. Moreover, there might be unexplored potential in unutilised yak-hybrid dung, potentially offering Sherpa women additional resources. To explore untapped synergies, we need to continue to work through a multispecies intersectionality, include non-capitalist solutions in our focus and underline humans' relations to animals and plants as gendered, intersectional and inherently social. One way to do this is to integrate a multispecies perspective into the conceptualisation of an 'ecosystem of support'.

8. A 'multispecies ecosystem of support'

As stated in the beginning of this paper, an eco-system of support approach takes into account an entire eco-system that focuses on the inter-relationship of different domains in order to work towards favorable conditions for women's economic empowerment. Operationalising this frame into a multi-sectoral and multi-dimensional analytical approach for a better understanding of how different domains have the potential to work in an iterative manner to create synergies for enabling environment for women's gendered and economic empowerment, we identified above a gap in terms of attention to time poverty amongst rural women attempting to engage empowerment-enhancing activities. Our multispecies triad lens, and inspiration from a multispecies intersectionality, has led us to suggest that this gap needs to be addressed through an integrated approach that simultaneously takes into account the needs of women, bovines and crop plants, creating positive synergies for all. In order to continue building on our insights, we propose to

integrate a multispecies perspective in each of the five key domains presented in the eco-system of support framework (Pradhan et al., 2026) above.

Keeping focus on the fundamental factors of women's overall well-being, decision-making capacity and risk management capabilities to build a shock resilient enterprise, that are at the core of the eco-system of support approach, we also keep an eye to a sustainable everyday life and household practices. Thus, we offer some specifications and inclusions to the five key domains, thus formulating a 'multispecies ecosystem of support'.

When we talk about (i) positive changes in the socio-cultural domain, we propose to include relations to animals as social relations, gendered expectations of species relations and a supportive network of the animals that women rely on for their agricultural and family lives. Looking into a favorable policy domain that responds in an equitable manner (ii), we suggest that it might be worthwhile to include policies related to animal health and welfare in order to create synergies that benefit women and their economic empowerment initiatives. We further underline the importance of including time–not the least time spent on essential animals–as a necessary resource when analysing (iii) conducive economic conditions. Also, when it comes to (iv) adaptation and management of environmental changes, we propose a scope that takes into account the way that such changes might affect bovine-related tasks and time resources. Lastly, when addressing the domain of (v) access to and use of technology, we advance the importance of also including technology for female coded animal-related tasks such as fodder collection and spreading manure on the crop fields.

Moreover, a key element of the original eco-system of support framework is to ensure the use of an intersectional perspective when analysing the gaps and the opportunities within each of the key five domains (Pradhan et al., 2026). We propose extending this intersectional perspective to, at least certain elements of, multispecies intersectionality. This will not only alert researchers and development programs to the persistent gender norms and power relations, especially among the marginalised groups, which shape agricultural practices, aspirations and self-determination (Leder, 2022), but further make visible how relations of species and animals' sex, age, and so on, are constantly infusing gendered and intersectional practices in rural areas.

9. Conclusion

In this paper, we have explored how engaging an intersectionality framework beyond the human, as well as a focus on multispecies triads can operationalise the conceptual frame of an eco-system of support, by paying attention to triadic relations and intersection of species, animal sex and the needs of crop plants. Using an adapted multispecies triad approach inspired by a multispecies intersectionality and integrated into an eco-system of support framework that we applied to women farmers, bovines and plants in the mid-hill of Nepal, we have been able to show that some of the crucial concerns for women's participation in gender and economic empowerment initiatives focused on vegetable and legume production as well as wintergreen picking, are in divergent ways shaped by their need for, responsibility towards, care towards and close relationships with, bovines. In order to tackle women's shock resilience, agency and gendered constraints in particular, and wider gender inequalities aggravated by climate change and COVID-19 related issues more

broadly, we need to target and fashion solutions in species-specific ways. For future work in this area, we contribute by extending the multispecies triad concept to include plants and offering a 'multispecies eco-system of support'.

Through this theoretical approach, we have underlined how two of the main resources lacking for these women are time and energy to engage in local opportunities. Thus, we propose to support them towards better conditions to engage in already existing opportunities. To do this, we suggest we need to look beyond capitalist-driven initiatives and increased meetings for women's groups. While such initiatives can be valuable, they will never be sustainable if local women do not find the energy and time to participate. Thus, rather than adding yet another set of activities or tasks to women's burdens, we call for solutions that take women's own problem formulations seriously and support them in finding ways to reduce their enormous labour burdens whilst continuing to build community of social support systems, for example including possibilities of resource-sharing, time-pooling and labour exchange, furthering their possibilities for gendered or economic empowerment.

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