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INSTITUTIONAL SUPPORT AND UBUNTU-DRIVEN PRACTICES: THE ROLE OF WOMEN'S INDIGENOUS KNOWLEDGE IN MITIGATING CLIMATE CRISIS IN KAPIRI MPOSHI, ZAMBIA

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Abstract
This study investigates the interplay between institutional support, Indigenous Ecological Knowledge (IEK) and gender resilience in addressing deforestation and climate crises in Kapiri Mposhi Rural, Central Zambia. Focusing on eight villages near the Mulungushi River, a region grappling with rampant charcoal burning, vegetation loss and erratic rainfall, the research employs Participatory Rural Appraisal (PRA) and Policy Analysis to assess how Ubuntu-driven communal practices counter environmental degradation. Key initiatives include Village Banking Groups (VBGs), which provide microloans to help households transition from charcoal-dependent livelihoods to sustainable agroforestry and communal gardening projects that preserve drought-resistant crops such as millet and sorghum. Findings reveal that women's IEK, rooted in Ubuntu ethics of reciprocity and collective responsibility, enhances climate resilience through seed preservation, shared labour and equitable resource distribution. However, systemic challenges persist, including policy gaps in recognising IEK and tensions between immediate economic needs (such as charcoal production) and long-term ecological sustainability. The study argues for integrating Ubuntu-informed practices into national climate frameworks and advocates for institutional support to scale grassroots innovations, such as solar energy adoption and agro-ecological training. By centring on women's voices, this research contributes to decolonial climate discourse and underscores the urgency of gendered, community-led solutions in Zambia's fight against environmental collapse.

Keywords
Climate resilience, deforestation, gender equity, indigenous ecological knowledge, Ubuntu, Zambia.

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1. Introduction

Climate change has major impacts on the livelihoods of rural communities. In order to counteract the situation, communities have developed various means for coping and adapting to the impacts (Kihila, 2018). According to Mulimba (2025), Zambia has experienced a 1.3°C increase in mean annual temperature since 1960, with rainfall decreasing by 1.9mm/month (2.3%) per decade. Projections indicate temperature increases between 1.2°C and 5.5°C by the 2090s and rainfall declines of up to 20-30% in southern and western regions by 2050. These climatic shifts have intensified extreme weather events, reducing agricultural productivity and water availability. Economic assessments estimate climate-related losses of up to USD 7.1 billion over a decade, with a potential GDP reduction of 6% by 2050. The agriculture sector, heavily reliant on rain-

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fed systems, has seen maize and bean yields drop by 25-34% in some scenarios (Kalonje *et al*., 2025; Mulimba, 2025).

Deforestation has been the main source of Zambia's GHG emissions, with Land-Use Change and Forestry accounting for 59% of total emissions in 2021, especially in the Southern and Central provinces of Zambia. Approximately 167,000 and 300,000 hectares are being deforested yearly (Hadunka, 2025; WWF Zambia, 2025; Kabisa *et al*., 2020). Most rural households are aware of this rapidly declining forest cover, resulting in crop failure, flash floods and droughts. Approximately 63% of farmers report seeing a reduction in nearby forests (HICPS) (Kalonje *et al*., 2025; Hadunka, 2025; WWF Zambia, 2025). Despite being aware, many farmers must continue to produce charcoal, often as a last resort when crops fail.

The urgent need to tackle this issue is acknowledged in the government's 8th National Development Plan (8NDP), which strives to limit the unsustainable production and consumption of charcoal (GRZ, 2022). Addressing this issue requires policies that tackle the root causes of household vulnerability. One potential cause of this charcoal burning is climate shocks. Since maize is both the main staple and a vital source of income, climate shocks that reduce harvests leave families with few alternatives. While these shocks may force smallholder farmers to resort to charcoal production, research on this relationship is lacking. It emphasises that African societies possess rich indigenous knowledge related to climate change that has not been fully utilised or recognised (Siwila, 2022).

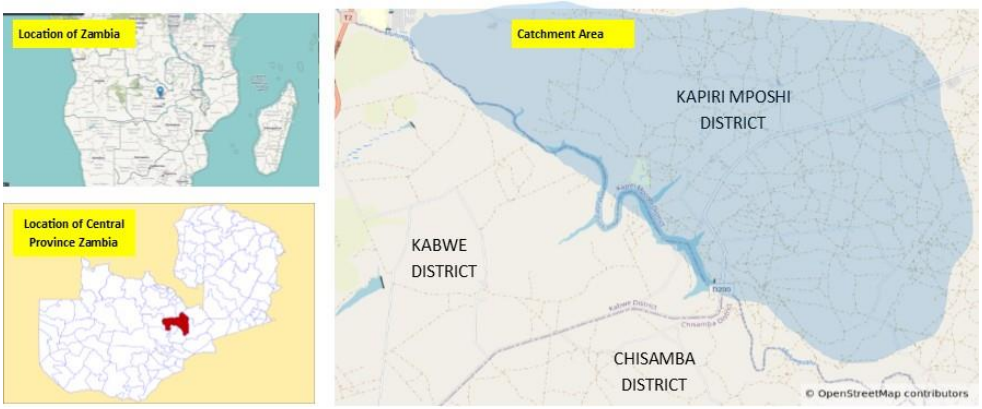

Figure 1. Kapiri Mposhi district and surrounding districts

The role of women's indigenous knowledge in mitigating the climate crisis in Kapiri Mposhi, Zambia, is significant, especially when integrated with institutional support and Ubuntu-driven practices. Women's contributions to sustainable climate practices are increasingly recognised, as they often serve as key agents of change in their communities. Indigenous knowledge has been realised in the design and implementation of sustainable development projects, but little has been done to incorporate this into formal climate change adaptation strategies. Warren (1991) defines indigenous knowledge as institutionalised local knowledge that has been built upon and passed from one generation to another by word of mouth. In its broad sense, it includes a social, political, economic and spiritual dimension of a local way of life (Emery, 1996). Indigenous knowledge is the basis for local-level decision-making in many rural communities in Zambia. The people in most rural parts of the country integrate indigenous knowledge into climate change policies through some strategies that include the adoption of early maturing crops, drought-resistant crops and selective keeping of

livestock. This response explores the intersection of women's indigenous knowledge, institutional support and the Ubuntu philosophy in addressing climate challenges.

Geographically, Kapiri Mposhi town lies in the middle of Zambia, next to the boundary with Copperbelt Province. The town is approximately 60 km north of Kabwe and 110 km south of Ndola. It is surrounded by 8 districts, namely, Kabwe District to the south, Chisamba District to the south-east, Luano District to the east, Mkushi District to the north-east, Masaiti District to the north, Mpongwe District to the north-west, Ngabwe District to the west and Chibombo District to the south-west. As of 2022, the Kapiri Mposhi had a total population of 371,068, with 184,685 being males and 186,383 being females (Zambia Statistics Agency (ZamStats), 2022). Below is a map of Zambia, Central Province and Kapiri Mposhi District.

2. Literature review

Globally, several Scholars observed that Participatory Rural Appraisal (PRA) emerged as a pivotal methodology in global climate adaptation discourses. Over the years, it has been integrated with Indigenous Ecological Knowledge (IEK) with institutional support to encourage gender resilience against deforestation and climate variability (Leal Filho *et al*., 2022; Gatty & Narayanan, 2025; Nyadzi *et al*., 2021). Globally, PRA facilitates community-led assessments that empower marginalised groups, especially women, to document traditional practices like seed preservation and agroforestry, which mitigate environmental degradation (Pisor *et al*., 2023; Siwila, 2022). By emphasising Ubuntu-driven reciprocity, this approach counters top-down interventions where collective responsibility enhances adaptive capacity in diverse ecosystems (Yadav, 2025; Sanjigadu & Mudaly, 2023).

Over the years, women's IEK has formed a cornerstone of these global strategies, encompassing intergenerational wisdom on weather patterns, drought-resistant crops and sustainable resource management (Karn, 2024; Verma *et al*., 2022; Parvin *et al*., 2023). For example, the roles of women in communal gardening and shared labour preserve biodiversity amidst erratic rainfall, which aligns with decolonial paradigms that prioritise local epistemologies over Western scientific dominance (Siwila, 2022; Leal Filho *et al*., 2022). Institutional support bridges economic vulnerabilities through microfinance like Village Banking Groups (VBGs), thereby allowing transitions from charcoal dependency to solar energy and agro-ecological training (Perrin *et al*., 2008; Gatty & Narayanan, 2025).

PRA's theoretical framework underscores pluralism and behavioural shifts, such as role reversal and optimal ignorance, fostering equitable knowledge triangulation (Chambers, 2015; Verma *et al*., 2022). Recent studies highlight how PRA has evolved into Participatory Learning and Action (PLA). This has been applied in disaster resilience contexts to map vulnerabilities and prioritise interventions (Parvin *et al*., 2023; Nyadzi *et al*., 2021). Globally, this manifests in agroforestry systems integrating trees like Gliricidia and Acacia for soil fertility, thereby reducing erosion and chemical inputs while enhancing moisture retention (Kang *et al*., 2009; Leal Filho *et al*., 2022).

Where women's Ubuntu-informed practices are rooted in interconnectedness through driving seed banks and livestock diversification for food security, climate crises call for more gendered PRA applications (Yadav, 2025; Sanjigadu & Mudaly, 2023; Pisor *et al*., 2023). However, challenges remain persistent, including policy gaps that undervalue IEK. Nonetheless, institutional frameworks recognising women's agency aligning with SDGs 13 (Climate Action), 5 (Gender Equality) and 2 (Zero Hunger) (Leal

Filho *et al*., 2022; Gatty & Narayanan, 2025). Globally, these insights reveal how PRA's adaptability in scaling grassroots innovations.

In Africa, PRA integrates IEK with Ubuntu ethics to address challenges such as deforestation and climate shocks, especially through women's leadership in conservation agriculture and rainwater harvesting (Leal Filho *et al*., 2022; Kihila, 2018; Nyadzi *et al*., 2021). Recent studies in the region emphasise diverse coping strategies, such as crop rotation, minimum tillage and permanent soil cover, which smallholder farmers adopt to combat soil degradation and erratic rainfall. However, some of the practices are not fully employed in some rural parts of Africa (Chikaire & Nnadi, 2011; Mekonnen *et al*., 2021; Siwila, 2022). Ubuntu-driven communal practices, like shared labour in drought-resistant millet and sorghum cultivation, enhance resilience while preserving cultural reciprocity (Yadav, 2025; Sanjigadu & Mudaly, 2023).

Therefore, Women's ecological wisdom remains central, with traditional forecasting and ecological indicators guiding adaptation in sub-Saharan contexts (Nyadzi *et al*., 2021; Karn, 2024; Kihila, 2018). For example, in Tanzania and Ethiopia, PRA tools like transect walks and focus groups reveal women's roles in agroforestry, improving soil health and reducing charcoal reliance (Leal Filho *et al*., 2022; Mekonnen *et al*., 2021). Institutional support through Village Savings and Loan Associations (VSLAs) empowers these efforts by facilitating access to organic fertilisers and irrigation equipment, thereby boosting capacity among these communities (Perrin *et al*., 2008; Gatty & Narayanan, 2025; Chikaire & Nnadi, 2011).

Studies in Africa critique extractive methodologies which advocate for PRA's shift to empowerment, as seen in community seed banks and livestock diversification with resilient species like goats and chickens to home-grown solutions among community members to avoid foreign Dependency (Nyadzi *et al*., 2021; Verma *et al*., 2022; Parvin *et al*., 2023). This can be seen through seasonal migration supplements, which should provide income during poor harvests, while NGO training on climate-smart agriculture complements traditional knowledge (Kihila, 2018; Leal Filho *et al*., 2022). In Zambia's regional neighbours, such as Malawi, intercropping cassava with maize and other vegetables helps to minimise losses. This highlights PRA's role in food security (Maninga, 2025; Chavula *et al*., 2021).

Despite progress, barriers like limited extension services and financial access hinder scaling, necessitating policies that valorise women's IEK within Ubuntu frameworks (Siwila, 2022; Yadav, 2025; Sanjigadu & Mudaly, 2023). PRA aligns with African Union climate agendas, promoting gendered, participatory governance for SDGs 1 (No Poverty) and 15 (Life on Land) (Leal Filho *et al*., 2022; Nyadzi *et al*., 2021).

In Zambia, PRA reveals that IEK among women acts as a protection against deforestation in areas like Kapiri Mposhi, where charcoal burning exacerbates vegetation loss near the Mulungushi River (Chavula *et al*., 2021; Kapaale *et al*., 2022; Maninga, 2025). Village Banking Groups provide microloans for agroforestry transitions and other initiatives by integrating Faidherbia albida trees to boost soil fertility and shade, reducing erosion and synthetic fertiliser dependency (Ngoma *et al*., 2020; Gatty & Narayanan, 2025). Other strategies are methods of Communal gardens aimed at preserving millet and sorghum, thereby embodying Ubuntu's collective ethos for equitable resource sharing (Nyadzi *et al*., 2021; Leal Filho *et al*., 2022; Yadav, 2025).

To many subsistent Zambian farmers in some rural areas, such as Kapiri Mposhi, with IEK skills and Knowledge, employ PRA for mapping vulnerabilities, prioritising rainwater harvesting via rooftop systems and small reservoirs to counter dry spells

(Ngoma *et al*., 2020). Studies have found that conservation farming, minimum ploughing, soil rotation and residue retention sustain soil structure, while organic compost enhances nutrient retention amidst climate inconsistency, as this aims to improve crop resilience and maximise yield (Lipper *et al*., 2014; Chavula & Hassen, 2022; Maninga, 2025). Women's seed saving in community banks ensures drought-resistant varieties, amplifying gender resilience (Siwila, 2022; Sanjigadu & Mudaly, 2023; Karn, 2024).

With policy overlooking IEK, several institutional challenges persist, despite VBGs and NGOs fostering training on solar adoption and climate-smart practices (Perrin *et al*., 2008; Verma *et al*., 2022; Parvin *et al*., 2023; Shepherd *et al*., 2025). In Kashitu and Mazabuka, diversification into small livestock and VSLAs builds financial buffers, mitigating migration needs (Kapaale *et al*., 2022; Kalonje *et al*., 2025). Challenges include poor infrastructure and extension access, underscoring the need for Ubuntu-integrated national frameworks (Ngoma *et al*., 2020; Leal Filho *et al*., 2022).

The application of PRAs in Zambia focuses on the voices of women advocating decolonial solutions for SDGs 13, 5 and 2, scaling innovations like organic fertilisers for long-term sustainability (Nyadzi *et al*., 2021; Gatty & Narayanan, 2025; Yadav, 2025, Musonda & Siame, 2026).

3. Theoretical framework

Grounded in the Participatory Rural Appraisal (PRA), this study employed this approach as a foundational theoretical framework for community-driven rural development as a means of emphasising empowerment through local knowledge and collective action. Evolving from earlier extractive methods like Rapid Rural Appraisal, PRA shifts toward bottom-up participation, enabling communities to analyse their contexts, prioritise needs and plan interventions. This framework proposes principles of equity, diversity and triangulation to challenge existing biases and foster sustainable outcomes.

Since the 1980s, through its evolution, PRA has developed commonalities with many aspects of related research, including Activist Participatory Research, Rapid Rural Appraisal (RRA) and applied anthropology, among other such methods for developmental planning (Gatty *et al*., 2025; Chambers, 2015). This has continued to be one of the most effective participatory methodological approaches to conduct participatory research in the areas of community development and development communication, criticising early data-extractive uses while asserting its usefulness in agriculture, disaster resilience and health. Studies emphasise PRA's maturation into a reflective methodology for self-determination, addressing critiques of superficial participation through deeper community ownership. This evolution aligns with Sustainable Development Goals (SDGs 1, 2, 5, 11, 13, & 17), fostering long-term resilience via context-specific action (Gatty *et al*., 2025; Parvin, 2023; Verma *et al*., 2022).

With PRA, it rests on behavioural shifts for facilitators, role reversal, promoting self-critical awareness and optimal ignorance to prioritise relevant local insights over exhaustive data collection. Its core tenets include reversing learning, from outsiders to locals, rapid and iterative knowledge building and seeking diversity through anomalies and stakeholder inclusion, particularly marginalised groups like women. These principles empower communities to own processes, transforming PRA from mere appraisal to participatory learning and action.

According to Gatty et al. (2025) PRA employs visual and group-based tools such as transect walks, participatory mapping, focus group discussions and ranking exercises to elicit indigenous knowledge without literacy barriers. Transect walks facilitate firsthand observation of resources and issues, while ranking prioritises needs through pairwise or matrix methods, ensuring culturally sensitive interventions. Recent applications highlight mapping's role in social cohesion and problem analysis, bridging local and scientific knowledge for equitable planning (Gatty *et al*., 2025; Parvin, 2023; Chambers, 2015).

4. Methodology

This study employed a mixed-method approach to comprehensively assess climate resilience strategies in Kakwelesa ward along the Mulungushi River among selected Villages of Kapiri Mposhi, Zambia. A descriptive research design was used for quantitative data collection, while a case study approach provided in-depth qualitative insights (Siame & Banda, 2024a).

The study focused on Kakwelesa Ward in Kapiri Mposhi District, with a study area of 08 villages along Mulungushi River with a sample of 90 respondents, comprising 80 farmers, 08 community Facilitators, 08 village headmen/women, 01 Social Welfare Officer and 01 agricultural extension officer, who were selected through systematic and purposive sampling (Siame & Banda, 2024b).

Data collection involved the use of structured questionnaires for quantitative data and in-depth interviews for gathering qualitative perspectives (Musonda *et al*., 2025; Siame *et al*., 2025). Descriptive statistics were used to analyse quantitative data, while thematic analysis identified key patterns and insights from qualitative responses (Siame, 2024). This methodological triangulation ensured a robust understanding of climate resilience practices in the study area.

5. Results and discussion

This section synthesises quantitative survey results (n=25), focus group discussions (FGDs) and Participatory Rural Appraisal (PRA) exercises conducted across eight villages in Kapiri Mposhi. Findings reveal the central role of women's cooperatives in mitigating deforestation and climate-induced livelihood shocks through Indigenous Ecological Knowledge (IEK) and Ubuntu-based practices. Despite these adaptive strengths, structural and institutional challenges persist, especially surrounding funding, information access and bureaucratic processes.

5.1. Demographic profile of participants

Results from the survey demonstrate a collective cooperative participation among respondents (100%), with groups operating for an average of 9.6 years (range 4-15). Women constitute 76% membership in each surveyed area (n=19), mostly aged between 21 and 68 years (mean 42), with primary-level education (84%) and livelihoods centred on farming or small-scale business (92%).

These village cooperative groups provide near-universal benefits through resource access (96%), skills enhancement (100%), networking opportunities (100%) and income improvement (88%). All respondents reported awareness of climate change impacts, droughts, erratic rainfall, floods and recurrent crop failures (100%). Coping mechanisms rely primarily on cooperatives (100%), supported by borrowing or reducing meals during scarcity.

Trust in leadership is exceptionally high (mean = 5.0/5) and women's participation in decision-making is universal (100%). However, financial constraints (100%) and household duties (100%) remain major challenges. Respondents' priorities ranked highly across all domains, including climate adaptation, childcare and skill-building (mean = 6.9/7). The table below provides a summary of key quantitative indicators.

Table 1. Summary of key quantitative indicators

Indicator	% Yes / Mean Score	n
Cooperative Membership	100%	25
Female Respondents	76%	25
Observed Droughts	100%	25
Used Cooperative for Coping	100%	25
Leadership Trust (1–5)	5.0	25
Climate Adaptation Priority (1–7)	6.9	25
Reported Financial Challenges	100%	25
Mean Years in Cooperative	9.6	25

These data insights emphasise the pivotal role of women's participation in cooperatives in fostering collective resilience. With their involvement, trust, inclusion and adaptation priorities are exceptionally high among the eight Village groups, validating the efficacy of participatory approaches (Gatty & Narayanan, 2025; Verma *et al*., 2022).

5.2. Environmental challenges and climate impacts

Thematic analysis from FGDs identified widespread environmental degradation: deforestation driven by charcoal production, declining rainfall, soil erosion and species loss, all compounding food insecurity. FGD and PRA results reveal deforestation due to charcoal production, declining rainfall and soil erosion as key threats. These phenomena exacerbate water scarcity, food insecurity and workload burdens for women. Water shortages, during the non-rainy season, scored 5/5 in severity, especially with villages further from the Mulungushi River. Some women reported increased workloads due to extended water and firewood collection times, reduced yields and greater reliance on alternative income sources such as charcoal burning and petty trading. The Figure 2 below provides a Perceived Severity of Environmental Challenges (Scale 1-5) in the study area.

Seasonal patterns of drought (from July to November) and floods (from December to March) in selected parts of Kapiri reflect the national climate variability trends (Ngoma *et al*., 2020; Chabala *et al*., 2021). While IEK practices such as cultivating drought-tolerant crops (millet, sorghum, cowpeas, soya beans) in this area provide adaptive relief, economic pressures often sustain unsustainable practices like charcoal production, stressing the tension between survival and environmental stewardship (Leal Filho *et al*., 2022; Nyadzi *et al*., 2021).

The PRA-generated community map on the next page identifies deforestation hotspots near charcoal production zones and main water sources (Mulungushi River and boreholes), communal gardens and flood-prone farmlands across Nsanje, Mboboka, Kaini, Mpenge, Lufunte, Mulamba, Kabamba and Mukosha. *This visual spatially confirms 100% survey reports of droughts, crop failures and ecosystem degradation.*

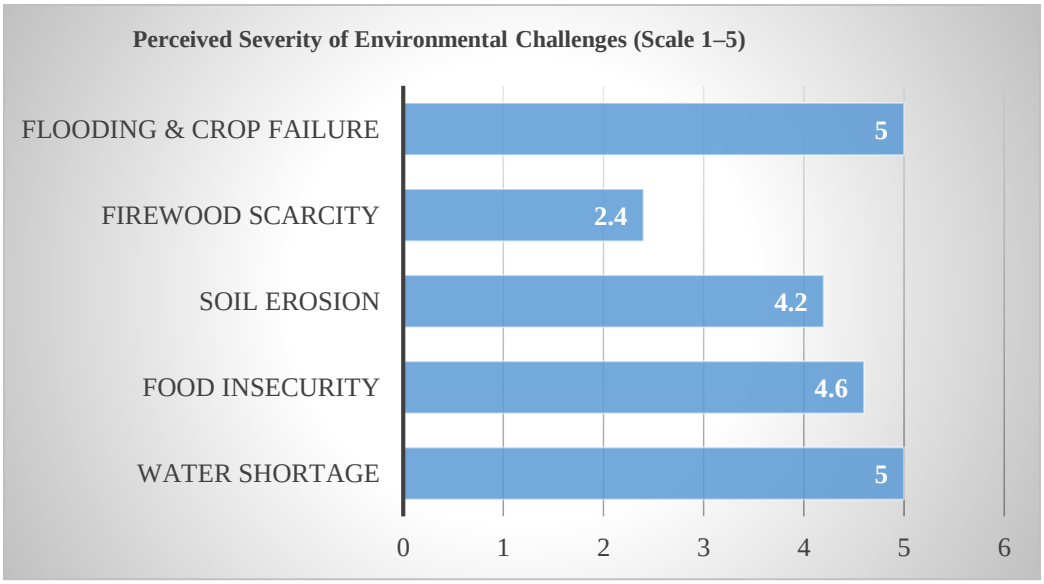

Figure 2. Perceived severity of environmental challenges (Scale 1-5)

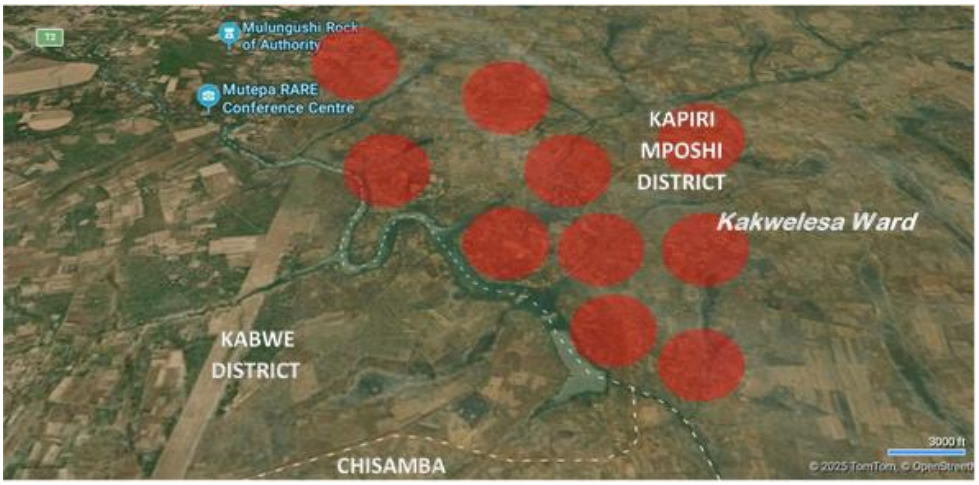

Figure 3. Map of PRA community mapping outputs
Source: Adapted from OpenStreetMap (TomTom, 2025)

5.3. Cooperative action and Ubuntu practices

Anchored in mutual care, reciprocity and collective responsibility, Ubuntu emerged as a foundational principle within cooperatives. Women's groups practised equitable resource sharing, collective decision-making, crisis assistance and communal labour in gardens. Village Banking Groups (VBGs) provided microloans and financial support during crises, especially for female-headed households. Survey data corroborate these findings as all respondents affirmed benefits in networking and skills (100%) and identified resource-sharing as a key cooperative priority (mean = 6.9/7). The Ubuntu practices in these communities enhance resilience and reinforce gender equity, reflecting African ecofeminist principles of relational agency and shared stewardship (Siwila, 2022; Yadav, 2025; Sanjigadu & Mudaly, 2023).

5.4. Indigenous Ecological Knowledge (IEK) and climate adaptation

Women's Indigenous Ecological Knowledge drives sustainable adaptation through seed preservation and exchange, organic composting, drought-resistant cropping (soya Beans, cowpeas, sunflowers) and agroforestry with species like *Gliricidia* and *Faidherbia*. Knowledge transmission occurs via trainings, storytelling and school-based partnerships (e.g., St. Paul's, Katuba). The following table shows the common IEK practices in women's cooperatives.

Table 1. Common IEK practices in women's cooperatives

IEK Practice	Description	Reported Frequency (%)
Seed Preservation & Exchange	Local millet, sorghum and cowpeas stored and shared	92
Organic Composting	Use of household and farm waste	88
Agroforestry	*Faidherbia albida*, *Gliricidia sepium* integration	80
Briquette Production	Charcoal substitutes using maize stalks/manure	72
Storytelling/Youth Training	Oral transfer of IEK knowledge	60

Cooperative coping strategies include surplus saving, use of briquettes made from manure and maize stalks and local water sourcing through wells and rivers. These practices not only sustain livelihoods but also reduce environmental degradation. Despite the withdrawal of USAID funding and support programs in Zambia and in the area in 2022, VBGs offering Savings and Loan services have ensured financial continuity, demonstrating IEK's viability as a sustainable resilience strategy amidst unexpected shocks (Karn, 2024; Pisor *et al*., 2023; Leal Filho *et al*., 2022).

5.5. Institutional support and gender dynamics

Institutional assistance, through grants, agroecology training and solar energy initiatives, has continued to strengthen cooperative capacity. However, barriers persist, including limited market access, bureaucratic delays in accessing the Farmer Input Support Program (FISP) and inadequate recognition of IEK within policy frameworks. Gender norms appear progressively minimal in these areas, with women occupying most leadership roles and reporting full participation in cooperative decisions (100%). Nevertheless, financial and familial responsibilities (100%) continue to constrain wider engagement. This aligns with previous studies that affirm that gender-sensitive institutional frameworks can enhance community resilience (Perrin *et al*., 2008; Kapaale *et al*., 2022; Gatty & Narayanan, 2025).

5.6. Implications of the study

Collectively, the findings highlight how women's cooperatives play a pivotal role in community-led climate resilience. Quantitative data revealed high adaptive capacity despite persistent water shortages, validating the advantage of IEK and Ubuntu-led models over external, top-down interventions (Nyadzi *et al*., 2021; Mekonnen *et al*., 2021). The cooperatives' inclusive leadership, grounded in trust (mean = 5.0/5), redefines gender roles by transforming women from aid recipients into climate leaders. Therefore, PRA methods facilitated Peer-learning and collective ownership, while enhancing the relevance of local solutions. The transition from charcoal-based livelihoods to diversified

income streams, such as poultry, livestock rearing, gardening and fish farming, demonstrates both environmental and economic progress. The limitations in this study include the small sample size (n=25), which, though appropriate for qualitative depth, restricts generalizability. However, triangulation of survey, FGD and PRA data ensures analytical robustness (Verma *et al*., 2022).

Policy implications in areas such as this include the need to:

a) Scaling up VBGs and solar-based interventions to strengthen financial autonomy.

b) Integrate IEK and Ubuntu principles into Zambia's Nationally Determined Contributions (NDCs) and Education Curriculum.

c) Simplify FISP access to enable equitable resource distribution to all members.

d) Promote male inclusion in climate and livelihood programs to foster collective resilience and participation.

6. Conclusion

The transformative power of women's cooperatives in Kapiri Mposhi Rural, Central Zambia, revealed how Indigenous Ecological Knowledge (IEK), Ubuntu ethics and Participatory Rural Appraisal (PRA) converged to combat deforestation, charcoal dependency and climate variability near the Mulungushi River while traditional methods remain valuable, integrating modern practices and enhancing support systems through policy interventions and financial assistance is essential. The data across eight villages: Nsanje, Mboboka, Kaini, Mpenge, Lufunte, Mulamba, Kabamba and Mukosha. Despite enduring financial and infrastructural barriers, these women are redefining climate leadership at the grassroots, turning vulnerability into innovation and advancing Zambia's progress toward SDGs 5 (Gender Equality), 13 (Climate Action) and 2 (Zero Hunger) (Leal Filho *et al*., 2022; Pisor *et al*., 2023; Karn, 2024).

Based on findings of the study, the following recommendations have been made:

a) Policy Integration: Inclusion of IEK/Ubuntu practices in Zambia's NDCs via simplified FISP access, IEK-recognising laws and Educational Curriculum and afforestation incentives.

b) Institutional Scaling: Fund VBGs/solar trainings; establish value-chain plants; provide M&E/literacy support in these rural communities as a way of creating Jobs

c) Gender Inclusion: Engaging men in fish/livestock via awareness and mentoring youths for knowledge transfer.

d) Research: Longitudinal studies on VBG impacts; PRA in urban-rural linkages.

e) By amplifying and embracing women's voices in these communities, Zambia can forge equitable, resilient futures against environmental collapse while championing the fight against climate change.

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