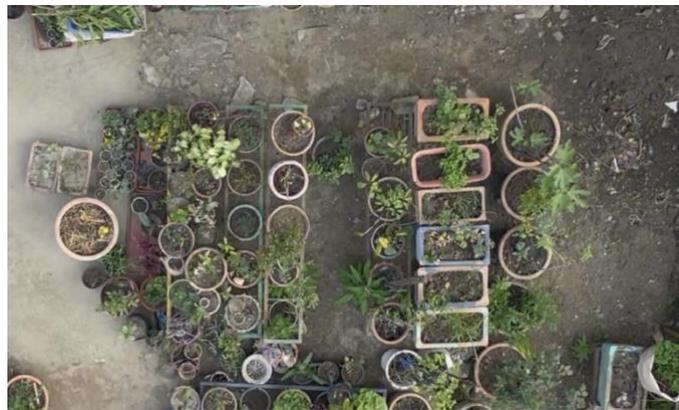


Master of Science in Geography

Gendered Rooftop Gardening Practices A Case Study of Kathmandu Valley, Nepal

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Under the supervision of Prof. René Véron



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TABLE OF CONTENTS

1	Introduction.....	1
1.1	Urbanization, Rooftop Gardening and Gendered Implications.....	1
1.2	Research rationale	3
1.3	Research Question.....	5
1.4	Structure of the research	6
2	Theoretical and Analytical Framework: A Feminist Political Ecology Approach to Everyday Urban Practices	7
2.1	Urban Agriculture and Organic Waste Management	7
2.2	Gender, Waste Management and Urban Agriculture.....	9
2.2.1	Gender and Waste Management in South Asia	11
2.2.2	Gendered Practices in Organic Waste Management at the Household Level	12
2.2.3	Gendered Practices in Urban Agriculture: Global Contexts and Rooftop Gardening in Nepal.....	13
2.3	Feminist (Urban) Political Ecology.....	16
2.3.1	Urban Political Ecology and its Feminist Extension.....	19
2.4	Analytical Framework	21
2.4.1	Gender Role Ideology and Power Relations.....	22
2.4.2	Everyday Practices	26
2.4.3	Embodiment	27
2.4.4	Emotions.....	28
2.4.5	Operationalization of Concepts	30
2.5	Research Subquestions and Hypotheses	32
3	Methodology	34
3.1	Research Location and Selected Area.....	34
3.2	Methods of Data Collection.....	36
3.2.1	Semi-Structured Interviews.....	37
3.2.2	Household-Centered Interviews and Observations	37
3.2.3	Participant Observation and Fieldwork Journal	37
3.2.4	Engaging Women's Voices: Focus Group Discussion	39
3.2.5	Institutional and Expert Insights	40
3.2.6	Document Analysis: RTG Training Manual, Websites, Brochures.....	40
3.2.7	Visual-Based Method: Urban Photography.....	40
3.3	Method of Analysis	41
3.4	Reflections	42
3.4.1	Epistemic Justice and Uneven Geographies	42
3.4.2	Positionality: Encountering Gender Roles: Personal perspective and local realities in households.....	43
3.4.3	Methodological Challenges and Limitations.....	44
4	Gendered Rooftop Garden Practices in Kathmandu Valley.....	46
4.1	The case of Kathmandu Valley: geographical, political and social aspects	46
4.1.1	A Short History of Urban Gardening and Organic Waste Management Practice in Kathmandu Valley	51
4.1.2	Policies around rooftop gardening and the promotion of organic waste segregation 55	
4.1.3	Organic/Kitchen Waste Management at the Household Level.....	57
4.2	Description of the Sample	60

4.2.1	Housing and Gardens of Respondents	60
4.2.2	Demographic Composition of Respondents	63
4.2.3	Socioeconomic and Cultural Profiles of Respondents	65
4.3	Gendered Perspective on Rooftop Gardening	67
4.3.1	Intra-household power relations and gender ideology	67
4.3.2	Two types of rooftop gardening	71
4.3.3	Motivations and Hindrances	73
4.3.4	Urban Gardeners in Kathmandu	75
4.3.5	Women's Embodied and Emotional Rooftop Gardening Experience	76
4.3.6	Women's Group and the Role of Community in Rooftop Gardening	80
5	Analysis and discussion	83
5.1	Women as Main Actors in Rooftop Gardening	83
5.2	Everyday Experience: Embodied and Emotional Well-being of Women in Rooftop Gardening	84
5.3	Gender Roles and Power Relations within the Household	86
6	Conclusion	90
6.1	Future Research	92
7	References	93
8	Appendix	107
8.1	Household Interview Guide	107
8.2	Women's Group Survey/Questionnaire	111
8.3	MAXQDA24 Code System	113

Figure 41: Rooftop gardening typology (created by FT, 2025).....	71
Figure 42: Production-oriented RTG (FT, 2025) Figure 43: Leisure-oriented RTG (FT, 2025)	72
Figure 44: Wordcloud of mentioned emotions and feelings (created by FT, 2025).....	76
Figure 45: Nepali women while gardening (FT, 2025).....	79
Figure 46: Women's group discussion and questionnaire distribution (Florence Testorelli, 2025)	81
Figure 47: Kausi Queen Competition 2021/22 (Nepali Times, 2022)	82

LIST OF ABBREVIATIONS

CIUD	Center for Integrated Urban Development
ENPHO	Environmental & Public Health Organization
FPE	Feminist Political Ecology
FUPE	Feminist Urban Political Ecology
HH	Household
KMC	Kathmandu Metropolitan City
LMC	Lalitpur Metropolitan City
NCCR	Nepal Center for Contemporary Research
PE	Political Ecology
UN-Habitat	United Nations Habitat
UPE	Urban Political Ecology
RTG	Rooftop Gardening
SWM	Solid Waste Management

1 Introduction

“I need solitude. I need space. I need air. I need the empty fields around me, my legs pounding along roads, and sleep, and animal existence. (The Diary of Virginia Woolf, 15th October 1930)

1.1 Urbanization, Rooftop Gardening and Gendered Implications

The Kathmandu Valley was once characterized by intensive agriculture and known for having some of the most fertile soils in Nepal. This agricultural abundance was supported by environmental resources that, in recent decades, have come under increasing strain. Rural-to-urban migration has contributed to making it one of the world’s top ten fastest urbanizing countries (Ishtiaque et al., 2017; Timsina et al., 2020), matching global trends in which the UN projects that 68% of the population will live in cities by 2050 (Desa, 2018). In South Asia, such demographic shifts bring a range of urban challenges, from waste management to food insecurity.

In Kathmandu Valley, these socio-environmental pressures have significantly reduced the overall agricultural production, with land use for agriculture declining from 80% in 1989 to 55% in 2016 (Ishtiaque et al., 2017). This loss of fertile agrarian land directly affects the country’s food security capacity. At the same time, these urban challenges prompted shifts in agricultural practices, as urban residents throughout the years explored new forms of urban agriculture, in this way adapting within dense environments. Rooftop gardening has emerged as one of these urban agriculture responses, offering a means of food production in areas with limited open space (Chowdhury et al., 2020; Kumar et al., 2019; Thapa et al., 2020).

In Nepal, women predominantly manage household waste. This is largely due to traditional gender norms that assign domestic tasks, such as cooking and, therefore, the management of organic waste, to women (UNEP-IETC & GRID-Arendal, 2019; Upreti et al., 2022). This gendered division of labour seems to persist in rooftop gardening, as women mostly fulfil the everyday tasks in these green and open spaces. They play a central role in maintaining these gardens.

In this way, rooftop gardening not only contributes to a more circular solid waste management system (Lohani, 2017; Upreti & Ghale, 2024) but also intersects directly with women's everyday household chores, rooftop gardening activities, and decision-making.

The practice of rooftop gardening has seen two notable peaks in Kathmandu. The first occurred during the Indian blockade of 2015, when fears of food shortages encouraged households to grow their own produce. Between 2015 and 2019, many citizens, particularly women, attended rooftop gardening trainings that covered composting, rainwater harvesting systems, and crop calendars. The second surge occurred during the COVID-19 pandemic, when again disruptions to food supply chains threatened the city (Marasini et al., 2022; Pant & Keitsch, 2020; Upreti & Ghale, 2024). During the lockdown, this prompted Kathmandu Metropolitan City (KMC) to offer online training sessions, attended by over 8'000 participants.

Over the past decade, research on rooftop gardening in Nepal has largely focused on its environmental and economic advantages, which have been largely explored in several cities in Nepal (Kumar et al., 2019; Pokhrel et al., 2025; Shakya et al., 2017; Thapa et al., 2020). Yet, little research has explored the social, more specifically, the gendered dimensions of these spaces. As women perform much of the daily household chores and activities in rooftop gardening, their experiences offer important insight into how urban agriculture is shaped by, and in turn shapes, household roles and responsibilities. Specific case studies have illustrated how gender roles, often tied to rural social structures, are being transformed in the urban context. This transformation is driven by urban agriculture, which exists within the broader context of an urban metabolism, where individuals and households must adapt to a complex array of social and economic processes in and around the city (Njenga et al., 2009). This research applies a Feminist (Urban) Political Ecology framework to examine how rooftop gardening is embodied, affectively experienced, and negotiated through women's everyday practices within the households, contributing to a deeper understanding of the gendered dimensions of urban agriculture.

1.2 Research rationale

In Kathmandu, as in many cities across the “Global South,”¹ the majority of municipal solid waste remains predominantly organic (Kaza et al., 2018). This presents both a challenge and an opportunity. In highly urbanizing areas like Kathmandu, inadequate planning, fragmented management strategies, and the complex involvement of multiple actors often lead to ineffective waste management (Bossoney, 2023). As the volume of waste continues to rise, there is a critical need for localized solutions, especially at the household level.

According to the waste management hierarchy, visible on Figure 1 (Nazari et al., 2021), waste reduction and reuse represent the most preferred and sustainable forms of waste diversion, whereas landfilling and open dumping are considered the least desirable. One such household-level strategy is composting, a simple yet powerful method that transforms organic kitchen waste into a valuable resource. Composting not only reduces the volume of waste entering the municipal system but also offers significant environmental and societal benefits (Pillai, 2025).

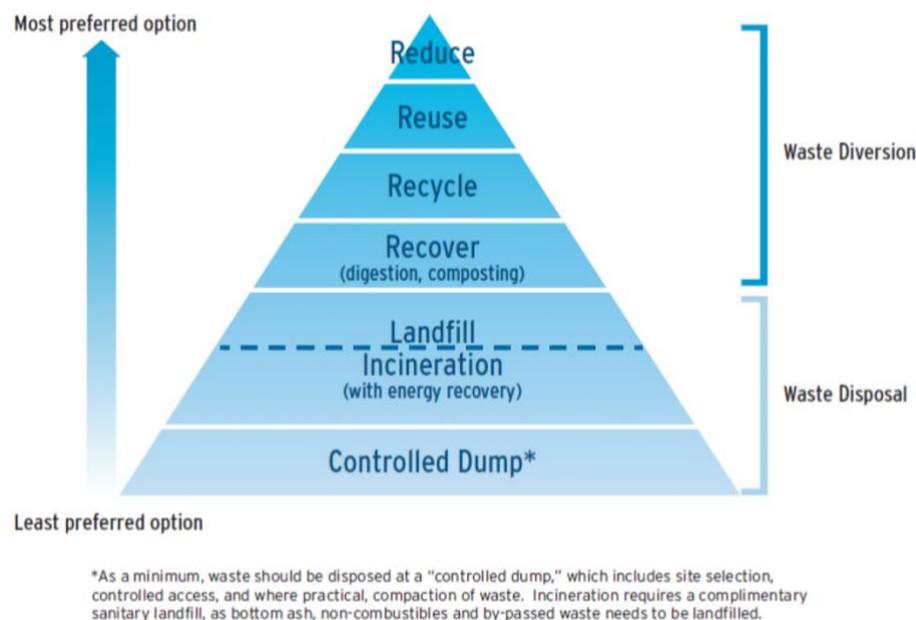


Figure 1: Waste Segregation Pyramid (Hoorweg, Daniel & Bhada-Tata, Perinaz, 2012)

¹ The term “Global South” refers to the regions of Latin America, Asia, Africa, and Oceania (Dados & Connell, 2012).

Parallel to composting, rooftop gardening (RTG) has emerged as a complementary strategy for urban sustainability. Recent literature in Nepal has largely focused on RTG's environmental benefits, including climate change mitigation, increased biodiversity, urban greening, and food security. Studies also acknowledge structural challenges such as rooftop leakage and lack of infrastructure (Bhattarai & Adhikari, 2023; Kumar et al., 2019; Lohani, 2017; Marasini et al., 2022; Pant & Keitsch, 2020; Pokhrel et al., 2025; Tuladhar, 2019). In some households, composted kitchen waste is reused directly in rooftop gardens and further used as fertilizer in the gardens, reflecting a closed-loop approach to waste management (see “reuse” Figure 1).

Importantly, these everyday practices of waste reuse are deeply gendered. In Nepali households, women are primarily responsible for cooking and, by extension, become the main managers of organic kitchen waste (UNEP-IETC & GRID-Arendal, 2019). As such, women often play a central role at the household level, particularly through composting and gardening. This gendered division of waste management inherently intersects with issues of gender roles and equity at the household level.

While some studies have begun exploring rooftop gardening in cities like Pokhara and Kathmandu, focusing on environmental, social, and economic benefits (Kumar et al., 2019; Shakya et al., 2017), the intersection of gender and (organic) waste management remains under-researched. In a recent report on “Gender Aspects of Climate Change and Sustainable Development”, the authors underline the important role gender plays in how waste is perceived, handled, and managed, while also highlighting the lack of research at the intersection of gender and waste management. Further, this lack of attention results in poor policy-making and unsustainable waste management strategies (dos Muchangos, 2024).

At the country level, Nepal, despite the growing interest in urban agriculture and circular waste practices, research on the nexus of waste, gender, and urban sustainability remains limited (Pokhrel et al., 2025).

1.3 Research Question

This sub-chapter presents the research question that guides this study and will elaborate on its specific objectives. During the COVID-19 pandemic, the Kathmandu Valley witnessed a significant increase in rooftop gardening (*kausi kheti*). As public life slowed and issues around food insecurity rose, many households began or resumed composting and reusing their kitchen waste to sustain rooftop gardens. This shift not only reflects broader trends in urban agriculture and environmental awareness, but it also raises critical questions about the social dimensions of these practices. Despite this growing phenomenon, limited scholarly attention has been given to the gendered dynamics of rooftop gardening, especially how such practices shape intra-household power relations and labour divisions.

Accordingly, this research seeks to investigate the central research question:

How do everyday practices of rooftop gardening in Kathmandu Valley shape gender roles and power relations within the household?

To explore this question, this thesis adopts a scalar and intersectional approach. It begins at the level of individual, embodied experience, then moves into relational dynamics within the household and extends outward to community interactions and, for contextual understanding, also the institutional implications of rooftop gardening on policies (Harris, 2021; Sultana, 2021).

This approach enables a nuanced understanding of how gendered labour, care work, and rooftop garden practices are negotiated, embodied, and experienced across multiple scales.

The thesis draws from feminist (urban) political ecology that centers on women's voices, lived experiences, and emotional narratives (Doshi, 2017; Longhurst, 2008). This theoretical framework prioritizes subjective accounts and affective labour and informs about the socio-material realities of women's engagement in rooftop gardening. By situating rooftop gardening within both ecological and domestic spheres, the research highlights how such practices offer a lens through which gender norms and household hierarchies may be reproduced, challenged, or reconfigured.

While this central research question guides the overall direction of the study, further sub-questions will be presented at the end of Chapter 2.

1.4 Structure of the research

The research is structured into six main chapters and follows a progressive structure, starting with theoretical grounding to empirical exploration, followed by the analysis and synthesis.

The second chapter starts with a literature review and situates the study within the broader discussions on urban agriculture, organic waste management, and gendered waste practices. Further, the review is complemented by studies on gendered organic waste management and rooftop gardening practices in South Asia and Nepal. Also, the chapter introduces the central analytical concepts mobilized throughout the study, namely, everyday practices, embodiment, emotions, and gender role ideology. These are then situated within the broader, overreaching theoretical framework of feminist political ecology. The chapter concludes with a detailed explanation of the research rationale and how the chosen concepts support the main research question.

The third chapter outlines the methodology and describes the research site, sampling strategy, followed by a detailed explanation of the qualitative methods employed. The chapter also offers a critical reflection on epistemic justice, researcher positionality, and the methodological limitations encountered during fieldwork.

The fourth chapter presents the results and provides a contextual and empirical grounding through an analysis of *gendered rooftop gardening practices in Kathmandu Valley*. It starts with a contextual presentation of the sample and an overview of Kathmandu Valley's geographical, political, and social background. The chapter concludes with its main findings on the gendered division of household chores and gardening tasks, women's embodied experiences while accomplishing these tasks, and women's roles within the broader community.

The fifth chapter analyses and discusses these results in relation to the hypotheses. It addresses the research question, its sub-questions, and their linked hypotheses while integrating empirical findings with theoretical insights from feminist political ecology and related literature.

Finally, the last chapter summarizes the key findings while identifying directions for future research.

2 Theoretical and Analytical Framework: A Feminist Political Ecology Approach to Everyday Urban Practices

The chapter starts with a broader review of urban agriculture, highlighting its multiple benefits and focusing in particular on compost-based practices as a sustainable approach to waste management. The discussion then builds on a thematic review of existing literature on gender and waste management, with particular attention to rooftop gardening and organic waste management, which includes the reuse of kitchen waste as a fertilizer. The section introduces the theoretical framework of Feminist (Urban) Political Ecology (FUPE), which guides the analysis. Finally, it outlines the analytical framework used in the study, including the core concepts and how they are operationalized in the research.

2.1 Urban Agriculture and Organic Waste Management

Over the years, the concept of urban agriculture has been evolving. In the Global North, its practices differ spatially and range from (peri-) urban farms to community farming, micro urban farms, greenhouses on rooftops, and even some indoor farming methods (Aubry et al., 2022; Morel, 2021). Though essentially influenced by the specific geographical context, in the Global South, both (peri-) urban and intra-urban market gardening can be observed. Despite rapid urbanization, these farming practices persist (Aubry, 2024).

Urban agriculture plays a significant role in climate change mitigation and adaptation by reducing greenhouse gas emissions and energy use associated with food transportation and storage, as fresh food is produced closer to where it is consumed (Gunapala et al., 2025). It can be implemented in diverse urban spaces - including public land, gardens, rooftops, barns, and even cellars - offering flexible solutions to cities seeking climate resilience and social equity. Also, does it support decentralized systems for wastewater reuse and composting of organic waste, contributing to circular resource use and lower urban waste outputs (De Zeeuw et al., 2011).

Compost-based urban agriculture addresses urban challenges by managing organic waste in urban and peri-urban areas, including rooftop gardens at the household level. This approach holds significant potential for tackling issues such as the scarcity of fresh and organic food and delivering valuable ecosystem services (Grard et al., 2017).

In climate-resilient cities, rooftop gardening offers similar benefits as urban agriculture and shares its capacity to overcome climate-related challenges (Dubbeling et al., 2019; Dubbeling & Massonneau, 2012).

Especially in the Global South, such as South Asia, where the organic waste share is still high, about 57% (see Figure 1), a decentralized collection and composting system of urban organic waste would reduce the cost of public waste management. The compost could then be used as an agricultural fertilizer in peri-urban areas and contribute to the rural-urban nutrient cycle (Drechsel & Kunze, 2001; De Zeeuw et al., 2011).

Most importantly, as an environmental and climate change mitigation measure, composting prevents organic waste liquids from entering waterways, stops the production of harmful organisms, and prevents the generation of methane released into the atmosphere (Kaza et al., 2018).

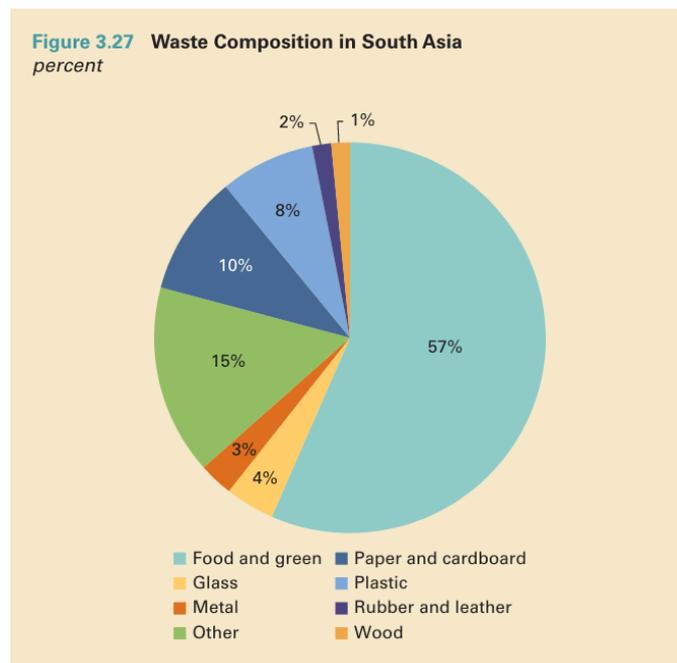


Figure 2: Waste Composition in South Asia (Kaza et al., 2018, p. 71)

In Nepal, composting offers multiple benefits across various scales. First, environmentally, it reduces the volume of waste sent to landfills, contributing to urban improvement. Second, economically, it creates new job opportunities, which are particularly relevant to Nepal's agriculture-based economy. Last but not least, on the agricultural scale, it enhances soil quality and reduces the need for chemical pesticides, supporting more sustainable farming practices (Lohani, 2017).

In Kathmandu, urban agriculture also plays an essential role in food security as it enhances the accessibility of fresh, nutritious products while supporting a dietary variety and combating malnutrition. According to a study conducted in Kathmandu Metropolitan City, 34% of the households practice kitchen and rooftop gardening (Shakya et al., 2017). In the city, rooftop gardening is an urban agricultural practice with environmental, social, and economic benefits (Pokhrel et al., 2025). A recent paper surveying 230 families reveals economic consideration (50%) as their primary motivation, before their personal satisfaction (20%). Most interestingly, through urban agriculture, the interviewed households can cultivate about 55% of their diet (Waiba et al., 2024).

2.2 Gender, Waste Management and Urban Agriculture

The thematic review seeks to deepen the understanding of the concept of gender through an examination of the existing body of literature, with a focus on the theoretical and conceptual framework. First, the analysis focuses on gendered waste management practices in South Asia, followed by a more specific review of literature on gendered approaches to organic waste management at the household level. The final section explores gendered practices in urban agriculture, specifically rooftop gardening in Nepalese households.

In Development Studies research, the application of gender as a concept is not a new phenomenon. Thematically, studies have focused on gender complexities and Sustainable Development Goals; variation in education and access to housing; natural disasters, climate change and declining natural resources; and gender roles in rural and urban areas (Momsen, 2019). In this regard, already in 1970, Ester Boserup et al. (2013) set the stage while focusing on women's role in Global South economic development, where she explored how agricultural modernization shaped the gendered division of labour and often placed women at a disadvantage. In a similar line of thought, Shiva (1988) highlighted how development and modernization eroded women's ecological roles and indigenous knowledge systems.

Moving beyond women's traditional roles in rural agriculture, this sub-chapter explores their significant involvement in urban food production (Hovorka, 2006; Njenga et al., 2009). It reviews literature on gendered aspects of household-level practices, particularly organic waste management and rooftop gardening practices.

As the previous chapter focused on global and later on regional contexts, this section builds on the same structure. Starting with a global focus, followed by a regional, country-level focus, while keeping the center of attention on the household level.

According to a report by the Food and Agriculture Organisation in Asia, households:

“Are not solitary units with undifferentiated labour, resources and incentives; but in fact are made up of women, men and children who may share, complement, differ or be in direct conflict in their need for, or interest in, improved technologies.”(FAO, 1995).

Indeed, at the household level, in most of the world’s countries, women take over most of the unpaid work (Kabeer, 2008). This unpaid “care work” usually includes the responsibility for all household chores (e.g., cleaning, washing, cooking, childcare, gardening, etc.). At the same time, the household is where the first decisions concerning waste management are made. For this reason, individuals involved in decision-making at this level represent valuable interview subjects for the study. Literature shows that women often deal with household waste and that men are the head of the household and decision makers (Darj et al., 2017; Maclaren & Thu, 2003). This finding is confirmed by a household survey from Kirtipur Municipality, which shows that women have a relatively low level of independent decision-making (20%). In some cases, decisions are made jointly (9%). However, in most cases, decision-making power rests with husbands and male respondents (66.3%).

Household decision-maker (Relationship with respondent)	Number/percentage		
Husband	140 (34.8%)		
Wife	26 (6.5%)		
Husband and Wife Jointly	36 (9%)		
Father	31 (7.7%)		
Mother	15 (3.7%)		
Father-in-law	12 (3%)		
Son	9 (2.2%)		
Daughter-in-law	3 (.7%)		
All together	3 (.7%)		
Others	15 (3.4%)		
Respondent himself or herself	M	F	Total
	75 (18.6%)	37 (9.1%)	112 (27.86%)

Source: Field Survey 2021

Figure 3: Common Household Decision-making (Ghale et al., 2023)

One oftentimes overlooked chore is the handling of waste at the household level, ranging from a large number of activities: starting with segregation of waste, household-level transport of the waste, and in some households, the production of compost (Nepal et al., 2022). This results in a differentiation of waste practices among men and women, where women cook and are responsible for the generated waste, whereas men are engaged in giving instructions and equipping the household with materials (e.g., waste bins). Consequently, this also affects the power relations and micro-politics within the household (Kongnso et al., 2024; Upreti et al., 2022). This last argument will be supported by relevant concepts and thematic literature in the following sub-chapters 2.2 and 2.3.

2.2.1 Gender and Waste Management in South Asia

Although gender-focused research on solid waste management (SWM) in South Asia and Nepal remains limited, it has gained increasing attention in recent years. One early example is Beall's (1997) study conducted in two South Asian cities that examined how women's responsibility for waste management, shaped by gender division of labour, is further influenced by factors such as wealth, poverty, class, caste, and hereditary group status. Her findings reveal that, across all income groups, women are responsible for separating dry and wet waste within the household. Interestingly, once the household income or well-being level increases, the reproductive labour tasks are increasingly taken over by female paid workers, thus replacing tasks formerly carried out by women.

A critical analysis of Lalitpur's (Nepal) Sub-Metropolitan solid waste management system recommends involving the public in decision-making processes, especially as the willingness of women's groups to actively contribute to a more sustainable waste management system is high (Sharma, 2017). In a dedicated sub-chapter, recent research has looked closely at the gender dimensions at each stage and dedicated space along the waste chain (Upreti et al., 2022). A final quantitative survey examining household perceptions of waste management found that 62.3% of respondents were dissatisfied with the current waste management system, with men reporting lower satisfaction levels than women (Acharya et al., 2021).

Research with a gender-focused perspective at the household level in Nepal is even more limited. On the country level, only two publications were available. The first one is a country-specific publication from Bhutan, Mongolia, and Nepal, which found that men predominantly occupy high-level administrative positions in the waste management sector, ranging from planners to landfill operators and managers of waste collection companies. In contrast, women are more engaged in informal roles and activities related to waste management at the household and community levels (UNEP-IETC & GRID-Arendal, 2019). The second most relevant article concentrates on household waste management with a focus on the role of gender in Nepal and contributes through quantitative and qualitative insights. First, it states a gender division of roles and responsibilities between men and women, with over 80% of the women being the household waste managers. The study highlights the importance of recognizing that gender roles and dynamics are essential for the effective planning and implementation of waste management systems (Nepal et al., 2022).

While regional studies highlight broader trends, gendered labour in organic waste management becomes most visible at the household level. The next sub-section explores how waste-related responsibilities are distributed within households, particularly regarding organic waste segregation and composting.

2.2.2 Gendered Practices in Organic Waste Management at the Household Level

In Nepali society, women are the main household waste managers, segregate waste more often, and also compost degradable waste (Nepal et al., 2022). Waste segregation into biodegradable (organic waste) and non-biodegradable waste is most commonly segregated at the household level and plays a significant role in the reduction of waste entering the waste chain (Maskey & Singh, 2017). A study conducted in Kerala, India, shows that waste segregation practices at source were more prevalent in households where female members were responsible for waste management (86%) (Rana & Narayanan, 2023). A paper focusing on Greater Jakarta in Indonesia argues that decentralized community-based waste management reinforces gender inequality by systematically relying on women to undertake labour-intensive waste management tasks within the household and in waste management facilities. This is hindering them from being formally or informally employed (Pakasi et al., 2024).

Another paper about the segregation of waste in Cameroon found that women and girls are primarily involved in non-remunerative waste jobs at home, such as sorting waste and handling kitchen waste. At the same time, boys are more involved in carrying the waste to collection points, sorting it there, and benefiting from selling recyclables or reusables (Kongnso et al., 2024). At the same time, this would recognize the work done by the housewives and support them with a small income.

Building on these gendered daily waste management practices at the household level, the final sub-section focuses on rooftop gardening as a gendered form of urban agriculture.

2.2.3 Gendered Practices in Urban Agriculture: Global Contexts and Rooftop Gardening in Nepal

While this research focuses on rooftop gardening in Nepal, first, some relevant insights from other contexts will be presented. They show how urban agriculture can reshape gender roles, improve women's status, and support household food and income needs. In Botswana, Hovorka (2006) demonstrates that women's engagement in poultry farming not only contributes to food production per se but also increases their control over household finances and responsibilities, further challenging traditional gendered divisions of labour and power.

Similar findings are made in South Africa, where Olivier & Heineken (2017) show that women involved in community gardening gain emotional well-being, pride, and greater visibility within their communities, in addition to gaining access to food and informal markets. This gain in social capital and emotional support strengthens the women's networks and their sense of agency. Another paper focuses on informal urban food production in the Global South and underscores how marginalized women, through their urban agricultural practice, create resilience, challenge spatial inequalities and build collective power through their communities (Njenga et al., 2009).

Still in Africa, in Ghana, Vercillo (2022) highlights how women's agricultural work strengthens their bargaining power in household decision-making, especially when it involves income generation or food provisioning.

These examples indicate the transformative potential of urban agriculture, not only in terms of food and income generation but also in reshaping gendered power relations, fostering women's recognition and enhancing their agency. These insights will further inform this research on rooftop gardening in Nepal as a site where gendered practices, rooftop gardening and waste management practices, and power relations intersect.

In Nepal, women are more receptive to waste management initiatives such as composting and, unsurprisingly, the primary practitioners of rooftop gardening (Upreti & Ghale, 2024). As mentioned previously, this is interlinked with their traditional domestic roles, such as cooking, which consequently implies the waste segregation management of organic and solid waste (UNEP-IETC & GRID-Arendal, 2019). Further, this is where the connection between organic waste management, composting, and rooftop gardening practices becomes evident.

Yet, literature on Nepal, from a gendered perspective, focusing on the intersection between organic waste management and the practice of rooftop gardening is largely absent. Nevertheless, one paper from Saptari (Madhesh Province), rural Nepal, examined the benefits of home gardens from a gender perspective, highlighting their positive impact on enhancing the status of rural women (Bhandari et al., 2021). In another more urban study, from the Municipality of Dhulikhel, the lack of leisure time was mentioned by 38.5% of the participants as the biggest constraint of rooftop gardening, before the lack of technical knowledge and the fear of heavy load, as visible on Figure 4 (Thapa et al., 2020).

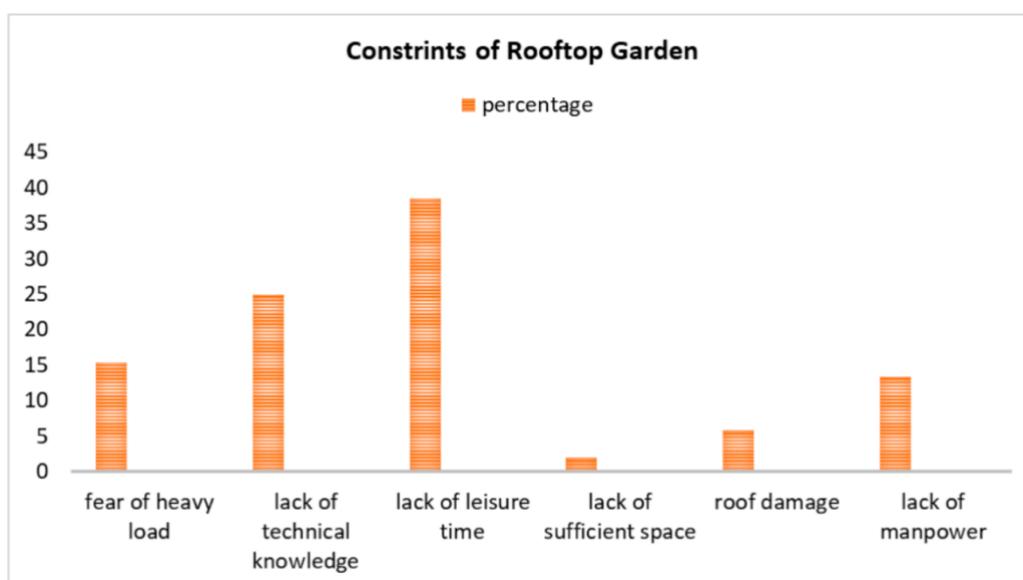


Figure 4: Constraints of rooftop garden (Thapa et al., 2020, p.245)

As elaborated further in the research rationale, there is currently a lack of literature specifically addressing gendered rooftop gardening practices and, therefore, the embodied and affective aspect of women in the Kathmandu Valley. So far, without a gendered differentiation, a recent survey has analysed people’s overall health condition and their urban agricultural practice, revealing that half of the participants recognize their health as excellent and 35% as very good.

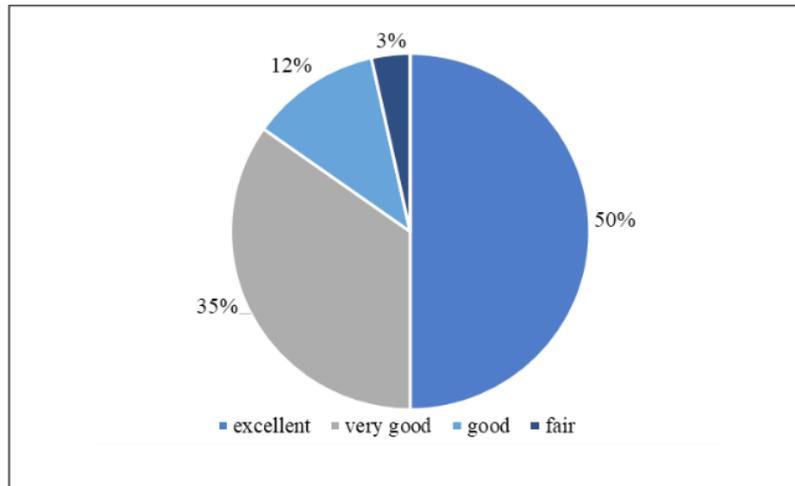


Figure 5: Overall health condition of people practicing urban agriculture in Kathmandu, Bagmati Province (Waiba et al., 2024, p. 148)

This opens up the potential for a gendered analysis. This analysis is even more relevant, as social dynamics, particularly gender relations at the household level, often called micropolitics, play a significant role in shaping the broader “urban metabolism of organic waste” (Kongnso et al., 2024). Consequently, this research aims to deepen the understanding of gendered practices surrounding rooftop gardening, with particular attention to how these practices shape gender roles and power relations within the household and how it is impacting the women’s wellbeing, such as through their emotional and embodied experience.

In sum, and across various global contexts, women’s engagement in urban agriculture has not only enhanced food security, household nutrition, and income stability but, above all, transformed power dynamics. The mentioned studies reveal that women gain social visibility, decision-making power, and emotional well-being through their roles in food production. These insights inform the analytical and theoretical framework, presented in the next chapter, which subsequently contributes to shaping the hypotheses within the context of rooftop gardening in Nepal.

2.3 Feminist (Urban) Political Ecology

At the core of this thesis are rooftop gardening practices, predominantly carried out by women, and their associated intra-household power relations. Therefore, the use of a gendered perspective and the advancement of related concepts helped embed the research. This thesis will rely on Feminist Political Ecology (FPE) as its main theoretical framework. FPE was chosen for its ability to connect gender, environment, and power, particularly as they are negotiated through everyday practices within household and rooftop garden spaces.

Given that the research is situated in Kathmandu, the framework also draws on insights from Urban Political Ecology (UPE) to account for the specificities, such as urban agriculture and waste management, in the urban context. The study enriches FPE by integrating concepts such as gender role ideology, everyday practices, embodiment, and emotions, which allow for a more nuanced understanding of how environmental practices such as rooftop gardening are experienced and negotiated by women.

First, an overview of FPE and its linkages to Political Ecology (PE) and Urban Political Ecology (UPE) will be given. Finally, the review will conclude with a closer examination of Feminist Political Ecology scholars who focus on micro-political scales, including household dynamics and the female body.

According to Robbins (2020) Political Ecology is neither a methodology nor a theory but rather a *community of practice* united around a *certain kind of text*. He characterizes it more as a kind of argument, text, or narrative, which seeks to:

“Address the condition and change of social/environmental systems, with explicit consideration of relations of power. Political ecology, moreover, explores these social and environmental changes with an understanding that there are better, less coercive, less exploitative, and more sustainable ways of doing things.” (Robbins, 2020, p. 17)

Political Ecology emphasizes, therefore, the politicized aspect behind ecological systems and further its direct links to economic processes. Thus, combining ecology and political economy concerns (Blaikie & Brookfield, 1987).

Starting with the 1970s feminist movements and women-centred scholarship, Feminist Political Ecology has since then approached environmental and societal issues with a feminist sensibility. In the 1990s, FPE emerged as a subfield of Political Ecology and critical development studies (Harcourt et al., 2023). FPE proposes a better understanding of everyday, embodied and emotional aspects of nature-society relations (Sultana, 2021; Sundberg, 2017). In this way, feminist theory, perspectives, objectives and practices are added and brought closer to Political Ecology (Rocheleau et al., 1996).

Over the years, FPE has continuously led to the development of new theoretical and methodological tools and offered a range of new perspectives (Elmhirst, 2011; Sultana, 2021). This is the case of an early research by Fortmann (1996), where she chose to form separate groups of men and women to create spaces where participants could express themselves more freely. This methodological choice underlines the significance of gender and contributes to the development of new feminist political ecologies. Furthermore, FPE continued to develop itself and started to pay attention to often overlooked topics or those at the margins and encouraged more in-depth understanding. They developed conceptual frameworks that illustrate how environmental identities are shaped through interactions with nature and daily material practices (Harcourt et al., 2023, pp. 4–5).

In FPE, the focus on gender, with close ties to class, race, caste, ethnicity, nationality and other relevant axes of power, shapes the access to and control over natural resources (Harcourt et al., 2023; Rocheleau et al., 1996; Sundberg, 2017). Although some attribute gendered experiences of the environment to biological differences (Mies, 1986; Shiva, 1988), Feminist Political Ecology argues that:

“There are real, not imagined, gender differences in experiences of, responsibilities for, and interests in ‘nature’ and environments, but these differences are not rooted in biology per se. Rather, they derive from the social interpretation of biology and social constructs of gender, which vary by culture, class, race, and place and are subject to individual and social change.” (Rocheleau et al., 1996, p.3)

Gender differences are constructed by society, norms and culture. Whereas sex refers to biological differences between women and men and according to physiology and reproductive capabilities (Butler, 2011; de Beauvoir, 1960).

In geography, political ecologists have focused on gender as a relation through which access to and distribution of natural resources are differentiated within societies

(Nightingale, 2006). Depending on the culture of a country, region, or city, the idea of what a woman or a man should be differs, and can change over time and scale (Truelove, 2011). Thus, in the context of Nepal, for instance:

“Hindu women cannot be understood in isolation from Hindu culture – that “system of meanings” which is so important in defining how women perceive the world and their proper place in it, and how they are perceived by others.” (Bennett, 1983, Section VII)

After Elmhirst (2011), the potential of this gendered approach is how it problematises naturalised and undifferentiated categories of people and social relationships (men, women, gender relations) while critically emphasizing the relationships between people and the environment. Thereby, exploring how gender relations shape both the symbolic and material dimensions of environmental issues (Nightingale, 2006). In her research about urban agriculture and Ladies’ Poultry Farm in Botswana Hovorka (2006), points out the importance of gender as it:

“remains an integral part of and key element in understanding agrarian restructuring and rural-urban transformation in Botswana.” (p.207)

In this context, women are renegotiating their marginalized positionalities within an agrarian restructuring and rural-urban transformation in Botswana. This represents an opportunity for them as they claim their traditional roles and responsibilities associated with poultry production. A similar finding was made with a focus on urban and commercial agricultural spaces in Botswana; it was revealed that the empowerment of women through increased access to land and productive activities increased their visibility, status, and value Hovorka (2012).

Both papers offer relevant insights for this study as they illustrate how participation in agriculture can challenge and shift traditional gender roles within the household. These findings underscore the importance of examining how women’s involvement in rooftop gardening may similarly influence household dynamics and gendered power relations in urban Nepal. Nevertheless, such changes in gender power relations remain bounded, due to compelling material, discursive and ethical implications of shifting positions within dominant structures.

Rochelau (2008) argues that analyses of gendered access to, control over, and management of natural resources, as well as household relations and community politics, are important insights that demonstrate complexities of households, communities, regions, and nations.

Unequal access to water is one such example, pointed out by Truelove (2011) those who emphasize its daily impact on women. Her paper reveals that in India, the journey to access water often requires women to navigate public spaces, and this can pose significant risks to their safety. The socio-spatial division of space, consequently, can mean the inclusion or exclusion of certain social groups. Finally, these unequal embodied experiences by women call for a rethinking of water infrastructures, insecurity, and inequality. This last paper highlights that not all everyday, environment-related practices inherently lead to the renegotiation or transformation of traditional gender roles.

After presenting the theoretical framework of Feminist Political Ecology, the following sub-chapter aims to situate this framework within the urban context of the fieldwork location: Kathmandu.

2.3.1 Urban Political Ecology and its Feminist Extension

Urban Political Ecology (UPE) examines how social power dynamics drive uneven development, with particular attention to the reciprocal relationship between urban environments and political and cultural economic structures. This includes exploring issues such as access to water, food, and green space, especially as they are shaped by intersecting factors like class, race, gender, age, and physical ability (Heynen, 2017).

This framework is particularly relevant in the context of Kathmandu, Nepal, where the household is an important site of waste generation, but also because it is where human-nature relations are being formed, negotiated and challenged (Nepal et al., 2022; Shillington, 2008). As forwarded in the literature review about gendered waste and rooftop gardening practices at the household level, women often deal and segregate household waste, whereas men are the head of the household and decision makers (Nepal et al., 2022). This research builds on these insights by examining, mainly, women's everyday engagement with rooftop gardening and organic waste, paying particular attention to how their embodied and emotional experiences may impact their intra-household power dynamics.

UPE is situated at the intersection of political ecology and urban geography (Wachsmuth, 2012) and provides a lens for understanding these dynamics. Heynen et al. (2006) complement this perspective as they conceive the city as a metabolism (see Figure 6), itself linking humans as individuals to the socio-urban and spatial processes surrounding them. Through the metabolism approach, the city becomes:

„Constituted through dense networks of interwoven socio-ecological processes that are simultaneously human, physical, discursive, cultural, material and organic” (Heynen et al., 2006, p. 21)

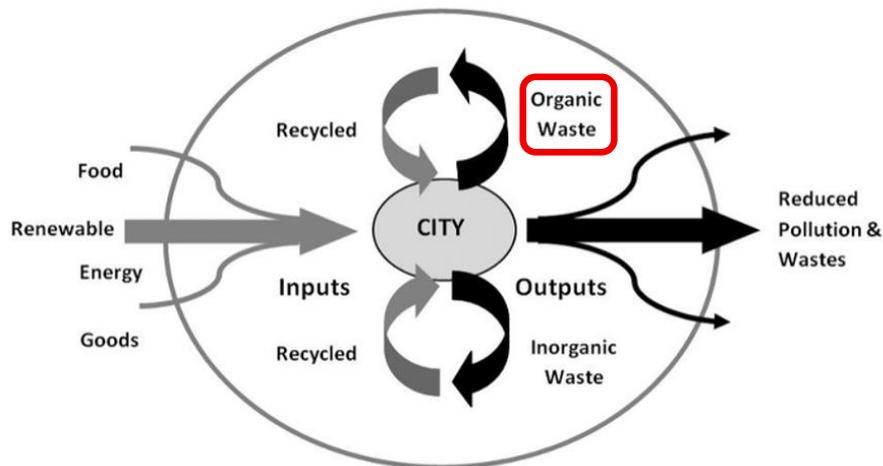


Figure 6: Circular Metabolism Model of Cities (Heynen et al., 2006)

These metabolic flows are not neutral, but they are deeply structured by power relations, including those based on gender, for example, within the household (Kongnso et al., 2024). Yet, UPE alone does not fully account for the gendered and especially embodied dimensions of these everyday practices, especially those occurring in private or domestic urban spaces.

To address this gap, Feminist Urban Political Ecology (FUPE) becomes particularly useful. The theory enriches UPE by advancing how gendered divisions of labour, access to resources, and decision-making power are reproduced within urban socio-ecological systems. FUPE brings together insights from Feminist Political Ecology (FPE) and urban studies and supports an analysis of urban, gendered environmental practices.

Beyond analysing structures of access and control, FPE allows for micro-scale analysis of everyday life, particularly within households and communities. The theory is attentive to how gendered access to, control over, and management of natural resources at a larger level of analysis is experienced through, for example, embodied relationships with the environment (Hovorka, 2012; A. J. Nightingale, 2011; Sultana, 2021). These micro-level analyses underscore the specificity and complexity of men's and women's environmental relations across diverse rural/urban geographies, e.g., in Botswana (Hovorka, 2006). These perspectives are particularly relevant in the context of Kathmandu, where rooftop gardening serves not only as a means of kitchen household waste management and food production, but also as a site where gender roles may be reinforced, resisted, or transformed.

2.4 Analytical Framework

Feminist Urban Political Ecology (FUPE) allows for an analysis of rooftop gardening and the linked everyday practices by women in Kathmandu. This approach enables a focus on how urban ecological, more precisely rooftop garden, practices are experienced at multiple scales and are shaped by gendered power relations.

Central to FUPE is the scalar approach, which traditionally spans from the intimate scale of the body to broader levels such as the household, community, and nation, and has been largely applied (Doshi, 2017; Elmhirst, 2011; Ge et al., 2011; A. J. Nightingale, 2011; Truelove, 2011). In this thesis, a modified scalar approach that begins with the intimate scale of the body, particularly through the lens of embodiment and emotions, and then focuses primarily on the household and community scales. These scales are particularly pertinent in understanding gender roles and power relations in the household and within the urban context. Less emphasis is placed on the national scale, as the research seeks to explore the micro-level dynamics within the household and communities.

Throughout the research, FUPE and the adapted scalar approach served as a conceptual foundation, guiding the integration of key analytical concepts.

Combining Feminist Urban Political Ecology with the 3E's (everyday, embodied and emotional) (Harris, 2021), this research places women's emotional experiences and embodied labour at the centre of analysis. This allows for a deeper exploration of how rooftop gardening shapes, and is shaped, by intra-household power relations and the negotiation of gender roles.

The following sub-chapters will elaborate on the core concepts underpinning this framework, beginning with gender role ideology, followed by detailed discussions on the 3E's (Everyday, Embodiment and Emotions).

2.4.1 Gender Role Ideology and Power Relations

Gender roles are shaped by prevailing cultural and societal norms, which assign different responsibilities and expectations to men and women Moser (1993). In her book, she outlines the “triple role” approach, which can be broadly categorized into three main types: productive roles (income-generating work), reproductive roles (unpaid domestic and caregiving responsibilities), and community management roles (voluntary work that supports collective welfare). The framework by Moser emphasizes that women often carry a triple burden, balancing responsibilities across all domains. Later on, this framework was complemented by Wickramasinghe's (2000), as shown in Figure 7, “gender roles/responsibilities framework”.

Gender Roles/ Responsibilities Framework	
Women	Men
<p>Women’s productive roles and responsibilities Include women’s roles and responsibilities that yield economic remuneration whether for manual labour; professional labour; subsidiary activities; part-time work or casual labour etc.</p> <p>Reproductive roles and responsibilities Include women’s roles and responsibilities within the household and family: inclusive of bearing, nurturing, rearing children; cooking; cleaning; washing; fetching water/ fuel-wood; marketing; caring for sick and the elderly, etc. <i>(Women are principally identified in relation to these roles and responsibilities).</i></p> <p>Community roles and responsibilities Include women’s role and responsibilities in the community: inclusive of maintaining kinship relations; religious activities; social interactions and ceremonies; communal sharing and caring activities; community survival strategies; etc.</p>	<p>Men’s productive roles and responsibilities Involve men’s roles and responsibilities that yield economic remuneration whether for manual labour; professional labour; subsidiary activities; part-time work; casual labour etc.</p> <p>Family roles and responsibilities Involve the occasions and the degrees to those men who are involved in household/ family maintenance. Depending on the many variables of culture, community, geography and or area men might contribute in the provision of travelling; protection to the family; trifling household tasks, etc.</p> <p>Public roles and responsibilities Involve men’s public roles and responsibilities that are inclusive of their visibility in the public and powerful spheres- of politics; in decision making bodies; in ‘status’ building activities; in international forums, etc.</p>

Figure 7: Gender Roles/Responsibilities Framework (Wickramasinghe, 2000)

From a Feminist Political Ecology perspective, Rocheleau and other Feminist Political Ecology authors made an earlier differentiation in the role attribution between genders visible in Figure 8.

Most interestingly, they underline how environmental rights and responsibilities are gendered spatially and around resource tenure, such as land, water, trees, and animals. Previously, resource tenure has been mainly discussed in the context of rural development, whereas gendered power over environmental quality was more approached in urban contexts (Rocheleau et al., 1996).

Resource tenure

Gendered resource tenure encompasses both rights and responsibilities and can be divided into four distinct domains:

- 1 control of resources as currently defined;
- 2 access to resources (de facto and de jure rights; exclusive and shared rights; primary and secondary rights);
- 3 gendered use of resources (as inputs, products, assets; for subsistence and commercial purposes); and
- 4 gendered responsibilities to procure and/or manage resources for family and community use.

Figure 8: Gendered environmental rights and responsibilities (Rocheleau et al., 1996)

Whereas Rocheleau et al.'s (1996) gendered environmental division remains broader, Wickramasinghe's (2000) adapted framework clearly divides it and will serve as a reference in this research.

In the majority, men are engaged in the productive role, while women's burden is mainly reproductive. This categorization is usually rooted in the predominant norm, where the male is considered the breadwinner, and the housewife and the children are dependent. Further, this implies the social construct under which men are considered household heads, further resulting in the gender division of work (Hartmann, 1976). However, Boserup's (1970) findings have challenged the perception that women play only a marginal role in economic life, highlighting their crucial productive roles in agriculture, especially in the Global South. Kabeer (2008) completes this finding, pointing out that traditional definitions of economic activity have privileged paid work while overlooking or devaluing unpaid labour, much of which is performed by women. Over the past 20 years, through publications by Gibson-Graham et al. (2020) more attention has been given to the unpaid work and therefore less monetised economies, also referred to as "iceberg economies". The productive work is paid, whereas the reproductive work is unpaid. As it is still the case in most societies, women tend to do more informal work, usually spatially limited to the household and their neighbourhood (UNEP-IETC & GRID-Arendal, 2019).

In Nepal, according to the most recent numbers published by the Gender Equality and Social Inclusion (GESI) Working Group, women’s access to employment is relatively high: women’s labour force participation reaches 79.3% compared to 87.1% for men. These figures should be interpreted with caution, as they account only for the productive sector and exclude unpaid reproductive labour. At the same time, the employment distribution by occupation shows a clear gender disparity: women are disproportionately concentrated in low-skill jobs (55.9% compared to 33.5% of men). In medium-skill jobs, their representation remains lower (20.6%), yet, interestingly, women surpass men in high-skill positions (23.5%).

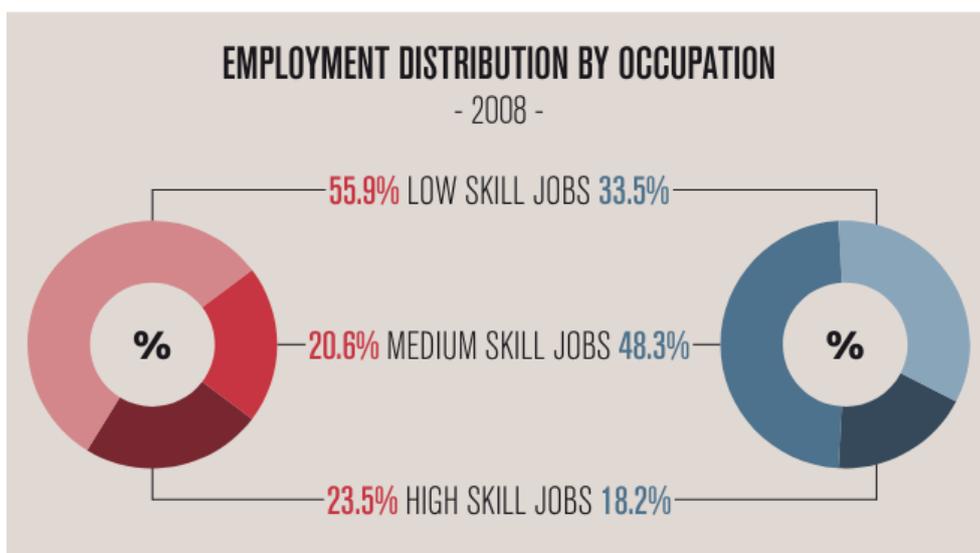


Figure 9: Distribution by status in employment in Nepal
(UNEP-IETC & GRID-Arendal, Nepal, 2019, p.44)

A study focusing on the household level and the distribution of working hours reveals some interesting context-specific data. Married women in urban and rural areas spent more hours on childcare and cooking, followed by elderly care. Interestingly, married women aged 15-25 and married men aged 36-45 spent more hours on domestic chores among all age groups in urban areas of Nepal. Most relevant for this research is also that married men and women aged 45-60 spent fewer hours on domestic chores among all age groups in the urban and rural context of Nepal (Dhungel, 2022). Despite still uneven distribution of household chores and lower decision-making, the status of women, their rights, roles, and responsibilities in Nepal are changing. This becomes visible as Human Development Gender Equality Indicators keep improving, consequently improving their socioeconomic and political roles (Bhandari, 2023).

From gender attributed roles and responsibilities, the concept of gender norms and ideology refers to “an individual’s attitudes to how roles of women and men are and should be shaped by sex...and accordingly, gender roles are social psychological constructs, not biological.” (Somech & Drach-Zahavy, 2016, p. 1). After this concept, employed wives with more traditional gender beliefs are more likely to view an unequal division of household chores as fair, whereas those with less traditional beliefs are more likely to see it as unfair (Surinya, 2000). To this extent, the household, the family are a strong source of gender role ideology formation, where gender-traditional/egalitarian parents are more likely to have gender-traditional/egalitarian children. Yet, factors at the societal level might be linked to the development of traditional compared to egalitarian gender role ideologies (Somech & Drach-Zahavy, 2016). In the same line of thought, Teerwichitchainan et al. (2010) addresses gender role ideology, noting that more egalitarian views between men and women lead to a more balanced division of household responsibilities.

In the context of Nepal, the household responsibilities mostly follow a division of productive and reproductive labour, with women being primarily responsible for cooking, cleaning, washing, childcare, and elderly care, as well as main household waste managers, and more active in community initiatives. Thus, they tend to be more concerned about the environment, have a stronger sense of civic responsibility, and are willing to improve the living conditions of the households (Acharya, 1994; Nepal et al., 2022; Rocheleau et al., 1996; UNEP-IETC & GRID-Arendal, 2019). This unequal division of household work causes a higher burden on women’s everyday lives. A study conducted in Birendranagar Municipality, Nepal, contributes to the discussion by showing that women’s domestic responsibilities are often framed as a way to maintain household harmony, even though they can lead to stress and reinforce gender inequality, as women must balance both household and professional roles simultaneously (Paneru, 2025). Additionally, socio-cultural expectations within the society reinforce male authority and women’s subordination across multiple facets of life, making unequal labour divisions appear natural and acceptable (Dahal et al., 2022). In rural Nepal, household decision-making remains a complex phenomenon that varies according to ethnicity, gender and the nature of the household’s activity (Devkota, 1999). Kaspar (2006) notes that the high outmigration of Nepali men has led to a rise in female-headed households and increased women's participation in decision-making.

This increased visibility does not necessarily result in substantive decision-making power, as women are not always granted the authority to make decisions across all domains. In some cases, they still have less power and autonomy than men in making decisions, for instance, about their health care. Many women express difficulty in managing new competencies alone and feel a sense of relief upon their husbands' return (Acharya et al., 2010).

2.4.2 Everyday Practices

This section draws on everyday practices, the first of the 3E framework, to deepen the analysis of rooftop gardening and its social implications (Harris, 2021). Within Feminist (Urban) Political Ecology, everyday practices are crucial for understanding how gendered power relations are lived, negotiated and potentially transformed through routine interactions with people, places, and resources.

In the literature, everyday practices refer to daily routines and interactions with individuals and communities strongly embedded in their environment and resources (Sundberg, 2015). A case study from rural Nepal (Nightingale, 2011) identifies such activities as forest harvesting, agricultural work, food preparation and consumption, highlighting how these tasks are embedded in both ecological systems and gendered expectations.

According to Elmhirst (2011), in a dedicated subchapter on emerging directions in feminist political ecologies draws attention to recent feminist scholars who advocate for a scalar approach. Not only do they focus on the scale of the body and the household, but also their interconnections are highlighted. This is notably the case of two research papers. The first is on the politics of migration and natural resource management, examining how the linking of scales and spaces affects the resilience of gender norms as they are reinforced through everyday water-related practices in rural China (Ge et al., 2011). The second, in a more urban setting in Delhi, analyses the everyday practices of water access and validates the relationship between bodies and cities (Truelove, 2011).

2.4.3 Embodiment

Embodiment, the second pillar of the 3E framework (Harris, 2021), highlights the active and material experience of everyday life, shaped through bodily presence and physical engagement with space. According to the scalar approach, the first and most intimate level of analysis starts with the body. In urban surroundings, the body can be conceived as a material and political site, a dimension of urban political ecology (Doshi, 2017).

Feminist theorists, especially Elizabeth Grosz, have largely contributed to linking bodies and cities, meaning bodies are bound to cities and vice versa.

“The city provides the order and organization that automatically links otherwise unrelated bodies: it is the condition and milieu in which corporeality is socially, sexually, and discursively produced” (Grosz et al., 1999, p. 382)

The statement positions the urban environment as a key space where the body is not only located but also produced and shaped by intersecting power structures, including gender, class, race, and sexuality. In this light, the body becomes a site of identity, where social hierarchies are expressed, reinforced, or contested (Longhurst, 2008).

Feminist geographers have long explored how urban spaces interact with bodies. Longhurst’s (2008) work, for example, revealed how shopping malls in New Zealand were not designed for pregnant bodies, shaping how women inhabited or avoided public space. As she notes:

“Bodies come in a variety of forms that exist in a variety of temporal and spatial contexts...they are inscribed and inhabited by intersecting sets of power relations.” (Longhurst, 2008, p. 51)

She highlights the social construction of bodies and urban spaces and their tangled linkages. In the same line of thought, Nightingale (2011) argues:

“In part, I want to explore how “environment” is an extension of and extends to the body as a site of material reproduction and ecological impact.”(p.155)

This underscores how environmental practices, such as rooftop gardening, are deeply embodied, performed through the body, while at the same time shaping the environment.

In Kathmandu, urban gardening and, more specifically for this research, rooftop gardening, are physical practices within gendered urban spaces. These spaces expose how bodies experience the city differently, a phenomenon referred to as subjectivities (Doshi, 2017; Longhurst, 2008). Understanding how women feel in these spaces while doing their household and rooftop gardening chores is key to understanding the micro-politics and gendered power relations within households.

In the urban context, these embodied subjectivities have allowed a better understanding of everyday environmental governance and power structures (Truelove, 2019). Thus, the analysis of the body, the household, or the community is highly valuable and central for social reproduction and livelihoods; it reveals other realities and possibilities to light (Harris, 2021). In this study, embodiment is central for understanding how rooftop gardening is experienced through bodies, emotions, and routines, and how it affects intra-household gender dynamics and power relations.

2.4.4 Emotions

For feminist political ecology, the focus on emotions and affect plays a central role. This included, as well, the broader scale analysis of how markets, economies, households, and communities all contribute to the resurgence of complex emotions. In this way, emotions include power relations, contestations and contribute to explaining everyday environmental governance. So-called emotional geographies and knowing why and how they occur contribute to informing about the resource struggles and the nature-society relations (Sultana, 2021). In an earlier section, the author recalls that virtually everything we do has accompanying emotion(s) (Sultana, 2011).

In this research on rooftop gardening, the application of the concept of emotions has been adopted by Doshi's (2017) paper on Embodied Urban Political Ecology, especially her fourth proposition, where she states that affect and emotion are also material and embodied experiences. After her, this approach gives valuable insights as they play an important role in shaping citizens' claims to the city. This last argument was well researched in the context of Bangladesh, where the role of women's emotions through social media and their political mobilization was analysed (Gama, 2018). Other research focused on rural areas in Bangladesh or Delhi by analysing the unequal experiences of everyday water practices and how this would affect their bodies, but also the emotions of women.

In the context of Delhi, women suffer particularly under the physical and emotional stress of working extra hours for less pay, all kinds of other everyday (water) practices, such as physical labour or the resulting experience of public shame (Sultana, 2011; Truelove, 2011)

Through the body, we feel emotional experiences and expressions, making it the most intimate scale for analysis. In the context of Feminist Political Ecology, emotions can be understood as the final extension of the scalar approach, following the body and everyday practices. As emphasized by Davidson & Milligan (2004) our bodies, they are inseparable from our emotions; they are the very sites through which feelings are processed, expressed, and made meaningful. In the case of rooftop gardening, this means that women engage with urban nature in an emotional and sensory way. The body becomes the medium through which the urban garden and the soil are felt and emotions are created, while also being processed. In this way, the rooftop garden becomes not only a productive space but also home to a diverse range of emotions.

2.4.5 Operationalization of Concepts

This section presents a table to analyse the gendered dynamics of rooftop gardening (RTG) practices. It illustrates how the core theoretical concepts - gender roles and power relations, and 3Es - were operationalized: Everyday Practices, Embodiment, and Emotions (Doshi, 2017; Harris, 2021).

The coding structure was informed by the theoretical framework of Feminist (Urban) Political Ecology and guided by the above-mentioned concepts. In this way, the codes were developed both deductively from the literature and inductively from the interview data. The concepts were then translated into measurable and observable variables and coded accordingly using MAXQDA24, a qualitative analysis software. These variables were differentiated into what was explicitly asked or stated by the interviewees: measured variables and what was inferred or interpreted through narratives, tone, or body language, observed variables. This operationalization is important as it facilitates the understanding of how the different concepts were defined.

Concepts	Measured variables	Observed variables	Codes MAXQDA
Gender Roles and Power Relations	Decision-making, household support, group membership	Respect, gratitude, shared experiences, gender role narratives	“decision-making”; “changes in relationship/family since RTG”; “division of hh chores”; “maid support”; “women’s group participation”; “gender roles/norms”; “observations*”; “occupancy outside the household”; “governmental/ policy support”

3 E's (Everyday Practices; Embodiment, Emotions)			
Everyday Practices of RTG activities and household chores	Chore frequency, RTG involvement, waste practices	Recognition within the family, support in the family, from a maid	“maid”; “frequency of support by maid”, “support by family in hh”; “quantity of hh chores accomplished”; “waste segregation”; “compost”; “motivation RTG”; “hindrance RTG”; “everyday practices RTG”
Embodiment	Embodied experience	Body language, physical activity of RTG and hh chores	“embodied experience before/during COVID”; “body/physical wellbeing”;
Emotions	Emotional motivation, reported feelings (e.g. about RTG, household chores), recognition of hh chores by the family	Emotional tone, expressions, visible feelings	“emotional state”, “emotions/feelings on RTG”, “feelings on family, community, hh chores”, “wishes on RTG”; “motivation joining a women’s group”;

Figure 10: Operationalization of the concepts (created by FT, Excel, 2025)

2.5 Research Subquestions and Hypotheses

After the thematic literature review and the presentation of the theoretical and conceptual frameworks, this final chapter of the section outlines the specific research questions guiding the study. The central research question remains:

“How do everyday practices of rooftop gardening in Kathmandu Valley shape the gender roles and power relations within the household?”

To operationalize this broader analysis, three sub-questions were developed. Each is presented below with an explanation of its significance for the research, followed by a corresponding hypothesis.

The first sub-question:

1. How common is rooftop gardening in Kathmandu, and who practices it, and what factors motivate or constrain their participation?

This first sub-question helps with a general understanding of the phenomenon of rooftop gardening in Kathmandu. It situates the research empirically by identifying who engages in rooftop gardening (e.g., by age, caste, profession, gender) and why. It also considers their motivations (e.g., food security, leisure, connection to nature) or the structural constraints (e.g., lack of space, municipal support, economic barriers) that engage them in the activity.

Deriving from the theoretical framework and the conceptual framework, the hypothesis states:

H1: Women are the main actors practicing rooftop gardening in Kathmandu. They are mainly motivated by guaranteeing food security for the household, but due to a high workload at the household level, they do not find time to pursue rooftop gardening.

The second sub-question uses the scalar approach and focuses on women’s embodied and emotional experience of rooftop gardening:

2. How are everyday practices linked to rooftop gardening embodied by women, at an individual household level, and what is the role of the community?

This question uses the scalar approach, starting from the most intimate level of analysis: the body, moving to the household level, and the community. The body centres women's embodied and emotional experiences of rooftop gardening, an underexplored dimension in the literature. By highlighting how the practice is felt and enacted, this sub-question allows for an understanding of rooftop gardening not only as a productive household chore of their everyday life, but also possibly improving their well-being. Looking at the community scale complements this analysis by showing how women's rooftop gardening practices are influenced not only within but also outside the household.

The second hypothesis states:

H2: Women involved in rooftop gardening report improved physical and mental well-being, which is attributed to their daily engagement in the activity and their close relationship with their community.

The third sub-question explores how participation in rooftop gardening and related household practices impacts gender roles and household decision-making:

3. To what extent (or how) does the participation in rooftop gardening and the related household activities, such as waste sorting and composting, impact women's decision-making power within the household?

This sub-question directly addresses the core aim of the research: understanding the intersection of everyday practices and intra-household power relations. It is relevant because it assesses whether and how engagement in rooftop gardening and associated tasks translates into shifts in traditional gender roles, greater autonomy, or new forms of recognition and authority for women within the household.

H3: Through rooftop gardening and related household activities, such as sorting waste, composting, women experience a shift in traditional gender roles, gaining greater autonomy and decision-making power within the household.

These sub-questions guide the empirical investigation. Each sub-question was designed to allow the formulation of hypotheses that can be examined qualitatively and contextually, contributing to a nuanced understanding of gendered urban agriculture practices in Kathmandu.

3 Methodology

The following chapter outlines the qualitative methodological approach, elaborates on the various data collection methods and their analysis, and concludes with a discussion of positionality and the principal challenges and limitations encountered.

The fieldwork for this thesis was conducted between the end of February and mid-June, in parallel with an internship experience at CIUD (Centre for Integrated Urban Development). Together with Bedhika Pudasaini, my Nepali translator, we were able to collect primary data through direct individual semi-structured interviews at the household level, key informants from the NGO and municipal level and meet with a women's group.

These vivid discussions were complemented by formal and informal chats, supporting the quality and relevance of the data. Additionally, my three-month stay in an urban host family in the neighborhood of Koteshwor in Kathmandu deepened my understanding of Nepalese culture and inner household relations. All of these different insights and observations have backed this research.

3.1 Research Location and Selected Area

The fieldwork took place in the Kathmandu Valley, more precisely, in the blue area encircled in Figure 11. The specific location of the fieldwork was the metropolitan cities of Kathmandu and Lalitpur and the municipalities of Kirtipur and Tokha.

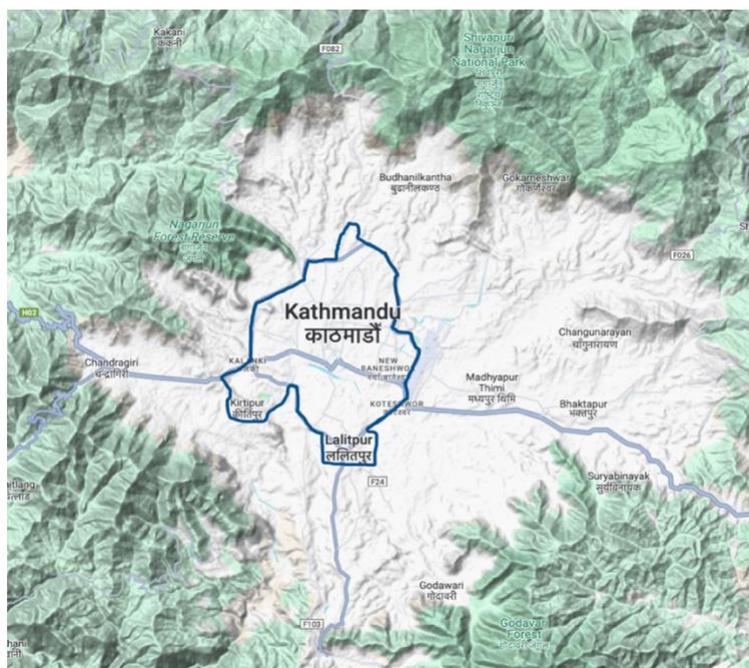


Figure 11: Research area in the Kathmandu Valley (adapted by FT from Google Maps)

To address the research question, individuals engaged in rooftop gardening and some doing urban gardening were purposively sampled. This sampling method is known as purposive sampling and advances two different kinds of approaches to sampling: snowball sampling and theoretical sampling. The first, snowball sampling consists of getting in touch with some first relevant interviewees to the research question and then, through them, establishing new relevant contacts (Bryman, 2008). Since it was difficult at the beginning to find interviewees practicing RTG, the snowball sampling approach seemed to be an easy and still valuable approach. One reason for the difficulty is linked to the character of the research and the sampling barrier that is set. Almost all of the interviewees were homeowners, as renters usually don't have access to a rooftop.

The snowball sampling approach influenced the interview locations, as illustrated in Figure 12, and resulted in a broader distribution of these locations. This accounts especially for the rooftop gardening interview location. In contrast, almost all of the more informal urban gardening interviews were conducted in the metropolitan city of Lalitpur along the river. This is due to the higher availability of agricultural land next to the river.

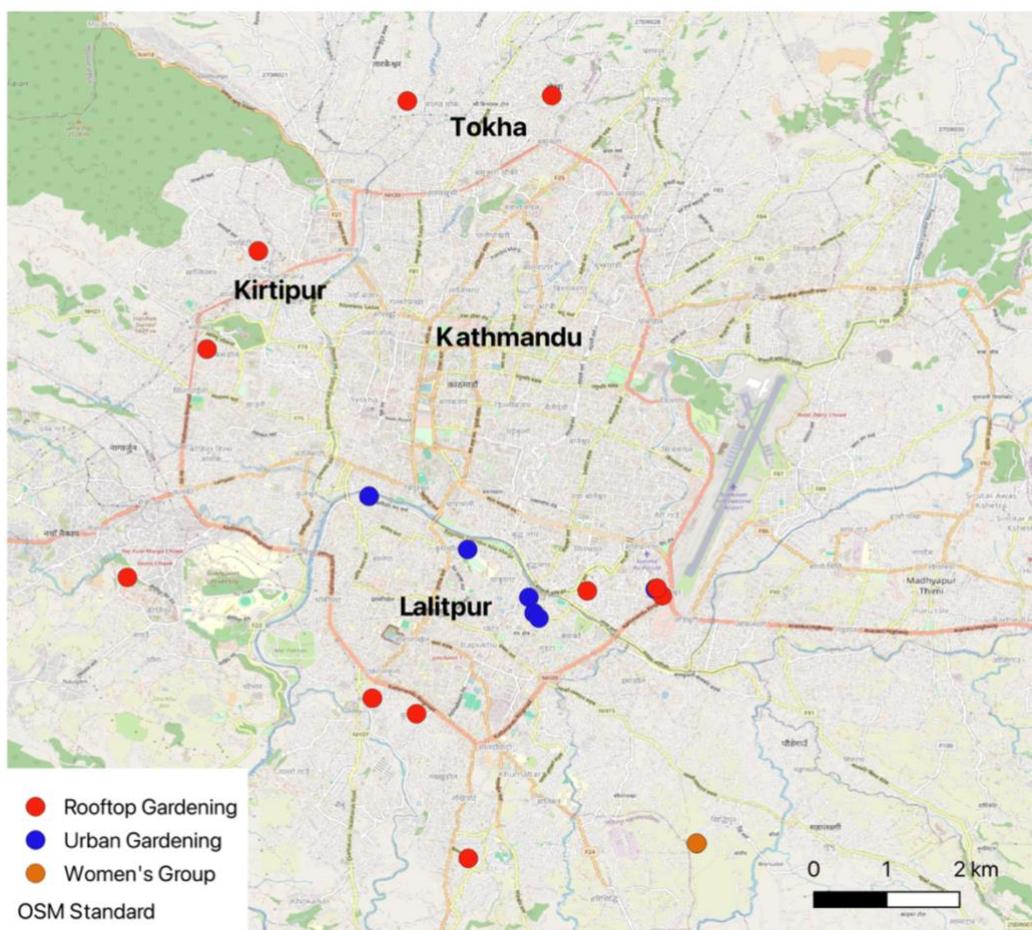


Figure 12: Exact interview locations (created with QGIS by FT (2025))

The advantage of the snowball sampling was the high probability of participants knowing other people engaged in RTG. Nevertheless, this method is not free from bias, as it is unlikely that the sample will represent the broader population (Biernacki & Waldorf, 1981; Bryman, 2008). At the same time, informal discussions with people from the office, taxi drivers, family members, and friends would contribute to a large and geographically diverse RTG sample and an RTG-specific women's group meeting. Also, since participants were referred to by a person they trust, this leads to richer data collection (Cherry, 2024). Later on, the approach was complemented by interviewing people doing urban gardening. In this way, a socio-economic diversity was reached, and the sample method barrier was much lower.

After about 10 interviews at the household level, so-called theoretical saturation was reached. In qualitative research, this means the research category has been saturated with data and no new or relevant data is emerging (Bryman, 2008; Strauss & Corbin, 1998).

3.2 Methods of Data Collection

For this research, several qualitative methods were employed. Mostly, the use of primary data served the research objectives, including semi-structured interviews at both the household and institutional levels with key informants, as well as a questionnaire distributed to members of women's groups. At the household level, some closed questions—such as those regarding age, number of children, marital status, and level of education - provided descriptive quantitative data that complemented the qualitative findings. Additionally, direct observations by both the translator and me were summarized in separate documents for each interview. The use of secondary data, such as government documents and rooftop gardening reports from ENPHO and UN-Habitat, provided valuable context for the study. Additionally, a significant number of informal discussions (e.g., with taxi drivers, encounters during my internship at CIUD, expats, Nepali friends and families, etc.) greatly enriched the thesis. Finally, photography was used as a complementary visual method, which helped to recall mostly the rooftop gardening interviewees and their precise location.

3.2.1 Semi-Structured Interviews

Most of the research interviews were semi-structured and lasted between 30 minutes and 1 hour and 30 minutes.

In general, the method of interviewing invites “the development of reflexive, relational and interpretive methodologies” (Leavy, 2014, p. 195). According to Leavy (2014), semi-structured interview formats count among the most used interview techniques. Semi-structured interviews as a data collection method are best suited for participants to study their perceptions, opinions, and identify what is meaningful to them. Also, it allows for follow-up questions, which allow spontaneous reactions on previous questions and therefore expand knowledge about the subject (Kallio et al., 2016). Also, this interview technique remains flexible as it allows for adaptations and changes once the first few interviews have been conducted. This is particularly useful in a context where cultural differences and sensitivities are different and where translation is necessary.

3.2.2 Household-Centered Interviews and Observations

Almost all of the semi-structured interviews involved mainly women practicing rooftop gardening, but some men and couples were also interviewed in their homes. In total, 13 households with 12 women and 7 men were visited. The sample will be further described in Chapter 4.1.

First, the focus lay on interviewing women to understand their daily practices, embodiment, and emotions linked to rooftop gardening. This type of data collection would not only provide information about their rooftop garden, motivations, and activities linked to RTG but also give highly valuable and sensitive insights, such as their personal feelings and embodied experience. During other household visits, sometimes the husband or the couple would be interviewed, depending on which person was the most active in doing rooftop gardening.

3.2.3 Participant Observation and Fieldwork Journal

Participant observation, a core method in anthropology and Feminist Political Ecology, reduces the social distance between researchers and the studied environment (Fischer, 2023). This approach has been central in understanding gender, power, and environmental dynamics (Bacon et al., 2021; Nyantakyi-Frimpong, 2019; Truelove, 2019).

In my previous academic work, I practiced participant observation in Lausanne by writing down personal reflections after interviews. I noted insights, curiosities, and emotions related to the walking interviews. This methodology was particularly valuable in the context of Kathmandu, where a translator was involved, as it allowed for complementary observation. Like this, our observations and feelings were written and shared in a document.

Living in a thrilling city like Kathmandu highlighted the importance of exploring new horizons and incorporating the city's dynamics from the perspective of a female researcher. This urban environment provided both challenges and rich opportunities for engaging in the city's everyday realities. From a personal view, more than most, writing down these observations in a field journal allowed me to navigate Kathmandu more easily. It brought me closer to its people and their urban and environmental contexts.

In this research, the 3E's framework (Everyday practices, Embodiment and Emotions) is central, making it crucial to incorporate embodied experiences into the analysis. This method enriched the data by providing both objective insights. Each interview, whether semi-structured or informal, was followed by a brief reflective note on the participants from both the translator and me. This helped to capture the emotional and sensory dimensions of the research, as emphasized by those who argue that emotionally engaged research generates new questions and interpretations, challenging traditional boundaries of objectivity and truth (Blakely, 2007).

Additionally, combining participant observation with semi-structured interviews is common in qualitative research (Fischer, 2023), particularly in human geography, where such approaches are described as performative practices (Latham, 2003). In a cross-cultural context, where the interview involved multiple parties (researcher, translator, participant), this method provided an additional layer of analysis. It allowed us to gain a multi-perspective view of the lived experience, even if the answers were translated. This fieldwork journal contributed to a sensitive, nuanced layer of data, offering insights that would later prove valuable during the analysis phase. This method also recalls a certain continuity of the application of a feminist framework.

Living with a Nepalese family for three months further enriched the research, providing direct insights into Nepalese culture, religious practices, and daily life.

Particularly, the host mother's daily routines related to rooftop gardening, the household chores and the household power dynamics. These specific daily observations deepened the understanding of household roles, power relations, and how women's labour and agency intersect with traditional practices.

Participant observation also raises ethical challenges, especially when dealing with sensitive and personal data (Jackson, 1983). Ethical concerns regarding positionality, biases, and the impact on participants must be critically considered. Since the data reveals itself to be sensitive and personal, anonymizing the participants is an important step. Finally, while navigating the urban context and researching it, awareness of policies, governance structures, and community power dynamics needs to be understood (Hopkins & Finlay, 2022).

3.2.4 Engaging Women's Voices: Focus Group Discussion

During the research, a focus group discussion was led, which was translated into English. During the women's group discussion, we gathered data from 11 women, the majority of whom lived in Lalitpur Municipality. The purpose of meeting this particular women's group was to get a better understanding of their political request and again understand and picture who the women are coming to these monthly discussions

Questionnaire with Women's group

The discussion was accompanied by an individual questionnaire, which had been previously translated from English into Nepali. The structure of the questionnaire was largely based on the semi-structured interview guide used for the individual household interviews. The data from the questionnaires helped to validate and support some preliminary findings from the household-level analysis. Further, it contributed to understanding the role played by networks, particularly women's group, their motivations and key challenges in doing rooftop gardening.

3.2.5 Institutional and Expert Insights

Starting with interviews from the local municipality level in the first few weeks of fieldwork helped to get a better understanding of the role the municipalities have played in supporting rooftop gardening in the past. After the interview, Mrs. Sanu Maya Maharjan (Chief of the Environment Division at KMC) and Mr. Pradeep Amatya (Head of Environment Department at LMC) would share some names of key figures, active in the rooftop gardening scene of Kathmandu and therefore share valuable upcoming interview partners. Most importantly for this research, two gender experts, Yamuna Ghale and Sushma Joshi, were interviewed to capture the broader picture of women's roles in Nepali society, as well as more detailed insights into household power relations, particularly between husbands and wives. Additionally, two members of CIUD, Sudarshan Rajbhandari and Yash Man Karmacharya, would share their views on the current solid waste management (SWM), its conflicts and problems and the impactful role of organic waste management in rooftop gardening. Furthermore, the Environmental & Public Health Organization (ENPHO) and UN-Habitat, the two most active organizations in rooftop garden training between 2015-2024, were interviewed. The semi-structured interviews focused on the conducted trainings, the role of women in RTG and the overall evolution of RTG in Kathmandu. Both of the NGOs have physically shared their training manuals and ENPHO even disseminated a detailed yearly crop plantation plan.

3.2.6 Document Analysis: RTG Training Manual, Websites, Brochures

The analysis of secondary data represents a minor part of this thesis, but it helped in understanding the rooftop garden context. The formalised RTG brochures from the NGOs (ENPHO and UN-Habitat) focused on the conducted trainings in the past, mostly followed by women and speak of RTG in a more formalised manner. Also, their brochures provided some visual support.

3.2.7 Visual-Based Method: Urban Photography

The main advanced complementary method in this research is photography. Urban photography in cultural geography research has an enormous potential to complement the existing interview transcriptions. Hunt (2014) underlines its enhancing effect in contemporary field research, especially those focusing on feelings, experience, and textures of place:

“ Urban photography offers a way of *doing* research that opens up city spaces, objects, and events, so we can better reflect on the complex textures, feelings, and experiences of urban space.” (Hunt, 2014, p. 151)

In this research, rooftop gardening serves both as a physical space and an emotional place, where the act of gardening takes place and where feelings are experienced. From the very first household interviews and initial visits to rooftop gardens, it became clear to me how essential it was to systematically incorporate photography and, at times, even short videos into the research process. This approach, throughout the research, served to document the large number of interviews and their specific contexts, helping to retain their nuances. What type of garden, and how is it organized, the plant varieties and their colours, seedlings, the compost bins, the utensils, the water tanks, the solar panels.

3.3 Method of Analysis

The advanced qualitative methodologies in the previous chapters aim to provide an insightful understanding of rooftop gardening through a micro-level analysis of the environment and the resulting changes in gender power relations within the household.

Later on, and with the most relevant interviews at the household level and with key stakeholders from the municipalities, NGOs and experts, the interview transcriptions were coded with the support of MAXQDA24 software (see Appendix 8.3). The operationalization of these codes with their related concepts of gender roles/ power relations and the 3E's (Everyday Practices, Embodiment, Emotions) was presented in Chapter 2.4.5. Sentences, words, or numbers would be coded and separated into different categories and colours. Also, some descriptive information was coded, as it gave the research valuable contextual insights, including age, caste/ethnicity, educational level, household size, number of children, professional background (of both women and men), and house ownership status.

Additionally, to the transcribed interviews and family insights, the translator and I further complemented each other's observations and gathered them together in a separate document. These short paragraphs of about 10-20 sentences were especially helpful to for the analysis part to recall the interviewed person in the analysis part, the place (eventually their rooftop or garden), their physical and mental wellbeing during that day, and also our wellbeing and emotions.

Kathmandu being an especially hectic environment, this method helped us to recognize, according to each other's perspective, the most pertinent patterns, while at the same time acknowledging our emotions and well-being.

The daily observations made during my stay with the host family, as well as those gathered after the interviews and while navigating the city, helped provide a more detailed understanding, raised new questions, offered new insights, and served as a guiding thread. Finally, photography was used to navigate and engage with the city, primarily as a tool for data collection and memory recall.

3.4 Reflections

3.4.1 Epistemic Justice and Uneven Geographies

In current times, where decolonizing knowledge and the awareness around uneven knowledge production in Geography, particularly from the Global North, has become increasingly important, it seemed evident to dedicate a sub-chapter on this topic. A more equal distribution of so-called uneven geographies is even more significant if we take into account that four-fifths of the global urban population lives in the Global South and East, but in contrast, most of the urban theories come from the Global North (Müller et al., 2025). More focused on the gatekeeping role of Northern institutions and therefore limiting the incorporation of more diverse urban knowledge, the authors call for greater epistemic diversity. According to them, two approaches would support epistemic justice. First, multilingual publications and translations would counteract the Anglophone-centric paradigm. Second, citation politics play a role, but an overall consciousness of who and what language is cited contributes to the diverse geography of knowledge.

Conducting research in the “Global South” enhanced my reflection about the production of knowledge and made me aware of the still small share of research produced in the southern hemisphere. Figure 13 shows the distribution of research paper authorship by origin and their institutional affiliations and national backgrounds. About two-thirds, 63% of the incorporated research papers are from the Global South, with about 37% from the Global North. This higher share of papers from the Global South is mainly due to the fieldwork's location in Kathmandu and the availability of its literature about rooftop gardening.

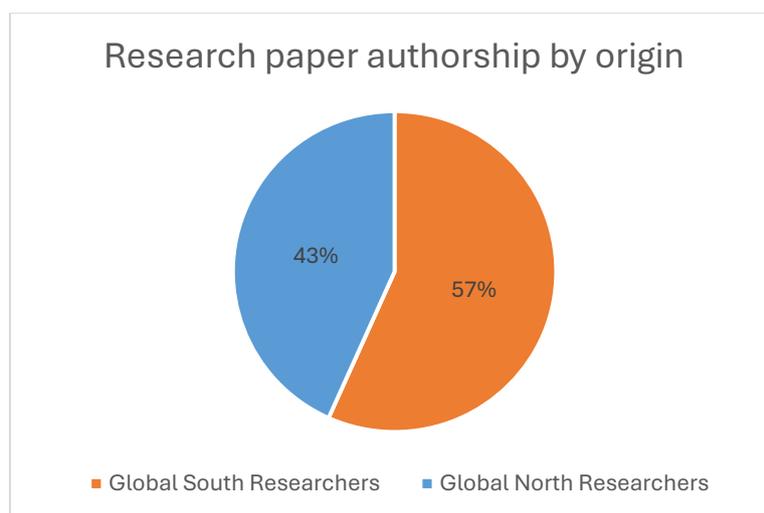


Figure 13: Distribution of research papers by authorship origin (ChatGPT, 2025)

3.4.2 Positionality: Encountering Gender Roles: Personal perspective and local realities in households

Being a woman, conducting the interviews with a woman translator, mainly interviewing women, and leading a discussion with a women’s group makes a statement about my positionality in this research evident.

The women’s everyday practices, embodiment, and emotions gave a very intimate perspective of their inner world. They were most insightful in their understanding of gender dynamics, roles, and gender justice. Throughout the interviews, I intended to create an environment of comfort and trust, to make them feel comfortable sharing how they embody and feel about their everyday activities, such as their involvement in rooftop gardening. Since the research focuses on changes in gender roles and power relations at the household level, my positionality regarding the perception of gender justice is even more salient. Since gender is socially constructed, the concept is changing among various contexts, geographies, cultures, etc. This is the first acknowledgment, and it helped me better observe and evaluate differences between Nepal and the European context. In the specific context of Kathmandu, most of the interviewed women aged between 50 and 59 would feel equal to their husbands and not sense inequality. Considering myself a feminist, being 27 years old and from a Western context, I had, at first, some difficulties recognizing their household environment as gender equal. After some time, discussions with some younger Nepali Women with a middle-class/high-class background, aged between 25-40, revealed a nuanced understanding of gender equity to them. This showed how a generational change affects society’s understanding of gender equity.

Navigating between these different variations and understandings of gender equity, I found that the best combination was an “insider” positionality, close to Nepali society, and an “outsider” positionality, closer to my own values (Chavez, 2008). Embodying both positionalities allows for empathy towards the participants and a critical distance, which can enrich the research process.

3.4.3 Methodological Challenges and Limitations

Since the thesis examines rooftop garden practices and their implications for gender roles and relations, involving a female translator is essential to ensure cultural and gender sensitivity, particularly as the practice of rooftop gardening is predominantly undertaken by women.

I arrived in a completely unfamiliar geographical context and the most urbanized city I have ever lived in. At first, it was difficult to spot people practicing rooftop gardening. This was not only because they were hard to see from the street level, but also due to the cooler season when I arrived at the end of February in Kathmandu. This was initially the case during the first few weeks, but then, as the season became warmer and I had the first interactions with residents, they gradually became more apparent. Nevertheless, the process of finding interview participants doing rooftop gardening was not spontaneous, as they could not be easily spotted. As a result, arranging interviews was sometimes time-consuming, since potential respondents were busy with family matters, unavailable in Kathmandu, lacked time, or were not interested in participating. In contrast, finding people practicing agriculture along the river was much easier, as their daily routines were observable, and we then knew when and where to approach them directly in their fields.

Another difficulty in organizing and conducting the interviews was obtaining insights from the husbands, as they were usually working and therefore not always present during the interviews. Also, together with my translator, we tried to reach out to several women’s groups, but first, the majority of them do not exclusively focus on rooftop gardening, and second, they seem to be organized in a very informal and spontaneous way. In other words, we most probably were able to find the only rooftop garden women’s group in Kathmandu.

As in most qualitative fieldwork, the first few conducted interviews were somewhat an exploration of the situation, if and what kind of information could be collected,

whether the questions made sense, and revealed also the adjustments that had to be made, etc. Despite adaptations and changes to the interview guide, one main challenge remained prevalent in most of the interviews: the relatively short answers by participants regarding, for instance, the topic of gender equity or their feelings. The respondents would state that rooftop gardening, the connection to nature and the usage of flowers for their daily rituals would make them happy. Whereas this word would, then, be directly translated by *khusi* (=happy), it limited a more detailed perspective of how they felt about their feelings. However, through observations by myself and the translator, it was still possible to grasp their emotions and embodied experience.

Similarly, when asked sensitive questions about gender equity, participants, especially women, would simply state that they felt equal to their husbands. While these statements are, at the same time, research findings, they initially appeared to offer limited insight. Already stated in the previous chapter on positionality, in this way, I became conscious about the different culturally embedded definitions of gender roles and power relations by the participants and myself.

Another limitation, which results from translation, is the loss of information or meaning, as answers by interviewees get summarized (van Nes et al., 2010). Therefore, the translator unconsciously or consciously already makes a preliminary selection of what she, subjectively, finds most important to be translated. The importance of language and local understandings is a reminder to researchers that we only ever gain partial insight (Lees, 2003). It was therefore essential to constantly ask the translator questions, update myself on cultural and societal understandings and immerse myself in Nepal's rich culture. Yet, the answers to these questions would usually reveal the complexities behind the caste, the ethnicity, Hinduism, Buddhism and their interlinked rituals. Also, most of the research was conducted in "sensitive research areas", where the private sphere, their households and deeply personal experiences were revealed as a unique insight in a foreign context (Lee & Renzetti, 1990).

Another limitation of this research lies in the initial sampling method, which restricted the socio-economic representativeness of participants, as most interviewees were from the upper-middle class. To address this and increase social class diversity, individuals engaged in urban agriculture, typically from lower socio-economic backgrounds, were also included. Notably, as further discussed in the results section, a clear socio-economic distinction emerged between those practicing rooftop gardening and those involved in urban agriculture.

4 Gendered Rooftop Garden Practices in Kathmandu Valley

This chapter presents the research's key findings. It starts with a contextual overview of the Kathmandu Valley, focusing on thematic relevance for this research. It is followed by a detailed description of the sample, including their housing conditions, demographic composition, and socio-cultural background. Finally, and most importantly, Section 4.3 highlights the main findings on gendered rooftop gardening practices and connects them to the concepts introduced earlier.

4.1 The case of Kathmandu Valley: geographical, political and social aspects

Nepal is a landlocked, predominantly Hindu Asian country nestled between India to the south and China to the north. The country is home to the world's highest mountain peaks, the birthplace of Lord Buddha, and the ancient Kingdom of the Himalayas. Its northern mountainous terrain, the Himalayas, is at the border with Tibet (Figure 14). This area is home to Mount Everest, the highest peak in the world, standing at 8,848 meters. The southern region of Nepal, known as the Terai belt and lying at the country's lowest elevation of 60 meters, is often referred to as the 'food basket' of Nepal, as it is where the majority of the nation's agriculture takes place, while also significantly contributing to the country's food security (Begho et al., 2025). Its geographical exposure and ability to adapt to climate change make it one of the world's most vulnerable countries (Amadio et al., 2023).



Figure 14: Map of Nepal (Source: <https://www.freeworldmaps.net/de/nepal/>)

The country is home to 30 million people (UNFPA, 2025), with most of them being Hindus, followed by Buddhists and Muslims. In 2006, the House of Representatives declared Nepal to be a secular state (Véron et al., 2008). In 1963, despite the legal abolition of caste-based discrimination, the practice remained deeply embedded in cultural norms and continues to influence occupational roles and social structures to this day (Wagle, 2017). Also, Nepal's ethnic groups and castes have divided the society into complex hierarchical social structures, which are strongly connected to the Hindu values of purity and impurity. Depending on the source, the number of caste and ethnic groups varies, as the country is essentially a conglomeration of minorities, with the two largest groups: 16% (Chhetri) and nearly 13% (Bahun-Brahmin). Taken together, with the three “untouchable” and other service caste, Dalits (11.3%), the janajati ethnic groups, from both hills and plains taken together, constitute 35.5%. In contrast, the hill ethnic group makes up 26.5% of the Nepali population. The major hill ethnic groups include the Magar, Newar, Tamang, Rai, Gurung, and Limbu (Pradhan, 2011). Within these groups, socioeconomic levels vary from low, middle, to high and significantly influence their access to opportunities (Dahal, 2014). Despite its rich cultural diversity, Nepal remains predominantly a Hindu kingdom with a Hindu polity, though this does not necessarily reflect a uniformly Hindu society.

Kathmandu Valley lies in a basin at about 1300 meters and is surrounded by hills such as Shivapuri, Phulchowki, and Chandragiri (visible on Figure 15). Located in the centre of the country, the Valley has served as a place where people from all over the country exchanged and sold goods and searched for economic opportunities such as employment.



Figure 15: Map of Kathmandu Valley (Source Google Maps, 2025)

The valley has 18 municipalities in total. This study focuses on four of them, Kathmandu, Lalitpur, Kirtipur, and Tokha, as explained more extensively in the Methodology section. This is linked to the snowball sampling procedure. In the past, the three municipalities of Kathmandu, Laitpur (Patan), and Bhaktapur formed separate kingdoms, each developing its own cultural and architectural character.

The Valley forms a large plateau, and its geographical conditions have facilitated urban expansion. At the institutional level, the incorporation of rural administrative units and their designation as municipalities has consequently supported Nepal’s shift from a rural to an emerging urban economy (Timsina et al., 2020). Additionally, migration from rural to urban areas, as in Kathmandu Valley, was a major driver, making it the fastest-growing metropolitan area in South Asia (Figure 16). The population of the Valley accounts for approximately 3.3 million (2022), and is projected to reach 3.8 million by 2031. The number needs to be carefully interpreted, as it accounts only for the registered residents and excludes those who are not officially registered, producing a margin of uncertainty.

LULC Class	1989		1999		2009		2016	
	Area	%	Area	%	Area	%	Area	%
Built-up Area	2153.79	5.10	4712.88	11.15	10,216.20	24.16	11,020.62	26.06
Agriculture	34,057.40	80.54	31,069.20	73.48	27,007.37	63.87	23,387.06	55.30
Forest	4138.56	9.79	4172.76	9.89	3627.99	8.58	6227.37	14.73
BG	1854.54	4.39	2252.7	5.34	1355.13	3.21	1576.73	3.73
River	80.00	0.19	76.80	0.18	74.50	0.18	73.00	0.17
Total	42,284.30	100.00	42,284.30	100.00	42,284.30	100.00	42,284.30	100.00

Figure 16: Evolution (1989-2016) of land use land cover change, areas presented in hectares (Ishtiaque et al., 2017)

Historically, agricultural land has been highest in Kirtipur and Bhaktapur, followed by Lalitpur and Kathmandu, with the least (Rana et al., 2015). As visible in Figure 17, between 1989 and 2016, agricultural surfaces in the Valley dropped from about 80% to 55%. This trend is unlikely to stop as Nepal is projected to become one of the ten countries with the fastest urbanization rates between 2018 and 2050 (Mesta et al., 2022).

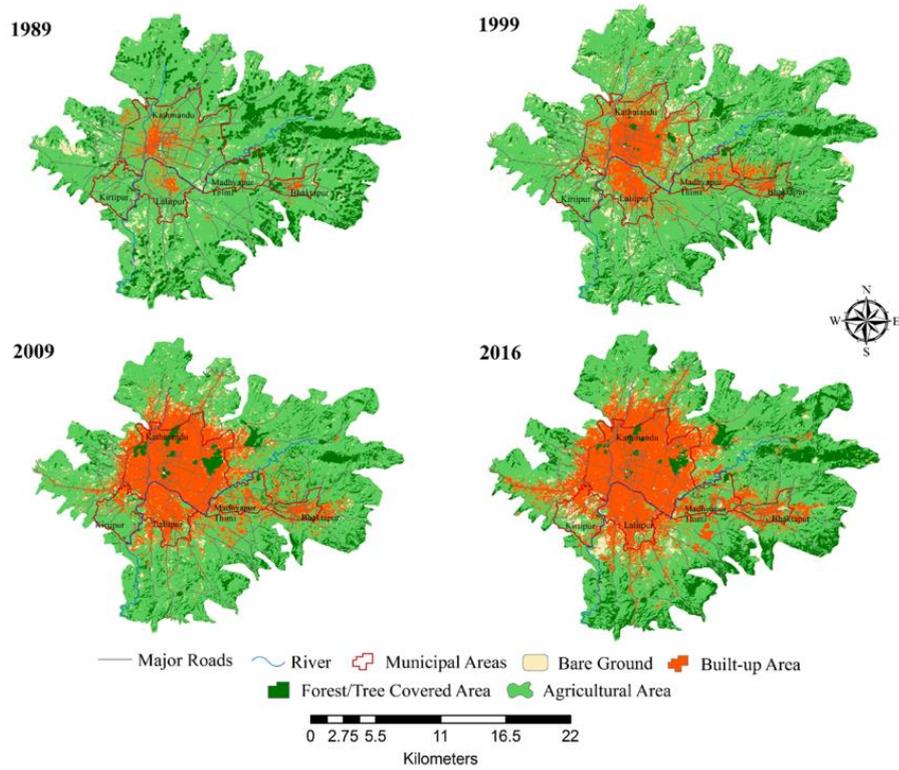


Figure 17: Urban Growth in Kathmandu Valley between 1989 and 2016 (Ishtiaque et al., 2017)



Figure 18: Urbanized View on Kathmandu (Florence Testorelli, 2025)

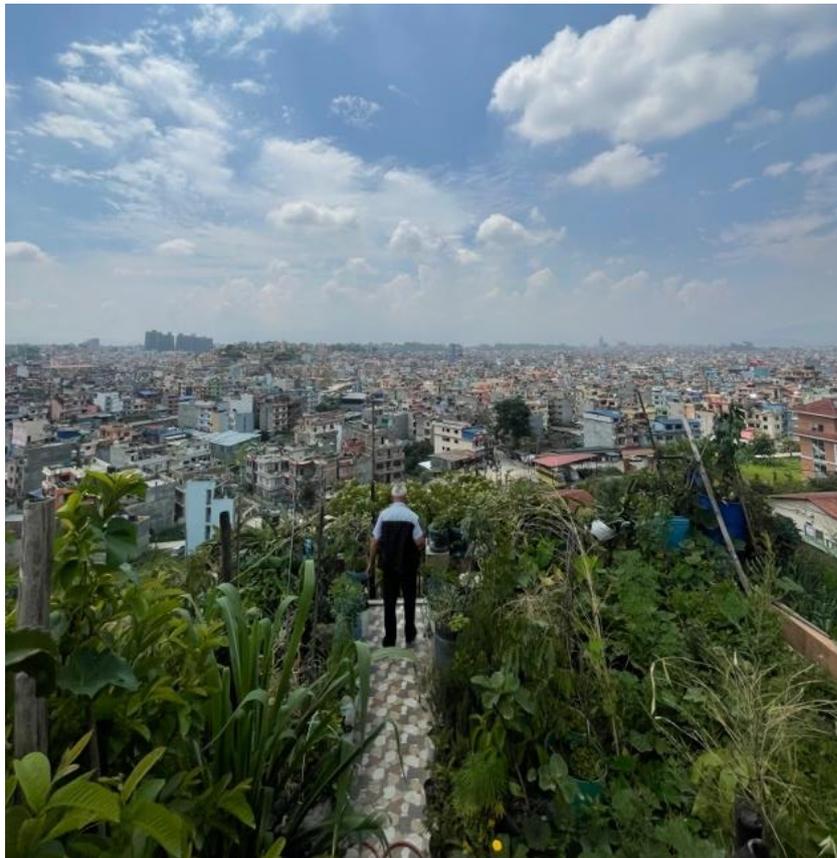


Figure 19: Rooftop Gardening, Tokha (Florence Testorelli, 2025)

Still focusing on land, the study by Rijal (2017) highlights a significant gender disparity in fixed asset ownership in Nepal. Only 10.7% of land and houses, and 9% of land, are owned by women. This ownership varies by ecological zones and provinces. The author emphasizes that women's asset ownership is vital for improving their status in families and society.

According to the Global Gender Gap Report, with in-depth analysis the four key dimensions Economic Participation and Opportunity, Educational Attainment, Health and Survival and Political Empowerment, Nepal ranks 125th out of 148 countries (World Economic Forum, 2025). Meanwhile, the 2015 Constitution of Nepal aims for an inclusive State and equality for all genders, but many of the population face discrimination (UNEP-IETC & GRID-Arendal, 2019).

Nepal's political system and its persistence of change over the past 70 years have led to political instability. More specifically, instability can be perceived on three levels: Legislative, executive, and constitutional. The country first transitioned from a monarchy to a federal democratic republic over the past 20 years. In 1991, it was declared a constitutional monarchy, which was then followed by a decade-long civil war initiated by

the Maoist Party in 1996 (Thapa, 2023; Whelpton, 2005), leading to the deaths of more than 17'000 people. On April 26th, 2006, the war ended with the signing of a peace agreement (G. Pradhan, 2009). A year later, in 2007, a provisional constitution was implemented. Today's political system builds on the most recent constitution from 2015, and defines the president as the prime minister and includes two chambers, the National Assembly and the House of Representatives (Thapa, 2023).

4.1.1 A Short History of Urban Gardening and Organic Waste Management Practice in Kathmandu Valley

With its fertile soil, the Kathmandu Valley has a rich history of extensive agricultural activity. Over the decades, the Valley has attracted many people and their communities, leading to its expansion and urbanization (Waiba et al., 2024). As shown in the first picture, this urbanization started covering the majority of the prosperous farmlands (Zurick & Autumn, 2010). However, peri-urban agriculture has persisted, with the urban supply chain and food security as just two of its benefits (Rana et al., 2015). The two photos (Figure 20; 21) show the change in land use in 1967 compared to 2025.



Figure 20: Aerial photograph of Kathmandu Valley, floodplain in 1967 (Nepali Times, 2021)



Figure 21: Picture of Kathmandu Valley from Monkey Temple (Florence Testorelli, 2025)

According to a recent study, urban agriculture in Kathmandu Valley has the potential to improve food production, revenue generation, and nutritional outcomes (Waiba et al., 2024). The local food production would lower the high food imports of the country, consequently providing citizens with food security. Urban agriculture in the Valley does have further benefits, as it supports waste management, human resource utilization, health hygiene and economic growth of the urban community (Dhital et al., 2016).

Back in the time in Kathmandu Valley, the indigenous group, called Newar, had their household waste management system and used manure as fertilizer for crop production (UNDP et al., 2011). The traditional method of composting biodegradable waste, such as *Saaga* and *Naugaa*, is becoming less prominent also due to urban sprawl, rising standards of living and changes in food habits (Upreti et al., 2022). In Kathmandu, about 56% of the total waste is generated by households. Women are the main waste managers in the household, and about two-thirds of the waste, considered organic, is either composted at home or mixed with the general trash. The Gender Map of Waste Management also highlights the role of NGOs in providing training for organic waste management. However, the visualization does not reflect the practical utility of producing one's own compost and integrating it, for instance, into rooftop gardening and urban agriculture (UNEP-IETC & GRID-Arendal, 2019).

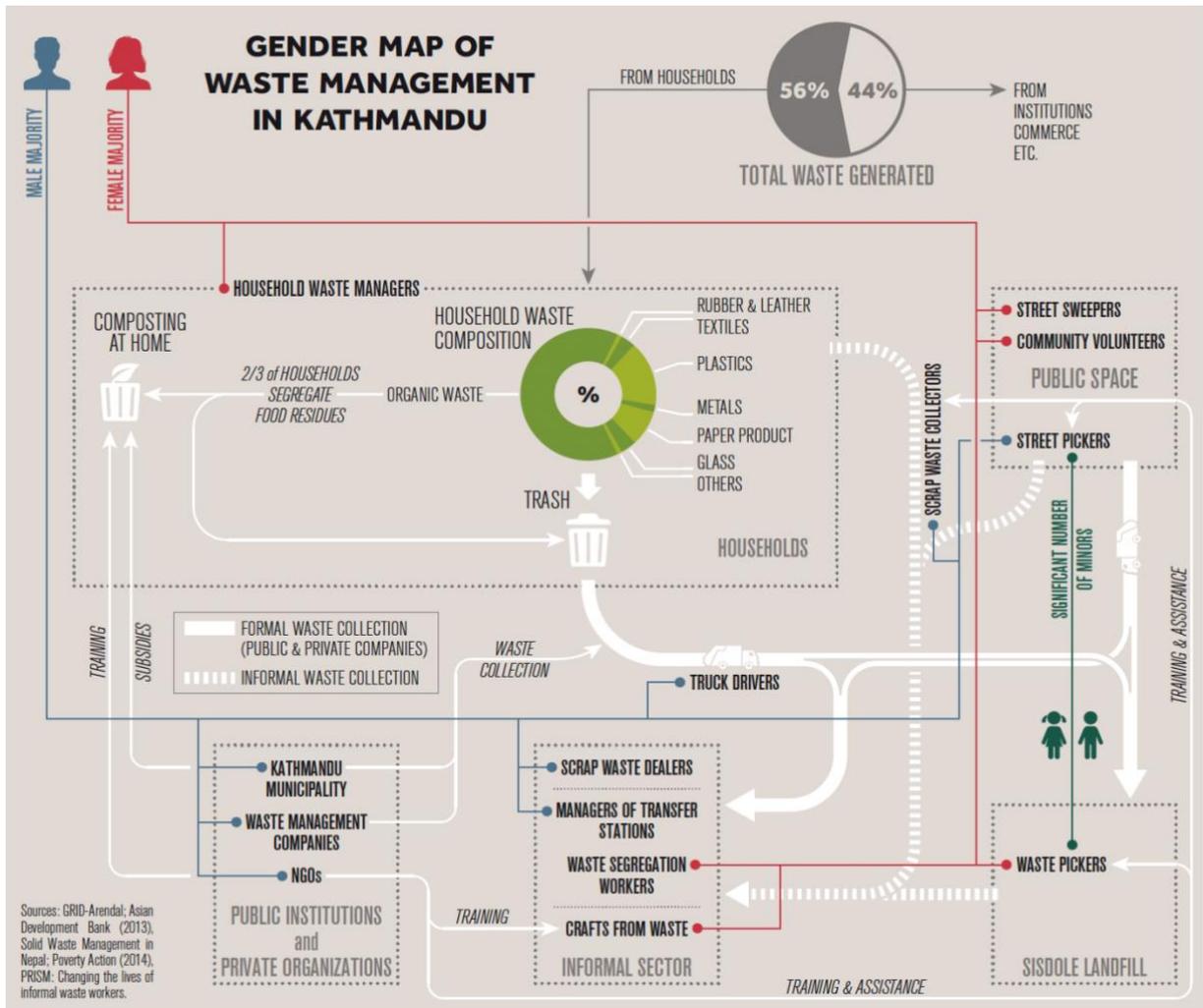


Figure 22. Gender Map of Waste Management in Kathmandu (UNEP-IETC & GRID-Arendal, 2019)

On the city level, over approximately 15 years, rooftop gardening has been promoted by various actors. In the first place, Kathmandu Metropolitan City (KMC), together with a local NGO called Environment and Public Health Organization and UN-Habitat, trained 500 households in 2014 and planned to support 150 more in 2015, in rooftop gardening management. Participants learn about rainwater harvesting, organic household waste management, climate-smart production technologies and a distributed annual crop calendar, tools, growing bags, seeds, etc. (Levenston, 2015; Tuladhar, 2019). Between 2023 and 2024, UN-Habitat and Lalitpur Metropolitan City (LMC) conducted a second initiative, where they established a demo garden at the community school (Namula Pachindray School), to provide healthy food to the school’s canteen. Besides the demo garden, the coaching of Trainers (44 female, 5 male) also promoted their rooftop gardening handbook through an app (Core XI) (see Figure 23).

In total, 126 women and 19 men participated. As described during the interview by Milan Bagale, Project coordinator at UN-Habitat, advisor:

“Our other aim was to upscale the rooftop farming initiative at the community level. That's why we conducted training of trainers (ToT) at the municipality level” (Interviewed on 9.04.2025)

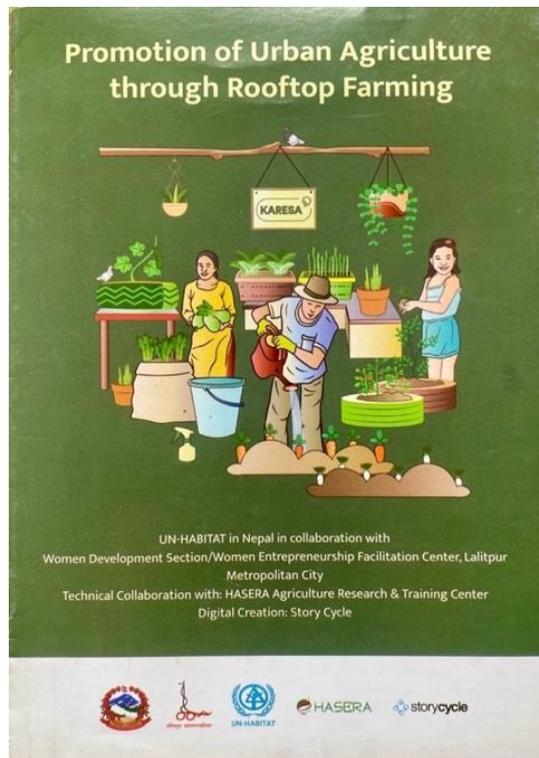


Figure 23: Brochure Promoting Urban Agriculture through Rooftop Farming (UN-Habitat, 2024)

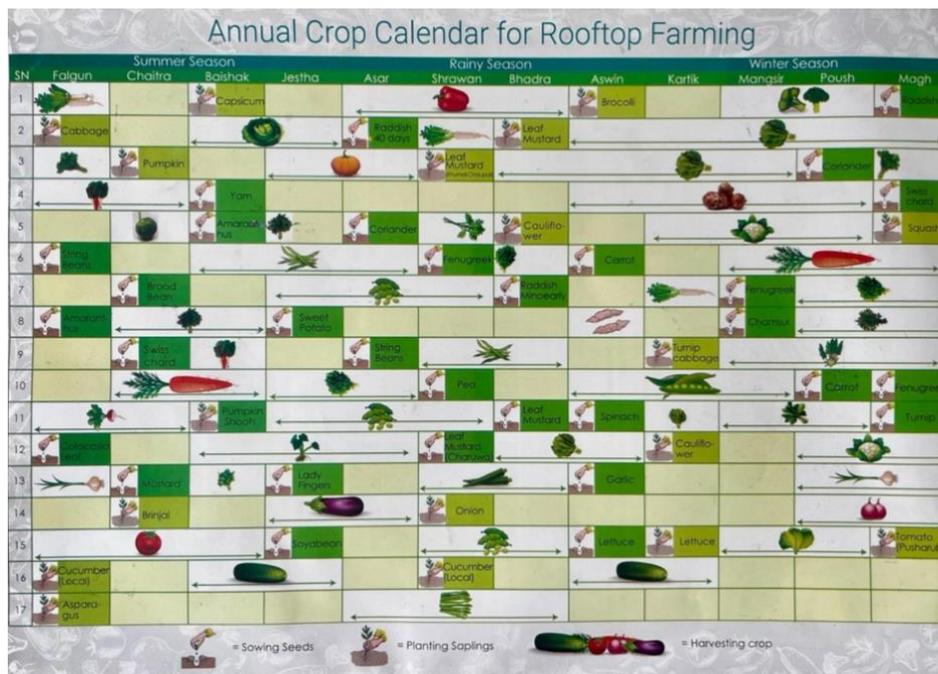


Figure 24: Annual Crop Calendar for Rooftop Farming (ENPHO)

A higher activity in rooftop gardening, especially in Kathmandu, has been observed when a regional or global crisis hits the country. For instance, in 2015, after one of the most devastating earthquakes and after the Indian government imposed a blockade for 4,5 months on Nepal, people were very worried about their food security and did more farming, even in cities. One of the biggest boosts experienced by rooftop gardening was during the COVID-19 pandemic. When citizens were suddenly limited to their homes and had more time, many of them would engage in gardening, share their harvest and ideas on social media, and follow training offered by KMC online with an attendance rate of 1'000 people. Till then, rooftop gardening was practiced by some, mainly female households in the city, and during COVID-19 also more family members also engaged. The field work translator explained from her own experience:

“During COVID-19, rooftop gardening was everywhere on social media. You could scroll and all you would see was people doing kausi kheti – rooftop gardening.”
(Bedhika Pudasaini)

4.1.2 Policies around rooftop gardening and the promotion of organic waste segregation

In 2014, a first policy draft for rooftop gardening in Kathmandu was submitted to Kathmandu Metropolitan City (KMC) by Nepal Forum for Environmental Journalism (NEFEJ) with the support of RUAF and UN-Habitat (Tuladhar, 2019). Further in 2019, Kathmandu's district, Bagmati Province, as the first in Nepal, provided the first policy, a procedural guideline to promote a rooftop garden policy. While the document is not a legal document, it is a government-approved procedural framework with legal weight at the local or provincial level and, therefore, likely to be adopted by the municipality in the Bagmati Province.

The policy outlines the importance of promoting rooftop gardening as a sustainable solution to urban food insecurity, waste management, and environmental concerns. To reach its promotion, four objectives were defined: Promote organic vegetable farming in urban and semi-urban areas, utilize unused rooftop spaces for agriculture, reduce household waste through composting and increase access to fresh produce. Another innovative approach provided by Tuladhar (2019) calls for a “Rent-the-Roof” policy, to establish rooftop gardening for both homeowners and tenants. She points out the advantageous possibility for landless domestic migrants of Kathmandu and homeowners.

As concluded in the study and reflected in the district's policy, training, and awareness programs on rooftop gardening techniques form a key part of the implementation strategy (Thapa et al. 2020).

From an early stage, ENPHO, a Nepali NGO with the mission to develop, showcase and promote innovative technologies and systems that empower societies to become healthier and more environmentally sustainable, has collaborated with KMC and UN-HABITAT. They employ and promote integrated community-based approaches for topics such as safe water, sustainable sanitation, improving indoor air, and creating healthy and environmentally friendly societies. Additionally, since 2012, UN-HABITAT has been implementing Water for Life (W4L), which aims for a green and clean city. Through this program, UN-HABITAT has continuously developed further projects to promote urban farming practices (e.g., Training of Trainers, Community Training and Technical Support, Technology Demonstration Center (Demo Farm) (UN-HABITAT, 2023). Together with KMC, ENPHO and UN-Habitat, they collaboratively raise public awareness through the promotion of a yearly awarded rooftop gardening queen. The award encourages innovation and sustainability in rooftop gardening and gives practical support to participants, while recognizing their public engagement and their farming skills.

Sanu Maya Maharjan, Senior Section Officer at the environmental department of KMC, was leading the project together with ENPHO and confirms its success. She argues that households need regular technical support for the maintenance of their rooftop gardens and a check from the civil engineer regarding the feasibility of gardening. This external and consistent support would help women in the early stage of rooftop gardening overcome initial challenges, as they are sometimes concerned about the load on the roof.

Lalitpur Metropolitan City and the women's group discussion confirm the importance and ask for more advanced training. On the most local political level, some wards would support their citizens with grow bags, a 50% off rate on compost bins and some received some seeds and material during training sessions. Not enough advertised and poorly communicated by the city Municipality, almost all interviewed households on rooftop gardening lacked policy awareness.

4.1.3 Organic/Kitchen Waste Management at the Household Level

Historically, composting was a traditional and sustainable practice in Nepal. However, in recent years, it has become undervalued and largely overlooked (Lohani, 2017). Lohani highlights not only the ecological advantages of composting but also its potential to contribute to environmental restoration and even job creation in Nepal.

Between 2013 and 2019, in Kathmandu Municipality, the total amount of waste at the household level increased by about 77.7%. From this household waste, a little more than half (51%) of its composition is considered organic (Khadka et al., 2021). This increases the potential of waste segregation, as a large part could be used for composting.

In 2019, KMC launched a new initiative in three Wards (12, 18, 21) for collecting segregated waste directly from households (Ojha, 2019). Since early 2024, segregated waste at the household level has been collected from 10 more wards, and degradable waste is being turned into compost at the KMC's waste transfer station (Kathmandu Post, 2025). While the majority of household waste is still primarily collected and recycled by the informal sector, they do not engage in the collection or reuse of organic waste (UNEP-IETC & GRID-Arendal, 2019).

In the Municipality of Kirtipur, waste segregation is done by 55,2% of the households and about the same percentage of households (54,0%) segregates kitchen waste (Upreti et al., 2022). The kitchen waste recycling method among households with rooftop gardens can be split into two categories: kitchen waste composted in bins, as visible in Figure 29, or vermicompost, as visible in Figure 26. Most of the households would possess a compost bin, but some households had even vermicompost bins. Usually, their compost is not large enough to be shared with neighbours or friends and family, but they need it for their consumption, except for one household, which sells it.

While walking close to the Bagmati river side, another type of open-air compost, as on figure 30, could be seen. The farmers and people interviewed along the river, who did agriculture as their side or main occupation, would confirm their compost production.



Figure 25: Open air composting (FT, 2025)



Figure 26: Vermicompost on rooftop garden (Florence Testorelli, 2025)

Almost all of the visited rooftop gardens had a different appearance. They would differ in size (1-2 floors), in growing types (flowers vs. vegetables), crop varieties, and material used (grow bags, clay pots, or polystyrene). Besides the compost infrastructure, some infrastructural elements could be observed on nearly every rooftop: a rainwater harvesting system (figure 27), water tank, used some space for a clothesline to dry laundry, solar-panel water heater (figure 28), a religious flag and often also a stand to offer puja, a daily ritual in Hindu culture.



Figure 27: Rainwater harvesting (Florence Testorelli, 2025)



Figure 28: Solar-panel water heater and water tanks (Florence Testorelli, 2025)

A separate brochure was developed by the NCCR, CIUD, and the University of Lausanne, visible in Figure 30. The manual provides information about the “Compost Life Cycle” and gives three main insights. First, on waste management and composting, especially in urban settings. It then presents various methods of compost preparation, including for the household, pit-based, and vermicomposting (with earthworms). The last part gives some practical guidance and awareness tips. From the semi-direct interviews at the household level, only two women received some training. For the majority of the other participants, through their family farming background, they learned most of their skills. Therefore, they did not need any training.



Figure 29: Pictured explanation for composting (Brochure, ENPHO; UN-Habitat, 2024)



Figure 30: Specific manual on composting (UNIL, CIUD, NCCR 2023)

4.2 Description of the Sample

The fieldwork took place in the Kathmandu Valley, more specifically in the metropolitan cities of Kathmandu, Lalitpur, and the municipalities Kirtipur, and Tokha (see Figure 12). As outlined in the previous chapter, the snowball sampling method was employed. The advantage of this method is partly why the research was conducted in several cities surrounding Kathmandu. In a second step, the sample will be described as a result of the data gathered during the interviews, the observations, and some documentation from NGOs.

4.2.1 Housing and Gardens of Respondents

As visible in Figure 10, in Lalitpur, Kathmandu, and Tokha, a very similar type of single house could be observed. The houses usually had an entrance gate, such as for a car or a scooter. A stone wall would usually separate their houses from their neighbors. Some of them had even some greenery around their house, some plants and flowers in pots. Also, most of the houses had up to 3-4 floors, with their garden on the roof (as in Figure 32). This differentiates the houses a little from the ones in Kirtipur, as on Figure 33. Due to the city's old floor plan, the houses are not separated but strung together.



Figure 31: Lalitpur, property home (FT, 2025)

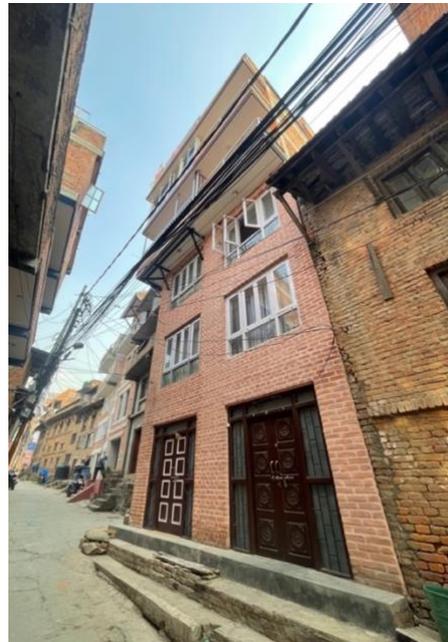


Figure 32: Kirtipur, property home (FT, 2025)

Some informal discussions with citizens took place on green spaces surrounded by houses, also referred to as kitchen gardens, as in Figure 34, or with citizens and farmers in wider, more open spaces, where they would do urban gardening along the Bagmati river, as in Figure 35.



Figure 33: Kitchen gardens, close of their homes (FT, 2025)



Figure 34: Agricultural Urban Gardening (FT, 2025)



Figure 35: Rooftop garden – leakage-proof plot (FT, 2025)

Due to limited space in Kathmandu, rooftop gardening has proved itself to be a valuable solution for continuing agricultural activity despite rapid urbanization (Tuladhar, 2019). But how many households or people are involved in rooftop gardening?

This depends on the types of urban gardening and on how narrowly or broadly we define the respective categories. An additional constraint is whether people possess a house or agricultural land. This research's main focus lay on rooftop gardens, but also included some kitchen gardens and some more agriculture-based forms of urban gardening. Rooftop Gardening, as visible on Figure 36, refers to a space on the roof where the practice of cultivation is pursued. These spaces may include areas with soil, small greenhouses, or simple coverings such as light plastic fabric. Additionally, in the context of this research, participants would produce their compost and use it as a fertilizer for their rooftop soil.

According to a household survey from the Municipality of Kirtipur, a little less than three-fourths (71.39%) do not have a home garden, compared to 23.13% with a garden (Ghale et al., 2023). A study conducted by the NGO ENPHO reveals that 34% of the households in Kathmandu Metropolitan City practice some form of kitchen gardening or rooftop farming (Shakya et al., 2017). Informal discussions, interviews and studies reveal a significant trend of rooftop gardening as many households were engaged in rooftop gardening during the COVID-19 pandemic (Upreti & Ghale, 2024). As with most trends, once people have less time and more physical mobility, some would either reduce or stop gardening. Through observations and fieldwork, I would state that about 15% of the households do rooftop gardening. This relatively small number may also be linked to the findings of a recent study, which indicated that among individuals engaging in urban gardening, 76% prefer kitchen gardening over rooftop gardening (24%). This suggests that those with greater access to land or space are more inclined toward kitchen gardening, whereas individuals with limited space tend to opt for rooftop gardening (see figure 27). Unlike rooftop gardening, kitchen gardening typically takes place directly adjacent to the house. Additionally, and also observed during the fieldwork, the housing situation, namely renting, would not give them access to a suitable space, despite their interest and the rooftop part would usually be kept by the house owner (Waiba et al., 2024).

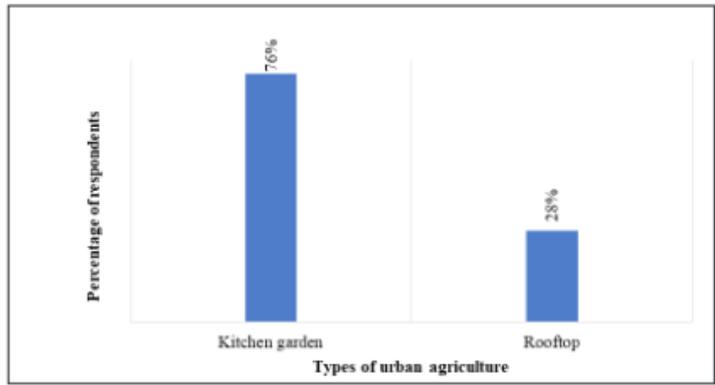


Figure 36: Types of urban agriculture being practiced (Waiba et al., 2024, p. 147)

4.2.2 Demographic Composition of Respondents

In total, 45 individuals involved in the broader activity of urban gardening were interviewed. 19 participants were interviewed in their houses with rooftop garden access, and 10 members of a women’s rooftop gardening group filled out a questionnaire. About 16 informal discussions were led with citizens and farmers practicing urban agriculture.

Since women carry the main responsibility for the household, while most of them don’t work full-time, they are the most active in rooftop gardening. A very high attendance rate of rooftop gardening trainings by women was also confirmed by the Metropolitan City of Kathmandu and Lalitpur. At the same time, most interestingly, about half of the participants doing rooftop gardening confirmed a family background in agriculture, and therefore, they did not require training or support from NGOs or the city. An almost equal share between men and women was observed in urban gardening. This is due to some of the men’s farming activity as an employment.

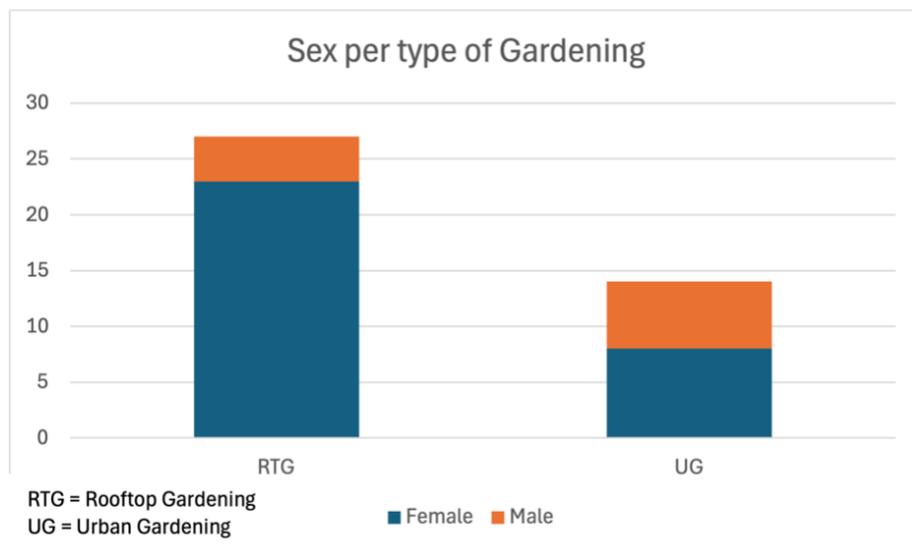


Figure 37: Sex per type of Gardening

As visible in Figure 39, the majority of the participants are between 40 and 60. The main reason why younger women are less involved in rooftop gardening is most probably linked to a lack of time, as it is less prioritized. They might feel less connected to their agrarian roots, like their mothers, who moved to Kathmandu only recently. To what extent these younger women are skilled in rooftop gardening has not been studied in this research.

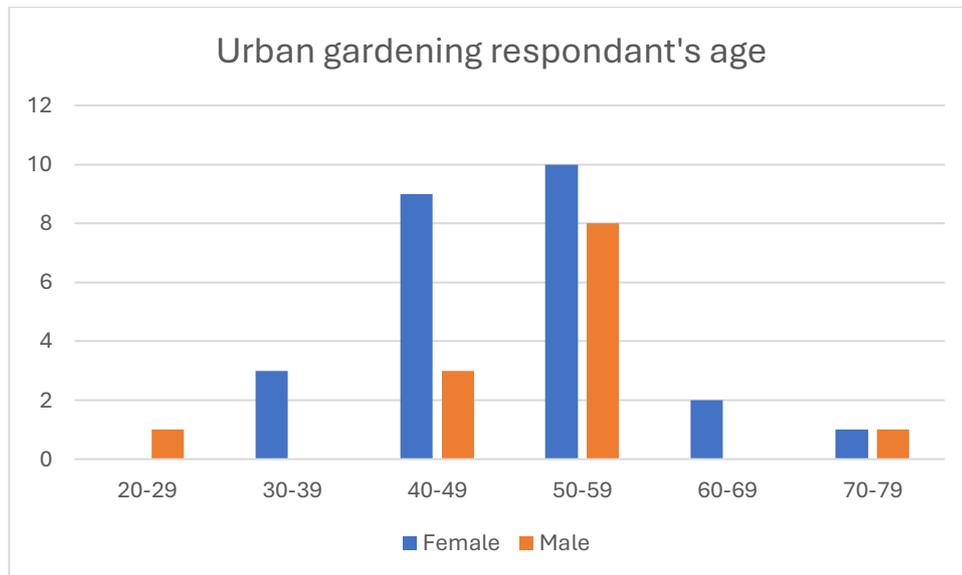


Figure 38: Respondent's age, divided by gender

4.2.3 Socioeconomic and Cultural Profiles of Respondents

The background information on caste and ethnic affiliation and their economic conditions will be further described in the next sub-chapter. For now, it is important to note that four out of the ten major Ethnic/Caste Groups - Brahmin, Magar, Newar, and Gurung - were interviewed (Dahal, 2014).

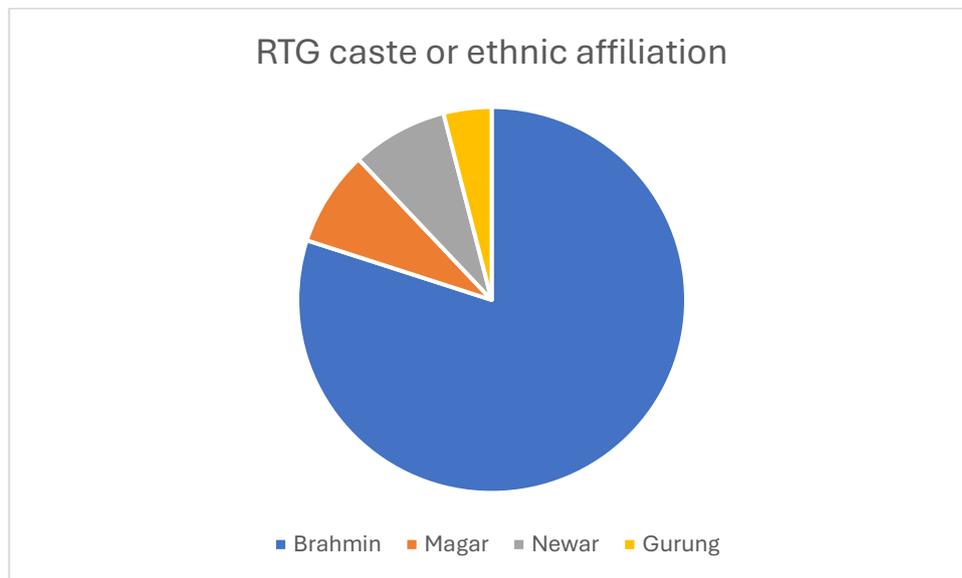


Figure 39: Respondent's caste or ethnic affiliation

The high representation of Brahmins, the highest Hindu caste, correlates with another finding: the socio-economic background of people involved in rooftop gardening. This high representation can be seen as a case of snowball bias. It is worth noting that the majority of Brahmins in Kathmandu are relatively recent migrants, many of whom come from backgrounds of relative abundance. For them, engagement in rooftop gardening is often less about necessity and more about a nostalgic connection to agrarian roots, combined with a leisurely pastime. A similar pattern can be observed among the two ethnic groups, Magar and Gurung, we specifically interviewed, whose participation in RTG also appears to be shaped more by cultural sentiment and recreational interest than by subsistence needs.

Almost all of them can be categorized as upper-middle-class and in two cases, even upper-class. This observation was informed by several factors, including the employment of the husband and/or wife, their level of education, urban home ownership, and the presence of domestic help. Except for one household, all of them would own their house and, in some cases, even sublet, but would always keep the rooftop for themselves.

For most of the women who were housewives, some of them continued to work as English teachers, had a degree in zoology, ran a homestay, were school nurses, or pursued a second Master's in Psychology. In Nepal, the household size of a family living together in a house can reach between 2 and 8. Another cultural aspect is the expectation that the son will stay and live in the family home, whereas the daughter is expected to leave and live with her future husband and his family. This often results in extended families and, consequently, relatively large houses. In most families, this is still the case, but the migration of the younger generation, including brain drain, has impacted this social rule, as many come home only once per year. These multi-generational households usually increase the women's work burden as they take care, cook, wash, etc., for their in-laws or parents.

Most interestingly, in the ethnic community of Magar, women are the head of the family, but decision-making and household chores are done collectively. In the interviews with the two Magar households, the women were confident and had both uplifting and positive characters. Originally from Western Nepal and the Northeast of India, they are the largest ethnic group native to Nepal and known for their matriarchal system (Molnar, 1982). Additionally, we noticed a higher participation of their husbands in rooftop gardening and, therefore, more equal gender roles.

The two Newar households and one Gurung household did not show any particular differences or results when it came to shared decision-making or higher involvement from the husband's side in the household or while gardening. A similar pattern to Brahmins can be observed among the two ethnic groups (households) we specifically interviewed, whose participation in RTG also appears to be shaped more by cultural sentiment and recreational interest than by subsistence needs.

4.3 Gendered Perspective on Rooftop Gardening

In Nepal, women are largely responsible for household chores, including those linked to waste management and therefore considered as household waste managers, as visible previously on *The Gender Map of Waste Management in Kathmandu* (Figure 29) (Maskey & Singh, 2017; UNEP-IETC & GRID-Arendal, 2019). Furthermore, women traditionally hold domestic responsibilities such as cooking, which generates biodegradable waste, also referred to as kitchen waste. This waste is then composted and ultimately, in some households, used to enrich the soil in their rooftop gardens (Upreti et al., 2022).

4.3.1 Intra-household power relations and gender ideology

The gathered data from the interviews and observations confirm the responsibility of women in everyday household chores such as cooking, cleaning, washing, looking after the children or parents/ in-laws, and tasks linked to rooftop gardening. This responsibility also persists in households, where both the wife and husband work. We can therefore conclude that the division of household chores remains unequal, as in most households, the support from other family members living in the same home is relatively limited, with a few exceptions, as further explained. A similar finding was made for the support in completing the rooftop gardening tasks; their husbands or children, usually in their early twenties, would sometimes support them with watering the plants. The amount of support provided usually depended on personal interest and the availability of time. Another observation was that rooftop gardening was sometimes carried out by the person with the most spare time and/or the highest interest in gardening; in most cases, the women, with a few exceptions. In some households, greater involvement by husbands or their in-laws was observed. Particularly when they were either personally interested in rooftop gardening or retired, thus having more time available. Thus, the observed elderly people would usually take over some smaller rooftop gardening activities, such as watering the plants.

“He does not have a particular motivation. He just loved to spend time on the field, as he had spent his life farming. This is what he has mastered in his life: doing the gardening. So that’s the main reason he is looking after all the gardening.” (27-year-old interviewee about his grandfather)

Women often attributed their own higher involvement in rooftop gardening to the limited interest shown by other family members. The limited interest shown by other family members does not necessarily imply a lack of support or encouragement for women to continue rooftop gardening. As underlined by Sanu Maya Maharjan:

“If the family supports her, then the success of the rooftop garden is guaranteed; if she does not receive a certain recognition by the family, she will stop.” (interviewed on 26.03.2025):

From a socio-cultural perspective, little support in accomplishing the household chores and tasks linked to rooftop gardening was observed, particularly in Brahmin households. This finding is based on the answers of the interviews and my own experience living with a Brahmin host family. Some Brahmin families would receive additional daily support from a helper, a so-called “Didi”, older sister. The Didi would usually come every day for 2-3 hours, depending on the size and tasks she had to complete. In two Brahmin households, the Didi would also support in rooftop gardening tasks.

“I think there is a kind of equity in our household. I feel it is balanced. He helps financially, and I look after the children and the household chores. Also, my Didi and I do rooftop gardening collectively sometimes, and most of the time, she is doing the majority of the household work, because I am engaged with my work as well.” (Interviewee with a Brahmin background)

To some extent, this external household support might help explain why overall family support within Brahmin households is relatively limited. However, while it may reduce women’s workload, it does not necessarily alter the gendered expectations, as of gender role ideology, placed upon them, particularly the assumption that they are primarily responsible for household duties.

In only two households, a higher level of participation by the husband in the household chores, especially rooftop gardening, was observed. These observations were specifically noted in the two interviewed Magar households, where participants would share chores, she stated:

“He waters the plant, I plant them, and he is looking after them. We both do the composting, but we do not have specific shared chores; whoever feels responsible will do the work. Everybody is involved in everything; this is also the case for the household chores” (Interviewee from Magar ethnic group)

However, an equal distribution of household chores remains rare and usually their work within the household is taken for granted, with little recognition from the family. In general, when discussing the household responsibilities typically carried out by women in Nepal, Yamuna Ghale, a Gender and Food Systems Expert, states:

“Their care work is never appreciated at home. The way you cook, the way you take care of the elderly, the way you do rituals, is never appreciated. Still, when they receive some income, like from selling produce or when they receive something from their husband, they appreciate that and are already happy.”

As noted above in the quotation from a Brahmin interviewee, some women or couples expressed the view that gender equity existed in their households. They defined this concept as an equal share of household chores and rooftop gardening responsibilities. When this was the case, and more equal gender dynamics were present, rooftop gardening, as part of everyday practices, also tended to be shared between partners. However, in most of the visited rooftop gardens, the women would be the ones doing all the related chores such as watering the plants, preparing the compost, weeding, harvesting, etc. Sometimes, based on a routine, their husband would, for example, water the plants in the morning before leaving the house.

Interestingly, most of the interviewees, especially women, accept the household chores, namely: washing, cooking, taking care of the children, and acknowledge them as part of their daily work:

“I like to do all seven, first cooking, taking care of the children, gardening, washing, shopping, these are all my daily work.” (female interviewee)

According to a recent newspaper article:

“These traditional roles are challenging in current times as young women contribute to household income, yet contribute more unpaid time fulfilling their traditional roles in the kitchen compared to young men. “(Prajapati, Nepal Economic Forum, 2024)

Only one participant confessed:

“I like cooking, but I don't want to cook three meals a day. I don't like it. I like to cook once properly, because then it is done. Otherwise, it's a burden. Also in Nepal, especially in the Brahmin caste, you are expected to cook all the time, especially if you are living together with your in-laws.” (female interviewee)

Similarly, as described by younger Nepali women living in Kathmandu, aged between 20-40, who, through several informal talks, would confess their perspective. They would be much more aware of the uneven distribution of household chores. This challenge to gender roles, from one generation to another, is described by a Nepali friend, who states:

“In Kathmandu, especially women from the younger generation, like me, are more independent; we have completed higher studies, we work and earn our own money.” (female Nepali friend, 26 years old, informal conversation)

“I can see the work my mother is doing in the household. For me, it is different; I work in a company and do not have as much time.” (female Nepali friend, informal conversation)

Thus, discussions with two gender experts confirm the higher work “burden” carried by women within the household. The term *burden* is placed in quotation marks because, for the women participants themselves, these tasks are not always perceived as a burden but rather as part of their daily duties. From an external perspective, this reflects a clear form of gender inequity. Both gender experts also note the relatively low level of demands among women within households for a more equitable distribution of domestic responsibilities or greater involvement in decision-making processes. However, the research showed that, since many of them were housewives and did not work outside the home, they tended to make the majority of household-related decisions on their own.

This was also the case for rooftop gardening. Since most of the time, they were the ones motivated to practice rooftop gardening, they would then also be the main decision-makers in this space. This greater autonomy is something we could observe during the interviews, which was then confirmed by them:

“In rooftop gardening, I decide everything.” (female Brahmin interviewee)

“She is the decision maker. She makes most of the decisions regarding rooftop gardening. For the rest of the household, we make decisions collectively.” (Magar husband about his wife)

In sum, household chores and tasks related to rooftop gardening are mainly carried out by women, except in households where either the ethnic background, such as Magar communities, where women tend to hold a higher hierarchical position than in Brahmin households, or in households where a higher level of interest from other family members led to more shared responsibilities. As shown, gender role ideology within intra-household relations remains unaffected.

4.3.2 Two types of rooftop gardening

Another valuable observation about rooftop gardening in Kathmandu was that, for most households, it remains an optional activity within the household; to some extent, this can be linked to their relatively stable economic situation of the research sample. However, for a more concise comprehension of the research, a distinction between the two types of rooftop gardening present during the fieldwork is presented in the table below.

Type of Involvement in RTG	Type of RTG	
Extensive RTG	Production- oriented type	Figure 42
Less extensive RTG	Leisure – oriented type	Figure 43

Figure 40: Rooftop gardening typology (created by FT, 2025)

This differentiation is based on two main factors. The first factor is the household's level of involvement in rooftop gardening, which results in two distinct types of rooftop gardening practices. Households with extensive engagement in rooftop gardening, characterized by a daily, routine habit, cultivated vegetables, fruits, and a wide variety of plants and crops, all within a very limited space (as shown in Figure 42). On the other hand, households engaged less extensively in rooftop gardening typically did not have raised beds for growing vegetables but instead used pots (as shown in Figure 43) to cultivate herbs and flowers; however, they would not grow any vegetables. This leisure-type of rooftop gardening was often attributed to a lack of time rather than a lack of interest.

In both cases, rooftop gardening is perceived as a pleasurable activity undertaken during free time. However, in more production-oriented rooftop gardens, considerations related to food security were mentioned more often.



Figure 41: Production-oriented RTG (FT, 2025)



Figure 42: Leisure-oriented RTG (FT, 2025)

4.3.3 Motivations and Hindrances

When it comes to the most often mentioned motivation of people wanting to engage in rooftop gardening, it was related to health and environmental concerns. For participants, whether being extensively or less extensively involved in rooftop gardening, they were aware, some even afraid, of the poor quality and pesticide-contaminated vegetables available on the market:

“I do not like the produce from the market because it was grown in contaminated water, and I want organic produce. This motivated me to grow my own produce.”
(female interviewee)

“I am not applying fertilizer on my plants, I use only my own home-made fertilizer. For other vegetables, I am very afraid to buy them on the market, the quality is not good.” (female interviewee)

They all wanted to grow their organic vegetables without pesticides and of better quality than those available on the market. This observation is also stated by a recent study by Pokhrel (2025):

“Consumer preferences have been increasing towards fresh and organic vegetables and fruits. That may be one reason that rooftop gardening has been increasing in urban areas” (p.197)

The second most frequently mentioned motivation was the desire for free time and leisure. Gardening allowed participants to relax, clear their minds, and be physically active. When discussing their household tasks, all participants identified gardening as their most preferred activity. This preference can be linked to the fact that, for most of them, it is an optional household activity, which they like to complete. This reflects their strong interest and motivation in rooftop gardening and related practices. Only a small number of women mentioned environmental concerns as a motivation, such as recycling kitchen waste, turning it into compost and incorporating it into the rooftop garden:

“I started doing it to utilize my kitchen compost. Before, around three, four years ago, I used to throw it, but then I wanted to manage it more. So that's why I started doing kitchen gardening.” (female interviewee)

In all interviewed households, the use of compost was only for their use in their garden, except for one, which would sell her vermicompost. The majority have dry compost, followed by vermicompost and liquid fertilizer. Only two households did not practice composting and had no fertilizer; they practiced more of a leisure-RTG-type. Overall, this shows the willingness of people to compost and their direct use in rooftop gardening. Further, this high willingness in composting and their organic rooftop production signals a high environmental consciousness among participants.

Within the sample, only a few households mentioned the importance of food security and lowering their household expenses. Also, a general finding was that many women reported high levels of food self-sufficiency among the produce-oriented rooftop gardening households. These households did not sell their produce but would sometimes share or gift it to neighbours.

But what is then hindering people, mainly women, from starting with rooftop gardening, or why would they stop?

For tenants, the primary constraint was the lack of access to space for gardening. Although many expressed an interest in gardening, rooftop areas were typically retained by house owners, as also noted by Waiba et al. (2024). In contrast, homeowners often had access to a roof; however, both women and men faced time constraints or lacked interest in engaging with it. Similarly, farmers practicing agriculture along the river cited limited access to land elsewhere as the primary reason for cultivating in this area.

Confirming the study by Thapa et al. (2020), 38.5% of participants identified the lack of leisure time as the greatest constraint to rooftop gardening. The ability to engage in either extensive or less extensive rooftop gardening was closely linked to time availability. Some participants, primarily women aged between 40 and 60, mentioned that a lack of time had previously hindered them from starting rooftop gardening or continuing the activity in the present. Usually, other non-negotiable, obligatory household chores, such as cooking, had to be accomplished by them. At the same time, since most interviewees were between the ages of 40 and 60, many noted that they had more available time, as childcare would be less time-consuming, for instance.

“Only when I’m free, I go on the rooftop. Sometimes it has been two, three days since I haven’t been, but then I go. I guess now that it is very hot, the plants might have dried, this is because I went back there only two days ago, to water and do the weeding.” (female interviewee)

A final constraint mentioned by the participants was related to health and environmental concerns, which was a main reason why they reduced or changed from a production-RTG type to a leisure-RTG type. The increasing number of mosquitoes in Kathmandu and the associated risk of dengue fever, along with monkeys destroying or eating their harvest, were cited as the main reasons for this change.

4.3.4 Urban Gardeners in Kathmandu

In addition to the semi-structured interviews in the households, several informal interviews were conducted with individuals engaged in urban agriculture on open fields along the Bagmati River. The interviewees were mostly farmers doing agriculture along the riverbank or close to their houses, on open fields, also known as kitchen gardens. They reported how recent floods negatively affected their agricultural land and how much they depended on the economic income from selling their produce. To some degree, this differentiates them from households engaged in rooftop gardening, which would do it more as a leisure activity. In both rooftop gardening and urban gardening, all participants revealed the importance of growing their organic food to reach a better quality than what the market would offer.

For almost all participants, cooking was their most preferred household chore, whereas gardening would often be referred to as a leisure activity and ranked very high in their most preferred tasks. In some households, women who disliked shopping would ask their husbands to fulfil the task. At my homestay, I usually observed my host mother watering the plants, cutting off lemongrass for some tea or collecting some flowers for her daily rituals. In many households, the women would say:

“First, I like cooking, then gardening, and shopping, and then children, but I think I like all things.” (female interviewee)

As mentioned in this quote, this was the case for the majority of the households; they liked and considered themselves happy while completing these different chores, with even greater happiness doing the gardening. They would not complain and continue to carry out their gender-specific tasks, reflecting the deeply embedded gender roles that shape the expectations and responsibilities within the household. More precisely, in this research, they would mention peace of mind, calm, relaxation, and how they loved to be close to nature in an urban place.

“I love nature and feel much more relaxed. Also, rooftop gardening keeps me physically and mentally active and happy.” (female interviewee)

A woman from the women’s group would have a similar feeling:

“Working in the garden gives you pleasure, fun, and makes you happy; other than that, it is hard to explain, nearly impossible.” (women’s group survey)

All of the mentioned statements were positive, and the participants would portray themselves with joyful emotions. This can be associated with the observations and feelings of the translator and me. To the same extent, we would be enthralled by their uplifting emotions and character:

“She is a cheerful person, and gardening brings her immense happiness. Additionally, she also has a collector’s spirit, as she enjoys gathering and planting various plants.” (description about an interviewee by Bedhika, translator)

Building on these positive emotions, the rooftop garden, as mentioned in the previous chapter, emerged as a space where the women made key decisions. This sense of autonomy and freedom was not always explicitly stated by the interviewee, but it was clearly observable in their attitudes and in the pride, care, and affection they showed toward their gardens.

“I like to come here on the rooftop and relax, I then sit here watching my garden and see what is growing.” (female interviewee)

“Rooftop gardening is very pleasing to me, and for others as well. I love organic food, especially when I cook curries. So, for me it is also a lifestyle.” (female interviewee)

Additionally, for 10 women of the women’s group, all with a Brahmin background, rooftop gardening provides them a sense of belonging, as many of them moved to Kathmandu quite recently (15-25 years ago). Through their meetings, they can collectively formulate requests to the local ward, such as receiving the same bamboo sticks provided for farmers, but which could also be used to build tunnels suitable for rooftop gardening. The group appears to empower the women, giving them the motivation to continue gardening. Rooftop gardening offers them a renewed sense of identity and helps them cope with the feeling of uprootedness in their new environment.

These positive feelings contribute to a general sense of well-being and contentment among the women’s group participants:

“I am very proud to be part of the women’s group and love to be involved in rooftop gardening. Also, it is thanks to the engagement and motivation of our women’s group president that I started practicing rooftop gardening.”



Figure 44: Nepali women while gardening (FT, 2025)

Also, since many of them have a farming background, they learned how to do agriculture or gardening from an early age, which would also remind them of the agricultural activity and recall their hometowns and families:

“I never received rooftop garden training. My father was a farmer. We grew up in a village and I used to cut the grass and eat organic food. Also, I do not like the city, but I like nature a lot.” (female interviewee)

“The couple has an ancestral familiarity with agriculture, and they have experience of practicing it in the larger fields; the terrace farming is quite an upgrade for them.” (observation by Bedhika, translator)

Participants expressed negative emotions related to rooftop gardening only in specific contexts, primarily concerns about animals, such as mosquitoes transmitting dengue or monkeys damaging plants, as well as infrastructural issues like water leakage or drought.

Some women liked to share physical items such as their harvests and seeds, while others loved to share on social media. This has the side effect of spreading the activity of rooftop gardening within and outside the family. Many interviewees mentioned a higher share of pictures and videos on social media during COVID-19.

Frequently, the participants mentioned being part of a Facebook group and updating themselves about newly tried seeds and projects people would share:

“Most of the inspiration I receive is from a TikTok, but also through a Facebook group focusing on rooftop gardening. I like to see what people are growing; sometimes they also show how they tried to grow new plants.” (female interviewee)

4.3.6 Women’s Group and the Role of Community in Rooftop Gardening

The visited women's group, *Namuna Mahila Samuha*, is based in Lalitpur and was formed in 2015. It was initiated entirely by Radha Dhakal, who inspired over 30 women, with a Brahmin background, to join, start and sustain rooftop gardening (*kausi kheti*). The group meets once a month to discuss topics such as seasonal planting, load management, composting, and the financial benefits of rooftop gardening. They also exchange seeds and deposit savings together, some of which come from reduced household expenses due to their homegrown produce. In addition to agricultural support, the group functions as a cooperative that provides small loans for rooftop gardening and other household needs. While it was formed by recent migrants from Harisiddhi, part of Lalitpur District, most members come from Brahmin backgrounds and have roots in farming from their village or home district.

The women’s group discussion revealed some political influence of the group. Since most of the women originally moved to this ward (a local political entity) from outside Kathmandu Valley, they had to defend themselves against another local women's group to ensure they could continue meeting. Despite being registered at the ward level, they receive no municipal support, which they attribute to political favouritism by the ward head, who prioritizes another women’s group from the Newar community.

The group is socially active and aware of municipal agricultural programs, though they feel excluded from policy-level support.

“We feel that the municipality, especially the head of this ward, from the Newar community, only favours her fellow community.” (women’s group member)

They hope for more inclusion in future government provisions related to urban agriculture, especially rooftop gardening. Also, when we asked them about what they wished for, from the government side, they would state: rooftop gardening tools, some would ask for training, seeds, or visiting other rooftop gardens.



Figure 45: Women's group discussion and questionnaire distribution (Florence Testorelli, 2025)

But what about the role of the community for the other participants of this research involved in rooftop gardening?

In the case of the research women's group, they share a common sense of belonging, their knowledge, their seeds, and their positive emotions and feelings, and in this way encourage each other. Thus, the women's group motivates them to do and pursue rooftop gardening and can also provide them with some financial support.

Participants would come up with another insight into the importance of community. Throughout the interviews at the household level, participants consistently expressed strong motivation to share their knowledge about rooftop gardening and harvest with neighbours, family members or a ward group/ women's group. Additionally, most of them were part of a ward group, community group, or, in a few cases, a women's group.

“For me, exchanging and sharing with the community is very important. I'm part of a women's group. Every Sunday, we meet together in different houses, turn by turn. When they came to my house, they saw the garden and took some seeds for their rooftop gardens.” (female interviewee)

A strong sense of belonging and community was visible to me from the early stages of the fieldwork, and I observed it consistently throughout. This observation was later confirmed by Jiban Poudel, an anthropologist at Tribhuvan University:

“Kinship plays an important role in Nepal and for instance, the neighborhood represents a core social entity, where they would share their knowledge. Also, people in Nepal cannot live without community.”

Another curious phenomenon is the Kausi Queen Contest, organized by Kathmandu Metropolitan City (KMC) in collaboration with ENPHO and UN-Habitat to promote rooftop farming in the city. The first competition was held in 2020. Coincidentally, two previous rooftop gardening queens were visited and interviewed during the field work.



Figure 46: Kausi Queen Competition 2021/22 (Nepali Times, 2022)

5 Analysis and discussion

The previous chapter gave a descriptive idea about the research's participants, geographical surroundings, social and political functioning, and waste management. It then closely focused on the gendered practices of rooftop gardening and its consequences on intra-household relationships, women's embodiment and the role of community. This chapter analyses the results and responds to the research question, the sub-questions and their linked hypotheses. Every sub-chapter discusses separately one hypothesis.

5.1 Women as Main Actors in Rooftop Gardening

Throughout the research, the overall higher implication of women in practicing rooftop gardening has been stated. Many of the interviewed participants, mostly women, already possessed gardening skills due to their agrarian backgrounds. Training sessions organized by the municipality and various NGOs were typically attended by women, accounting for approximately 90% of the participants.

The first hypothesis states that, guaranteeing the food security of the family is their main motivation, but due to time constraints, they are not able to fully pursue rooftop gardening. In the research, mainly people with a production-oriented rooftop gardening practice would mention food security. This trend may be partially attributed to sampling bias introduced by the snowball method, which resulted in a participant sample composed largely of upper-middle-class Brahmin households. Additionally, time constraints were frequently mentioned and were often linked to the social expectations and the disproportionate burden of household chores that women in all interviewed households were expected to carry. In some households, the presence of a household helper (*didi*), reduced the overall domestic workload, potentially allowing the residents more time to dedicate to rooftop gardening. At the same time, those women who would work beside fulfilling the majority of the household chores again tended not to prioritize the activity of rooftop gardening, due to a lack of time.

Moving beyond, the following chapter examines how rooftop gardening becomes a site of embodied well-being, shaped by emotional engagement, everyday practices, and the women's relational experiences within their domestic and social environments.

5.2 Everyday Experience: Embodied and Emotional Well-being of Women in Rooftop Gardening

The conceptual approach of the Everyday, Embodiment, and Emotions, the 3Es, as advanced by Doshi (2017) gave the research a close and intimate understanding of the participants, mostly women, physical and mental well-being and their feelings about the practice of rooftop gardening. It further supported the overall understanding of their intra-household relations, as further explained in the next sub-chapter.

By visiting the different rooftop gardens, it became clear how proud the women were to share and show us their gardens. In most of the interviews, it was their personal space that made them feel happy and relaxed. For all women, whether they engaged in gardening extensively or not, it was a leisure activity pursued during their free time and not perceived as an additional household chore. It was their choice and decision to practice rooftop gardening and since many of them had agricultural roots, they knew how to get started.

The rooftop garden is their space, where they typically engage in gardening independently or, as noted, with some support from family members. The implications of the decision-making within this space will be discussed in the following sub-chapter. Furthermore, two additional studies confirmed the aspect of well-being and relaxation by underlining the therapeutic and healing benefits of rooftop gardening. For instance, research on urban agriculture revealed improved psychological health among elderly women, with participants involved in gardening exhibiting lower depression scores compared to those who did not engage in such activities (Park, 2016; Tuladhar, 2019).

The main motivation for all women engaged in rooftop gardening was the production of organic food, reflecting a high consciousness of their health and their bodily well-being. Consequently, they expressed happiness in being able to provide these healthy, organic produce to their families, friends, neighbours, and share the seeds within the community or women's group. Only a few households mentioned the reduction of overall household waste through composting kitchen waste as a motivating factor. Despite this limited awareness of waste reduction, participants demonstrated a strong commitment to their composting practices. Within their rooftop garden space, they decided to exclusively use organic fertilizer, derived from their own compost made from kitchen waste. Not a single household reported purchasing chemical or synthetic fertilizer, in contrast to some farmers practicing agriculture along the river.

In all the visited households, both women and men would state an overall happiness and a frequently positive effect on their physical and mental health. They valued the opportunity to be close to nature and engage with the gardening practices, which also evoked nostalgic memories linked to ancestral farming. Proudly, they would show us their rooftop gardens and enjoy sharing their harvests. Some additionally shared photos or videos of their gardens and produce on social media platforms such as Facebook and TikTok.

These positive emotions and the physical well-being stated by the participants differ from the available literature on resource management in rural and urban areas, with a gendered perspective on the body, focusing more on the body as a site of unequal share of power relations. In their case studies, women suffer from unequal access and carry a higher burden due to environmental or social inequalities (Longhurst, 2008; Truelove, 2011, 2019). For several reasons, the everyday, embodied and emotional experience in this study differs. First, compared to Truelove's research on everyday water procurement and its related inequality, this research focused on a less politically contested resource. This is because rooftop gardening in Kathmandu Valley remains a private activity, where women hold the decision-making authority and, to a certain extent, can determine the amount of time, care, and effort they invest without feeling compelled to fulfil the task. The second reason is most probably the socio-economic stability of the households, as the majority would not do it for food security and still had the money to buy the additional food, but mainly production oriented rooftop gardeners would still mention some reduction in food expenses, depending on how extensively they would do rooftop gardening (see RTG typology in chapter 4.3.2).

Another aspect supporting the second hypothesis is the monthly support, the women or participants would receive through community or women's groups. As cited earlier, the shared time, discussions, and exchanges of seeds further encouraged and motivated them to pursue the activity of rooftop gardening. It helped them to politically make requests, as they built a stronger entity together. However, not all female participants were part of a women's group, but they would always be linked to a local ward group, with some neighbours and engage in community life.

It is therefore possible to confirm the second hypothesis: Women involved in rooftop gardening state a high level of physical and mental well-being and also health due to their organic food production on the rooftops, their closeness to nature and the related feelings and their community participation linked to rooftop gardening. For the farmers, participants, and couples doing urban gardening on bigger fields, their physical activity would be even higher, having more space, work and harvest.

5.3 Gender Roles and Power Relations within the Household

In urban Kathmandu, the role of caste and/or ethnicity plays a vital role in shaping gender roles and power relations within the household. As mentioned earlier, in the Brahmin caste, which follows a patriarchal structure, women are often placed under higher social expectations compared to the ethnic group Magar, which is more matriarchal. Thus, in Brahmin households, daughters are expected to live with and take care of their in-laws and fulfil the related household chores after marriage. To some extent, these socio-cultural expectations derive from caste, but religion and rituals also contribute to shaping gender roles and power dynamics. An extensive number of festivities, especially in Hinduism, the most practiced religion in Nepal, require the engagement of the husband and the wife. Still, usually, the workload of women is higher, and they are expected to complete the chores linked to the household, but in most of the households, also those linked to the festivities.

Interlinked with these more structural findings of caste and religion that shape gender roles and power relations, the household and its intra-relations continue to shape the everyday experiences, responsibilities, and decision-making power of women within the domestic sphere. But what is the role of rooftop gardening?

According to the third hypothesis, the activity of rooftop gardening leads to a shift in traditional gender roles, through which they would gain greater autonomy and decision-making power within the household. The next paragraphs outline the most important arguments.

The Rooftop Garden – Women’s space within the private sphere

The space of rooftop gardening, in most cases, proves to be a space where the women are mainly responsible. They generally received little support, but in some households included in this research, they might receive assistance from their in-laws or children with watering the plants. Since they tend to spend a lot of time, especially in their free time, on the roof, within this private space, they confirm, in most cases, to be the decision-makers. For example, in cases where they declared themselves independent decision-makers of the garden, they had the autonomy to decide, for instance, what they wanted to grow and make sure it was organic food they produced; they therefore have a certain control over the space. These embodied and emotional experiences and decisions, while rooftop gardening provided them with some autonomy and further contributed to their overall stated sense of well-being. Nevertheless, this observation was limited to the domain of rooftop gardening and did not give them a higher say over broader decision-making processes within the household. As discussed in the previous chapter, households with a more equitable distribution of domestic responsibilities also tended to share tasks related to rooftop gardening. In these families, predominantly of Magar background, a more balanced division of labour was observed, contributing to increased gender equity. That said, the research did not find evidence of significantly greater autonomy or a higher say in decision-making power for women within the household overall. Rather, rooftop gardening offered them a distinct space separate from obligatory domestic work, which may be interpreted as affording a degree of personal freedom.

The limited effect of rooftop gardening on gender roles also depends on what kind of variables we include to further answer the research question. Apart from decision-making and household support, the other measured variable for gender roles/ power relations is group membership.

Whereas the women might not directly experience a shift in traditional gender roles within the household, the role played by the community or the women’s group can, to some extent, challenge these roles. This statement is based on personal conclusions, as the women would not explicitly state changes in gender ideology. Yet, discussions with the women’s group, as well as observations of their interactions and exchanges, primarily centered around rooftop gardening but also touched on broader aspects of life, revealed a strong sense of mutual support. Participation in these monthly sessions was voluntary, and, as many women expressed, the collective setting empowered them to articulate

political demands. Outside of the women's group, most participants were still engaged in local ward groups or maintained active exchanges with neighbours. Whether and if these exchanges are impactful remains open, but in any case, they can be considered rare moments where household chores can be left behind.

Normalized Gender Roles

The biggest limitations to shifting traditional gender roles and power relations arise when these roles become normalized. As explained, the participants, mainly women, always expressed high levels of contentment when it came to the accomplishment of mandatory household chores. They would not complain about anything but rather accepted that it was their responsibility. These feelings and observed attitudes by the participants showed how gender roles and their linked inequity become normalized, as for them, they were still perceived as gender equity.

From my gender justice perspective, I would, therefore, question the equity of household labour distribution, especially when noticing that women, compared to men, dedicate significantly more time and energy to domestic tasks. Discussions with two gender experts further confirmed this imbalance, highlighting both the disproportionate burden placed on women and their relatively low expectations for a more equitable division of household chores or a higher say in household decision-making processes.

As an optional activity, rooftop gardening provided women with a sense of joy and fulfilment through sharing, displaying and engaging with their gardens. To a certain extent and depending on their interest and motivation, women were able to determine the level of involvement desired. At the same time, in some households, a greater engagement in rooftop gardening was limited by the burden of obligatory domestic responsibilities, which limited their time and autonomy to pursue the activity as extensively as they might have wished. Thus, women's ability to engage in rooftop gardening is shaped by the degree to which they are constrained by social and familial obligations. In other words, gender roles significantly influence the extent to which women can participate in rooftop gardening.

Challenged Gender Roles

The activity of rooftop gardening and urban gardening was mostly conducted by participants aged between 40 and 60. It was insightful to see how the gender role and power relations perception would vary across age groups. Discussions with Nepali women living in Kathmandu, mainly aged between 25 and 35, would reveal a change in the perception of gender equity and, therefore, in gender roles. They were aware of the higher workload of women, their mothers, within the household. While I agree with Nightingale's (2011) statement that 'gender boundaries vary across geography, caste, and ethnic groups, I would add that they also vary across generations, highlighting the importance of considering age as a key component.

The younger generation tends to exhibit greater independence, influenced by higher levels of education, formal employment, financial autonomy, and adaptation to a more modern urban lifestyle. Informal discussions with younger participants frequently revealed limited engagement in rooftop gardening, often due to a loss of agricultural skills and a weaker connection to their agrarian ancestry. At the same time, many noted that societal expectations, such as the norm of living with their in-laws, continue to place a disproportionate burden on women compared to their husbands or brothers.

In this thesis, I argue that within these systems, changes or a shift in traditional gender roles remain limited, and it takes time, probably about one generation, to change the perception of gender roles and power relations within the household. Whether this younger generation will practice rooftop gardening in their future homes remains open.

To conclude, the research reveals that rooftop gardening practices have a limited impact on reshaping gender roles and power relations. As previously discussed, a shift in traditional gender roles, such as a greater degree of decision-making power within the household, was not observed. However, since the garden remains primarily their domain, women do exercise decision-making power in this specific space. At the same time, rooftop gardening brings them fulfilment, joy, and a sense of embodied happiness. These intimate feelings and perceptions offer a deeper understanding of intra-household power dynamics and gender roles. Nevertheless, factors such as community support, assistance from family members, exchanges with neighbours, participation in ward meetings, and involvement in women's groups serve to encourage continued engagement in rooftop gardening.

6 Conclusion

This study examined how everyday practices of rooftop gardening by women in Kathmandu Valley intersect with gender roles and intra-household power relations, using a Feminist Political Ecology lens and with the concepts of everyday practices, embodiment, and emotions (3E's), gender roles and power relations. The first hypothesis proposed that women are the main actors in rooftop gardening, motivated primarily by securing household food security, but constrained by the high workload of household chores, also referred to as the double burden. The findings confirm women's dominant role in rooftop gardening; however, food security was not the main driver for the majority of participants. With high certainty, this finding is linked to the predominantly upper-middle-class Brahmin, Newar, Magar and Gurung household respondents reached. They would state that rooftop gardening was more often linked to cultural nostalgia and leisure-type activity than to subsistence needs. Farmers, but also some rooftop gardeners with production-oriented rooftop gardening, engaged more directly with food provision motives. Time constraints such as double burden, rooted in the unequal distribution of domestic labour, were a recurring limitation, especially for women who worked outside the home in addition to managing most household tasks. Households employing domestic helpers saw fewer constraints, while others deprioritized rooftop gardening due to competing obligations.

The second hypothesis predicted that women involved in rooftop gardening would report improved physical and mental well-being fostered by their engagement in the activity and community participation. The findings strongly support this, as participants expressed pride in their gardens and described them as spaces of happiness, relaxation in a hectic city, and personal choice, distinct from the space of the household, where they carry the responsibility to fulfil obligatory household chores. The findings show even a higher potential than only providing them with a higher physical and mental well-being, but further, the garden provides them with their own space, within their private household.

At the same time, it is important to critically reflect on well-being, of which happiness is an undeniable value and a key component (Sen et al., 2008). However, after Sen, it must be included in a broader range of capabilities. In other words, much more depends on the individual's functioning and capabilities – on what they can *be* and *do*, rather than solely on how happy they feel.

The gardens provided opportunities to grow organic produce, reflecting a high awareness of health and bodily well-being for themselves and their families. Sharing their organic harvests and seeds with neighbours, friends, and women's groups fostered social bonds and community identity. This sense of connection was extended to the digital sphere, with some participants sharing their harvests, gardens and their connected experiments on social media. Through their agrarian backgrounds, many women would already be skilled in rooftop gardening training. From a policy perspective, the different cities, in cooperation with the Ministry of Agriculture and Livestock Department, could support these already skilled women by providing high-quality seeds and by formally recognizing their work as agriculture, which would enable them to access resources, typically distributed to farmers more easily.

Interestingly, these positive emotions and this well-being associated with rooftop gardening, as their own space, represent a new finding that contrasts with much of the existing literature on gendered resource management, which often portrays the body as a site of unequal burden. Another divergence from the available literature in Feminist (Urban) Political Ecology on gendered everyday practices around resources is that rooftop gardening involves a private, non-contested resource and is practiced voluntarily, rather than as a traditional household chore or burden.

Moreover, most participants and interviewed households enjoyed a high degree of economic stability, exemplified by homeownership, which facilitated their engagement in rooftop gardening. Furthermore, this study shows that the non-mandatory nature of rooftop gardening offers women a distinct and separate space for themselves.

The third and last hypothesis suggested that rooftop gardening could shift traditional gender roles and increase women's decision-making power within the household. The results indicate little substantial change, and shifts within the household are limited, but as mentioned in the second hypothesis, they state a higher level of well-being. While women exercised, in most cases, clear autonomy over their rooftop gardens, deciding what to plant and how to manage them, this autonomy does not extend to broader household decision-making. Also are gender roles and household structures largely influenced by caste, ethnicity, and religion. For example, Brahmin households tended to be more patriarchal, with women bearing a greater share of domestic and ritual workloads, while Magar households showed more equitable divisions of household and rooftop gardening chores.

Women's participation in community or ward groups occasionally created collective empowerment, especially in making local political requests, but participants rarely identified these activities as altering gender norms at home.

The persistence of normalized gender roles emerged as a central constraint. Many women expressed satisfaction with current household arrangements and would sometimes normalize the labour divisions within the household. Again, this finding can be linked to their overall happiness and well-being.

Across all three hypotheses, rooftop gardening emerges as a practice that enhances women's well-being, provides them with a personal space of autonomy and further strengthens their sense of belonging within the community or women's group. Yet, within the socio-cultural context of this research, it does not significantly alter gender roles or power relations within the household. In conclusion, the value of rooftop gardening lies primarily in its personal and emotional significance for women, especially in the sense of providing them with their own space within the house.

6.1 Future Research

One of the most significant findings of this thesis is the way rooftop gardens create a distinctive space for women. They function as a refuge from daily household chores and responsibilities, providing them with a domain where they exercise autonomous decision-making. Since only one women's group could be reached in this research, future research could further explore how collective settings influence and shape gender dynamics. From a feminist political ecology perspective, this multi-scalar approach would be particularly valuable, as it highlights how women's everyday practices in intimate household spaces intersect with broader social networks and collective forms of environmental governance. In this way, future inquiries could clarify whether the autonomy women experience in rooftop spaces remains bounded within the household, or whether it can translate into more substantial shifts in community participation, leadership, and recognition in urban environmental politics. Such a comparison could reveal how different scales of engagement, domestic versus collective, shape gender roles and power relations in distinct ways.

7 References

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8 Appendix

8.1 Household Interview Guide

Date:/...../2025

Intro: Introduce myself, explain that we are doing research about the role of women, while practicing rooftop gardening at their home. Ask for permission to record the interview (only for my research) and take some pictures. Express our gratitude that they take the time and participate in our research. Also explain the importance of a female interpreter.

General questions about the women and their rooftop garden

1. Name
2. Caste/ Ethnicity
3. Age
4. Do you have children?
5. Are you married? Single/ married/widowed/
divorced
6. How many people live here?
7. Do you own or rent the place?
8. Since when do you live here?
9. GPS Data, Address
10. Occupation/ Profession of men in household:
11. Education level of men in the household: primary, secondary, University
12. Occupation/ Profession of women in household:
13. Education level of women in the household: primary, secondary, University
14. Presence of other people during the interview

Focus on household chores

15. Do you have any cleaners or maids? Yes/No
If No, continue with 16
- 15.1 If yes: Gender of this person F/ M
- 15.2 If yes, What kind of tasks does this person carry out for you?
See 7 household tasks (cooking, cleaning, shopping, clothes, rooftop gardening/ gardening, child, waste)
- 15.3 How many times is the maid supporting you?
16. Is anyone else in the family supporting you in household chores?
17. Is your work recognized and appreciated by your family?
- 17.1 How do you feel about this?
18. What kind of tasks related to household chores do you have?
19. Show them the pictures with the household chores (include 7: cooking, cleaning, sorting waste, gardening, children, shopping, clothes) and ask them to put them in preference order
- 19.1 Which task do you prefer? Why?
- 19.2 Which task do you dislike? Why?
- 19.3 Which task is a burden for you?
20. How do you feel about these household chores?

Focus on the management of rooftop gardening

21. Who has access to the rooftop garden?
22. Is this the only place where you do gardening? Do you have land outside the city?
23. Who takes care of your rooftop garden regularly?
- 23.1 Why are you, within your household, taking care regularly of the garden?
If the person herself, then what are the main activities of the garden?
How often are you doing these tasks?
Maybe some tasks are separated? Ask which one
24. Who is buying and organizing the material and resources for the gardening?
- 24.1 From where do you get the material to maintain your rooftop garden (seeds, soil, pots)?
- 24.2 What water are you using? Rainwater/ Water from tap
25. Do you like doing RTG?
- 25.1 What has motivated you to start rooftop gardening?
- 25.2 What kind of feelings do you have while gardening?
- 25.3 How do you feel since you started doing RTG?

- 25.4 Do you feel physically more fit? Is your mind more relaxed?
26. When did you start with rooftop gardening? Before Covid/ during Covid/ post-Covid
27. What is the main purpose of your rooftop garden? (Food Security, pleasure, free time)?
28. Does growing your own food give/ensure your food security?
29. What are you growing?
- 29.1 Why are you growing these kinds of seeds?
- 29.2 Did you ever think of selling your products?
30. Are you composting?
- 30.1 If yes, do you use the compost for the garden? Do you share it?
- 30.2 Does your neighborhood provide compost for rooftop gardening?

Power relations within the household

31. Have you noticed any changes in your relationship or within your family since you started RTG? For example, More independence, more decision-making power, and more overall support for household chores.
32. As a result, are you getting treated differently? E.g. More respect or gratitude for your personal effort
33. Are you sharing your experiences with other people?
34. Are you part of any women's group?
- Yes/No
- If yes: How often do you meet, and what are you exchanging about?

Authority (Institutional, Municipal policies from Kathmandu)

35. Are you aware of any RTG policies from the Municipality that could support you? Yes/ No
- If yes: How do you know of them? Which one are these?
36. Did you receive any RTG training from NGOs or the Municipality? Yes/No
- If yes, when?: Before Covid-19/ Online during Covid-19/ After Covid
- If no, why?
37. Did you receive any material (e.g., compost bins) from the Municipality?
38. What kind of support would you like to receive from the government?
39. Do you get any support from outside the family for rooftop gardening?
- E.g., neighbors, women's group, NGO, municipality, etc.
40. What role do your community**, your neighbors play in regards to RTG?

Ask to see the garden (take some pictures)

- Observe the emotions and feelings about the garden?

Outlook

- Is there anything you would like to add to the topic of rooftop gardening?
- How do you feel now that we have finished the interview?

**Reflect on the concept of community with the interpreter, in order to get a local understanding of it. e.g., ethnic community (Newar, Brahmins)

8.2 Women's Group Survey/Questionnaire

General questions about the women and their rooftop garden

1. Name
2. Age
3. Where do you live?
4. Do you have children? YES/NO, Age?
5. Since when are you part of the *kausi kheti* women's group (year)?
6. What has motivated you to join the women's group?

Focus on the management of rooftop gardening

7. Since when are you doing *kausi kheti*?
8. Additionally, do you also do farming on a land plot? YES / NO
9. Is anyone helping you doing *kausi kheti*? YES, who? /NO
10. What has motivated you to do *kausi kheti*?
11. What kind of feelings do you have, while gardening?
12. Have you done *kausi kheti* during COVID-19? YES/ NO
 - 12.1 Why have you done less, more *kausi kheti* during COVID-19?
13. How do you feel since you started doing *kausi kheti*?
14. What is the main purpose of your *kausi kheti*? Reduction of organic waste ending up in landfill/ Food Security/ Free-time, pleasure
15. Are you aware, that through your *kausi kheti* practice, you reduce the quantity of organic waste ending up in the landfill?
16. Are you segregating waste in your household? YES / NO
 - 16.1 Are you composting? YES/ NO
 - 16.2 Do you use your own compost for your *kausi kheti*? YES/ NO

16.3 Do you buy extra compost? YES/ NO

17. To what extent are you self-sufficient ? less than 30%/ 50%/ 75%/ more than 75%

Municipality

18. Did you receive any support from the Municipality?

If yes, what support? (e.g. seeds, compost bins etc.)

19. Did you receive any *kausi kheti* trainings from NGOs or the Municipality? YES/
NO

If yes, when?: Before Covid-19/ Online during Covid-19/ After Covid

20. What kind of support would you like to receive from the government?

21. Do you get any support from outside the family for *kausi kheti*? E.g. neighbors,
women's group, NGO, municipality etc.

8.3 MAXQDA24 Code System

Code System	Frequency
Code System	605
Personal Informations	0
Profession women	21
Profession husband	11
People living in house	9
Economic situation	2
Age	11
Body/Physical wellbeing	1
Education	1
Children/ Mariage	15
Caste/Ethnicity	17
Gender Role	11
Community strong role	24
Changes within the relationship/family since RTG	5
hh chores, alone vs. division (+)	29
RTG chores alone vs. divided	25
Power relations	0
feelings about hh chores	7
Most prefered hh chores	2
Maid support	4
hh work appreciated/recognized	1
Social expectations/norms	4
Observations	3
Occupancy outside the hh	3
House	0
land outside the city	8
on rent	3
owner	9
Waste segregation	3
Share/Buy?	5
Reason(s) to compost	7
Composting (Vermi/dry/liquid)	24
Rooftop gardening	3
Obstacles of RTG/hindrance	17
RTG Training vs. farming family	10
Motivation for RTG	26
Saving money	2
Health, no pesticides	18
Leisure, pleasure, free time	8
Food Security	11
Sell produce	2
Context	9
COVID - RTG	11

Environmental conciousness	9
RTG start	9
Who?	6
Harvest/ Veggies/fruits grown	21
RTG - Everyday, Embodiment, Emotions	0
Everyday practices RTG (+)	17
Embodied experience (before RTG)	11
Mental feelings	7
Physical feelings	3
Emotions/Feelings RTG	32
Government, Policy, Women's group	1
Support	20
Women's group vs. other group	18
Policy	15
Wishes	12