

Who adapts, who decides: A synthesis of gender and climate adaptation in pastoralist socio-ecological systems. A systematic review protocol

INPLASY202580019
doi: 10.37766/inplasy2025.8.0019
Received: 6 August 2025
Published: 6 August 2025

Dormal, W.

Corresponding author:
Waithira A.C. Dormal

uo296834@uniovi.es

Author Affiliation:
University of Oviedo.

ADMINISTRATIVE INFORMATION

Support - None declared.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202580019

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 6 August 2025 and was last updated on 6 August 2025.

INTRODUCTION

Review question / Objective To systematically synthesise empirical studies (2013–2025) on gendered adaptation in pastoralist socio-ecological systems, using PRISMA and SWiM guidelines, and to identify shifts and patterns in labour, authority, resource access, and knowledge, with attention to structural and institutional constraints, cross-context variation, and spaces of agency.

Rationale Pastoralist and agro-pastoralist socio-ecological systems in Africa, Asia, and Latin America are experiencing rapid transformation driven by climate change. Gender relations play a critical role in shaping adaptation, influencing labour division, access to and control over resources, decision-making authority, and the recognition of indigenous and local knowledge systems. While research on gender and adaptation in these contexts is expanding, much of it remains fragmented, methodologically diverse, and theoretically limited. Often, gender is treated as a

secondary or binary variable rather than a structuring force within adaptation processes. There is a lack of systematic synthesis that integrates qualitative, quantitative, and mixed-methods evidence, and incorporates intersectional and power-sensitive analysis. This gap limits the development of robust, contextually grounded adaptation strategies and obscures the distinct ways in which agency, exclusion, and knowledge operate across diverse pastoralist systems.

Applying PRISMA 2020 guidelines and the Synthesis Without Meta-analysis (SWiM) protocol, this review aimed to provide a comprehensive and transparent synthesis of empirical evidence. The study addressed the methodological challenges of integrating heterogeneous literature and advances existing systematic review practice, generating insights to inform equitable adaptation governance and policy for climate-vulnerable communities.

Condition being studied Pastoralist and agro-pastoralist communities in Africa, Asia, and Latin America are confronting increasingly severe

climate impacts, including drought, resource scarcity, and livelihood disruption. These environmental and socio-economic pressures require continual adaptation, the processes, and outcomes of which are strongly shaped by gender relations. Understanding how gender structures labour allocation, control of resources, participation in decision-making, and the use of indigenous and local knowledge is crucial for building effective adaptation strategies and strengthening resilience in these climate-affected systems.

METHODS

Search strategy Databases: Web of Science and Scopus; initial search (2013–2022) plus update to April 2025.

Search terms: (“climate*” AND “adapt*” AND (pastoral* OR agro-pastoral*) AND (gender OR women OR men OR masculin*) using Boolean operators and truncation.

Note: Only peer-reviewed studies included. Grey literature excluded.

Participant or population This review addresses pastoralist and agro-pastoralist populations in Africa, Asia, and Latin America. Included studies feature communities reliant on livestock and mixed farming systems, often in rural or semi-arid regions, experiencing climate-related stressors such as drought, erratic rainfall, and resource scarcity. Populations span different socio-cultural systems, including patrilineal, matrilineal, and caste-based governance arrangements, with gender-disaggregated perspectives.

Intervention Where present, the review considered adaptation interventions explicitly aimed at responding to climate variability and change in pastoralist SES. These included but not limited to livelihood diversification initiatives, water harvesting schemes, microfinance, livestock mobility strategies, climate-smart agriculture programmes, microfinance schemes, ecological restoration projects, early warning systems, resource management committees, and education and training initiatives. Interventions were included whether led by governments, NGOs, community-based organisations, or multi-scalar collaborations. The review also applied studies without formal interventions if they addressed endogenous adaptation practices.

Comparator Where applicable, comparisons were drawn between different gender groups (women and men), social subgroups (e.g., caste, age, marital status), or governance systems (e.g.,

patrilineal versus matrilineal tenure). Some studies compared outcomes before and after specific adaptation initiatives, while others contrasted communities with and without access to certain adaptation resources or decision-making forums. No universal comparator was applied across all included studies.

Study designs to be included The review included qualitative, quantitative, and mixed-methods empirical studies that provided gender-disaggregated data or explicit gender analysis in the context of climate adaptation within pastoralist or agro-pastoralist socio-ecological systems. Eligible designs encompassed ethnographies, case studies, cross-sectional surveys, quasi-experimental evaluations, participatory research, and longitudinal studies. Systematic reviews, purely theoretical papers, and studies lacking empirical gender analysis were excluded.

Eligibility criteria Population: Pastoralist or agro-pastoralist SES in the developing world i.e Africa, Asia, or Latin America.

Study designs: Qualitative, quantitative, mixed-methods empirical studies with gender-disaggregated findings or explicit gender analysis.

Period: January 2013 to April 2025.

Language: English.

Exclusions: Grey literature, non-empirical studies, studies without relevant gender analysis.

Information sources Web of Science and Scopus. Initial search (2013–2022) conducted April 2023; update to April 2025. Reference lists of included studies screened for additional sources.

Main outcome(s) The review found that gendered power relations shaped adaptation in pastoralist and agro-pastoralist socio-ecological systems in ways that were negotiated, intersecting, and contested. Four domains captured these outcomes.

Reorganisation of gendered labour roles: Climate pressures, male migration, and livelihood diversification increased women’s roles in livestock care, cultivation, and small-scale trade alongside care work. In several settings, younger women entered male-dominated arenas such as market livestock sales, generating competition over resources and reshaping gendered boundaries. These changes did not necessarily bring greater authority and, at times, heightened tensions between age and gender groups.

Patterns of access to and control over resources: Access was stratified by gender, age, marital status, and lineage. Older men retained dominant control over land, water, and high-value livestock,

while younger men often faced greater constraints than senior women. Women's groups sometimes improved access to credit, small livestock, or seed inputs, but gains were uneven and could provoke male resistance.

Decision-making authority and inclusion/exclusion: Senior men, and occasionally older women with lineage roles, held most authority. Younger men and unmarried women were frequently excluded from governance and informal decision spaces. Initiatives expanding participation often did so selectively, reinforcing some hierarchies.

Recognition or marginalisation of gendered knowledge systems: Women's seed management, forage assessment, and animal care knowledge were vital yet rarely institutionalised. Younger men's technical skills from training were sometimes dismissed by elders, showing that epistemic exclusion also affected men when authority privileged age or lineage over skill.

Across all domains, adaptation more often redistributed tasks than rebalanced power, with intersectional hierarchies shaping whose labour, knowledge, and claims informed adaptation decisions.

Additional outcome(s) Beyond the four primary domains, the review identified several cross-cutting patterns that illuminate how adaptation capacity is negotiated within institutional, socio-political, and technocratic contexts. Institutional arrangements ranging from customary tenure systems to decentralised governance committees mediated the distribution of both authority and resources. In some cases, institutional reform created openings for marginalised groups, such as matrilineal systems where women exercised control over land allocation, or local market structures where women traded livestock covertly to maintain economic agency outside formal oversight. However, these same institutions could also consolidate elite control, limiting the reach of adaptive benefits to specific households or lineages.

Technocratic adaptation initiatives, including climate information services, livestock vaccination campaigns, and externally designed early warning systems, often privileged credentialed expertise and formal governance channels over community-based knowledge. This reinforced existing authority structures and sidelined both women's indigenous ecological knowledge and younger men's technical skills acquired through training.

Relational agency emerged as a critical outcome, expressed through the ability of individuals and groups to negotiate, broker, and sometimes subvert institutional and social rules in order to secure resources or influence decisions. This

included coalition-building across age and gender lines, strategic use of kinship networks, and selective engagement with formal committees to shape adaptation priorities. Such practices complicate binary framings of vulnerability and empowerment, demonstrating that adaptive capacity in pastoralist socio-ecological systems is embedded in shifting power relations that operate within and beyond formal adaptation interventions.

Data management All records identified through database searches were exported to a reference management software (Mendeley) for de-duplication and storage. Titles and abstracts were screened within Mendeley before full texts were retrieved. Data extraction was carried out using a standardised spreadsheet aligned with the review's codebook (Appendix A1), which included bibliographic details, study characteristics, adaptation domains, and relevant outcomes. Extracted data and coding decisions were stored in password-protected files on a secure local drive, with version control to track revisions. The full dataset and codebook are available as supplementary materials to ensure transparency and reproducibility.

Quality assessment / Risk of bias analysis Risk of bias in qualitative studies was assessed using SRQR criteria. Quantitative components were examined for sampling bias, measurement validity, and control of confounding factors. Mixed-methods studies were evaluated for the quality of integration between components. Appraisal outcomes informed sensitivity analyses, but no study was excluded solely on the basis of assessed bias. The review followed SWiM guidance by reporting the approach used for bias assessment without applying the GRADE framework, given the qualitative and mixed-method nature of most included studies. All coding decisions and bias assessment outcomes were documented in the review's Codebook (Appendix A1), which accompanies the article.

Strategy of data synthesis The synthesis followed the Synthesis Without Meta-analysis (SWiM) protocol, grouping findings thematically into four domains: labour, resource access and control, decision-making authority, and knowledge systems. Vote-counting was applied to identify the direction of effect for quantitative findings, while qualitative results were synthesised into thematic summaries. Heterogeneity was explored narratively through contextual, institutional, and socio-cultural comparisons rather than statistical measures. The Codebook (Appendix A1) provided detailed definitions, coding categories, and criteria for

assigning findings to domains, ensuring consistency and transparency in synthesis. SWiM guidance was followed for transparency of synthesis processes, and no GRADE assessment was applied due to the non-meta-analytic approach.

Subgroup analysis Subgroup analysis was conducted narratively, drawing on the thematic synthesis of studies to explore variations in adaptation outcomes by gender, age, marital status, governance systems, and regional context. Differences were examined between women and men, but also within gender categories, including younger versus older women, and younger versus older men. The review identified cases where younger women entered male-dominated spaces, creating competition over resources, and where younger men faced more severe access constraints than older women. Comparative attention was also given to communities under matrilineal versus patrilineal tenure, and to adaptation initiatives implemented under different institutional arrangements. These subgroup patterns were synthesised to highlight how intersecting social structures shaped the negotiation of labour, authority, and knowledge recognition.

Sensitivity analysis Sensitivity analysis was undertaken by considering the influence of study quality and methodological design on the synthesis. For qualitative studies, we assessed whether thematic patterns held when high-risk-of-bias studies were set aside. For quantitative and mixed-methods studies, we compared patterns across those with larger and smaller sample sizes, and between those employing robust statistical analysis and those with descriptive reporting only. The thematic conclusions were consistent across these checks, indicating that the core findings, particularly regarding gendered labour reorganisation, resource access stratification, and the marginalisation of certain knowledge systems were not driven by a small subset of studies. No studies were excluded from the synthesis solely based on bias assessment, but the strength of evidence for patterns was interpreted considering these quality considerations.

Language restriction None.

Country(ies) involved Spain.

Keywords Adaptation governance, Adaptive capacity, Gendered agency, Climate change adaptation, Indigenous Knowledge Systems,

Intersectionality, Pastoralist Socio-Ecological Systems, Power relations.

Contributions of each author

Author 1 - Waithira A. C. Dormal - Author 1 undertook the entire body of work encompassed in this systematic review.

Email: uo296834@uniovi.es