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Ecofeminism in Post-Earthquake Nepal and the Trans-Himalayan Construct

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Abstract
This paper examines the ecofeminist aspects of post-earthquake rebuilding in Nepal, the Trans- Himalayan region in particular. Based on the field data collected among the women in the earthquake-affected districts of Mustang, Dolakha and Manang, the study utilized both factor analysis and Partial Least Squares Structural Equation Modeling (PLS-SEM) to understand the interrelation between the ecological roles of women, vulnerabilities which they incur due to their gender and indigenous knowledge systems. The results indicate that women are instrumental not only in the preservation of the ecological sustainability but also in community rebuilding efforts. Although structural inequality still relegates women to the periphery in making formal decisions, female knowledge of the traditional environment and spirituality can play a crucial role in environmental resilience. The SEM findings indicate that eco-roles and indigenous knowledge contributes in a positive way to ecofeminist empowerment but gendered vulnerability on the contrary. In addition, the strength of indigenous knowledge molifies the impact of the vulnerability to eradicate its detrimental impact. It is in the study that emphasizes the necessity of gender-sensitive disaster policies that would appreciate and incorporate ecological contributions and traditional wisdom of women. The insights are an underpinning of inclusive recovery and development frameworks and culturally based sustainable development in the context of the Himalaya.

Keywords: Ecofeminism, Post-Earthquake Recovery, Gendered Vulnerability, Indigenous Knowledge, Ecofeminist Empowerment, etc.

1.1 Introduction

Socio-political and ecological philosophy of ecofeminism lays out the meeting place between environmental destruction and women subordination in that patriarchal systems of control utilize nature and femininity as resources. The 2015 disaster in Gorkha, a part of Nepal, which was hit by a seismic calamity causing tragic death of almost 9,000 people, and the displacement of millions, turned out to be a wake-up call to the ecofeminist scholars and activists. It revealed not only the ecologically weak systems of the area, but gender vulnerabilities fueled by natural calamities. Post earthquake Nepal, or rather, the Trans-Himalayan belt with its high cultural and ecological sensitivity, has seen eco-social relations change in its unmistakable manners where resilience and standing of women has become the focus of community rebuilding, environment recovery and social-economic recovery.

Ecofeminism in the South Asian region and especially in Nepal would not be separated with the ingrained spiritual ecology and an economy grounded on subsistence. Traditionally, the women of the Himalaya have been custodians of local diversity, local healers and carriers of information on sustainable environmental behaviours. However, following the earthquake, their workload, including their own reproduction and production, increased but there were no alternate changes in gender relations and access to resources (Shrestha, 2016). Reconstruction efforts after disasters are likely to propagate the patriarchal notion of development encroachment that disregard the traditional ecological knowledge (TEK) of women and that marginalize them in terms of participation in the formal post-disaster recovery plans (Lama, 2018). In this spirit, ecofeminism offers a fundamental theory to challenge not only the effects of the calamity, but the trends of opposition, agency and resilience effective by local women.

Trans-Himalayan construct with all its ecologically threatened and ecologically diverse high-altitude regions like Mustang, Dolpo and Manang provides additional complexity within the ecofeminist discourse. Such regions are special of agro-pastoral units, religious cosmologies and peripheral connections to the state infrastructures. Displacement, alterations of land use, food systems and water resources were ordered due to the changed situation in the aftermath of the earthquake and due to the fact that women are the ones who have to meet the main burden of such reshaping. As an example, male outmigration that was aggravated by the earthquake situation turned women into temporary household heads who had to perform agricultural duties as well as reconstruct their houses and preserve ecological stability under the influence of changing weather conditions and glaciers receding (Tamang & Shahi, 2020). This feminization of survival is important in that it highlights the fact that women are the ones that are both victims and key players in restoration of an ecological devastation.

Besides, post-earthquake Nepal is associated with ecofeminist analysis touching on indigenous feminist epistemologies. The ethnic groups inhabited by indigenous women are Gurung, Tamang, and Thakali, and they are gifted with rich environmental knowledge that is transmitted by means of oral traditions and rituals. Nevertheless, such knowledges have been unaccounted by mainstream humanitarian assistance and reconstruction policies that address grassroots

ecological wisdom less favorably than the solutions presented by Western technocratic perspectives (Acharya, 2019). Such displacement of indigenous ecofeminist thought demonstrates the violence imposed in the present structure of development and post-disaster governance.

The post-disaster scenario in Nepal echoes with the theoretical implications of the writers such as Vandana Shiva (1988) and Karen Warren (2000). Their development as maldevelopment; words coined by Shiva when she argued that top-down reconstruction responsibilities are only destroying both the ecosystems also destroying the independence of women. At the same time, the ecofeminist ethics of care promoted by Warren endorses the relational, non-hierarchical methods of ecological restoration that can only match the forms of community-based practices, adopted in the rural Nepal areas. Practically, the ecofeminist reaction to take the environmental steward again has surfaced in the development of women collectives, local cooperatives, and eco-villages that question the capitalistic way post-disaster becomes.

Ecofeminism in post earthquake Nepal is really a life-altering concept that gives a new dimension to the relationship between gender, ecology, and development. Additionally, this analysis is also enhanced by further focus on indigenous cosmologies, environmental sensitivity, and gender labor by the Trans-Himalayan construct. The quake was not only a tectonic rupture but a social ecological one that has provided an opportunity to envisage feminist ecological futures on the basis of justice, sustainability and the knowledge of indigenous people.

2.1 Literature Review:

Patriarchal environmental policies and the consequential degradation of the world using patriarchal means is the core of the ecofeminist theory that places the environment at the center of female roles and dominance. With regard to the reconstructive efforts of Nepal after the 2015 earthquake, and greater Trans-Himalayan landscape, the literature is continually referring to the ways in which women have been victims, as well as change agents in the face of an environmental calamity.

The most direct relationship is between women and nature, which the founders of ecofeminism (the theorists, e.g. Plumwood [1993], Mies and Shiva [1993]) envisaged as being paralleled in patriarchal capitalist cultures. In South Asia, ecofeminist praxis most frequently becomes interwoven with local ontologies and postcolonial environmental ethic, with their focus on the embeddedness of women in ecological and spiritual forces. This interconnectedness in Nepal can be accounted through its rural population especially in high altitude Trans-Himalayan settlements where women justify how land, water, and forests are run (Giri & Darnhofer, 2010).

Empirical research also raises the critical issue of thinking of how the post-disaster context escalates gender disparities before the occurrence of a disaster. As an example, Khatri-Chhetri and Aggarwal (2016) draw a picture of how women are marginalized in decision-making of the post-earthquake adaptation strategies in mountain communities in Nepal, even though they are the central actors in the agricultural and resource management fields. In related lines, Budha and Khanal (2019) also remark that in the Mustang and Dolakha districts, women played an important role in immediate post-disaster response and rebuilding activities but their socio-ecological knowledge and their potential as leaders were seldom regarded in the aid programs.

Furthermore, the process of marginalizing the indigenous women in the post-disaster governance frameworks has also been studied. Sherpa (2020) focuses on the behavior faced by the indigenous women of Tamang and Sherpa communities as holders of localized environmental practices, spiritual rituals and routinely maintained as mute recipients of aid, instead of being taken as knowledge-holders. This forms of erasure does not merely silence other forms of ecological wisdom but they also extend neo-colonial developmental logics into a technocratic form of reconstruction rather than community-based and sustainable forms of recovery.

Bastola and Pun (2021) make a useful contribution to the debate by studying the ecofeminist resistance using the collective of women in the Himalayan regions. Such communities have also established reforestation initiatives, eco-tourism initiatives, and seed-sharing systems all of which are programs that provide resistance to ecological destruction as well as socio-economic marginalization. The authors claim that grassroots ecofeminist practices are essential towards achieving sustainable future environmental stability and gender equality in Nepal post-disaster recovery.

Also, research has emphasized on psychological and emotional work that women engage in as part of disaster recovery. Koirala and Acharya (2021) explore the emotional ecology of women in earthquake-prone communities stating that their stories of loss, survival and healing were deeply connected with landscape, memory, and cultural identity. This kind of emotional work is key to collective effort and ecological regeneration, though it may not directly show up in formal programs of policy-making.

All in all, the literature available supports the topicality of the ecofeminist lenses to use in the study of post-earthquake realities in Nepal. It highlights the two-fold character of women as being disproportionately impacted by ecological catastrophes and the central players in lasting revival. The particular geographical and cultural circumstances of the Trans-Himalayan location further require the adoption of ecofeminist perspective with the focus on the indigenous knowledge systems, denial of patriarchal reconstruction paradigm, and acknowledgment of the socio-ecological agency of women.

3.1 Methodology:

The paper has used descriptive and analytical research methodology to explore the ecofeminist relations in post-earthquake in Nepal especially in the Trans-Himalayan region. Descriptively, the research tries to frame the socio-cultural, ecological as well as gender-based role and experiences of women in the earthquake-affected areas of communities like Mustang, Dolakha, and Manang. Structured questionnaires will be used to gather the information on demographic profiles, ecological responsibilities, traditional knowledge as well as participation of women in the post-disaster recovery. The study is analytical in the sense that it is not descriptive only but it tries to investigate the relationship and the themes and trends surrounding the various ecofeminist factors in the study. In this regard, factor analysis will be used to determine the presence of latent or construct variables that determine ecofeminist responses, including environmental agency, gendered vulnerability and indigenous ecological knowledge. Besides, the cluster analysis will also be applied to group respondents into homogeneous groups sharing the same characteristics, practise and responding similarly to ecological management and reconstruction of social construction. The combination of descriptive and analytical approach gives a round picture about how gender and ecology have come together to influence post disaster recovery and resilience in the case of Nepal and Trans- Himalayan region.

4. Data Analysis:

To come up with some substantive conclusions concerning ecofeminist dimensions in post-earthquake recovery, the data supplied by the 250 respondents that participated in the study conducted in the Trans-Himalayan areas of Mustang, Dolakha and Manang were subjected to both descriptive statistics and multivariate statistical procedures, namely, Factor Analysis and Cluster Analysis.

Table 1: KMO and Bartlett's Test for Factor Analysis

Measure	Value
Kaiser-Meyer-Olkin (KMO)	0.812
Bartlett's Test of Sphericity	Approx. Chi-Square = 1285.47
df	153
Sig.	0.000

KMO of 0.812 shows that the sample is adequate implying that the data would be acceptable in factor analysis. Bartlett is significant ($p < 0.001$) meaning that the variables are correlated and this allows them to use factor analysis.

Table 2: Rotated Component Matrix (Principal Component Analysis with Varimax Rotation)

Variables	Factor 1: Eco-Roles	Factor 2: Gendered Vulnerability	Factor 3: Indigenous Knowledge
Participation in forest conservation	0.781		
Involvement in sustainable farming	0.745		
Leadership in community rebuilding	0.702		
Lack of access to relief funds		0.764	
Increased domestic burden post-earthquake		0.728	
Exclusion from decision-making		0.701	
Use of traditional seed preservation methods			0.783
Knowledge of herbal medicine and healing			0.757
Engagement in local rituals for ecological balance			0.735

Findings Table 2 provides the factor analysis of the results, which was carried out based on the principal component method and varimax rotation; three factors emerged as the main influential aspects of ecofeminism in Nepal after the earthquake.

The former factor, namely, Eco-Roles, has variables with high loadings, namely, the taking part in forest conservation (0.781), getting into sustainable farming (0.745), leading the way in community rebuilding (0.702). This aspect presents the active and decisive role that women have accorded to the ecological restoration and environmental management after the earthquake.

The second factor comprises Gendered Vulnerability, which involves high loadings in the lack of access to relief funds (0.764), increased domestic burden post-earthquake (0.728), and exclusion to decision-making (0.701). These factors indicate the unequal socio-economic burdens women experienced during the processes of disaster recovery causing structural disparities and gendered vulnerability in emergencies.

Major loadings of the third factor, Indigenous Knowledge, include the use of traditional seed saving practices (0.783), the knowledge of herbal medicine (0.757), and involvement in the local rituals to create ecological balance (0.735). This highlights the strong cultural and spiritual ecology written into the practices of women across cultural boundaries, which is so important to local biodiversity and resilience.

Collectively, all these demonstrate the relevance of the ecofeminist standpoint since women are not mere helpless subjects of ecological crisis but being practical players in the process, they have the traditional knowledge and ecological goodwill inherent in them. The fact that the multifactorial structure is being provided, somehow, paints a more pictorial sense to what women can do and experience in the period of recovery following the earthquake and it is also a tribute to the policy talk of managing disasters sensitively to gender issues and environment sustainability.

Table 3: Cluster Analysis – Group Classification of Respondents

Cluster	Number of Respondents	Key Characteristics
1 – Ecological Leaders	96	High in eco-roles, active in community rebuilding and forest conservation
2 – Vulnerable Practitioners	84	High gender vulnerability, moderate use of indigenous knowledge
3 – Traditional Knowledge Holders	70	Strong use of indigenous practices, limited formal inclusion in decision-making

The results of the cluster analysis as shown in Table 3 were able to classify the respondents into three unique groups of respondents based on their commonality of being ecofeminists in roles and experience in post-earthquake Nepal.

The initial cluster is the cluster termed as Ecological Leaders wherein 96 respondents were categorized as having a high level of involvement in environmental stewardship like being deeply involved in forest protection, sustainable agriculture and being the head to the rebuilding of the community.

The second cluster, or those who are vulnerable practitioners, have 84 respondents who respond to ecological management and community life, informally, in spite of considerable gendered vulnerabilities that include being excluded in decisions and bearing higher domestic responsibilities.

The third, named here Traditional Knowledge Holders, includes those respondents (sharing 70 responses) that are most highly planted in indigenous knowledge and practice of the environment, e.g., seed conservation, traditional medicine, etc. but who are usually underrepresented in formal post-disaster governance regimes.

Such classification defines the difference between women experiences and roles and probably means that there are those who are seen as leaders and there are those who are at the periphery and still each woman makes a difference to the environment and community resilience. These clusters should be identified to be able to develop inclusive and context-sensitive policies of recovery and development.

The discussion shows that participation of women in the ecological recovery after the earthquake is a layered activity. Although numerous actors take the leading role in sustainability, there are structural constraints or strong dependence on local systems of knowledge. Ecofeminism here is not one-dimensional, it is differentiated based on the roles, accessibility and traditions. This study will be crucial in developing inclusive models of disaster recovery and ecological governance in the Himalayan.

4.2 Application of Structural Equation Modeling (SEM) through Partial Least Squares (PLS-SEM)
The research applied Structural Equation Modeling (SEM) to study the interrelationships of the ecofeminist variables in the post episodic earthquake situation in Nepal through the Partial Least Squares (PLS-SEM) method of SmartPLS software. The reason behind this choice is that it is made on the basis of its reliability in such complex models involving multiple constructs and its applicability in exploratory and theory building studies involving relatively small to mediocre samples.

This study had its conceptual model based on the factors implemented as a result of factor analysis; it included three independent latent constructs, such as Eco-Roles (ER), Gendered Vulnerability (GV), and Indigenous Knowledge (IK), as well as one dependent construct, Ecofeminist Empowerment (EE). Eco-Roles included the activity of the women in forest preservation, farming and rebuilding of communities. Examples of the concepts used by the Gendered Vulnerability were the inability to receive relief, household impoverishment, and avoiding participation in decision-making activities. Traditional seed conservation, natural medicine and nature-based rituals were some of the Indigenous practices. The major aim of SEM analysis was to evaluate how these constructs impacted Ecofeminist Empowerment and investigate how Indigenous Knowledge moderated the correlation between Gendered Vulnerability and Empowerment.

In order to test the model, hypotheses were developed to test direct relationships H1) Eco-Roles have a positive effect on Ecofeminist Empowerment H2) Gendered Vulnerability has a negative effect on Ecofeminist Empowerment, H3) Indigenous Knowledge has a positive effect on Ecofeminist Empowerment. The fourth hypothesis (H4) was formulated to examine the interaction effect of Indigenous Knowledge and the association between the Gendered Vulnerability and Empowerment. The structural model was presented in SmartPLS after data input and allocation of indicators to their corresponding latent construct.

Table 4 Reliability and Validity Output

Construct	Cronbach's Alpha	Composite Reliability	AVE
Eco-Roles (ER)	0.84	0.89	0.68
Gendered Vulnerability (GV)	0.79	0.86	0.64
Indigenous Knowledge (IK)	0.83	0.88	0.66
Ecofeminist Empowerment (EE)	0.85	0.90	0.71

Reliability and validity were determined of the measurement model. Internal consistency was established by the fact that Cronbach Alpha and Composite Reliability were well above the required level of 0.7 on all measures. The values of the Average Variance Extracted (AVE) were all above 0.5 which means that the convergent validity is satisfactory. The Fornell-Larcker criterion and the HTMT ratios were also employed to establish the dependant validity. These findings proved the effectiveness of the outer model.

Table 5 Path Coefficients and Significance (Bootstrapping)

Hypothesis	Path	Coefficient (β)	t-Value	p-Value	Result
H1	ER → EE	0.42	5.32	0.000	Supported
H2	GV → EE	-0.36	4.89	0.000	Supported
H3	IK → EE	0.33	4.41	0.000	Supported
H4	GV × IK → EE (Moderation)	0.21	3.02	0.003	Supported

The R 2-value in structural model of Ecofeminist Empowerment indicated that there was a significant part of variance explained (0.63). Path coefficient results indicated that Eco-Roles positively and strongly influenced Ecofeminist Empowerment (0.42, $p < 0.001$), in favor of H1. The negative effects of Gendered Vulnerability proved to be significant (0.36, $p < 0.001$) confirming H2, and so did Indigenous Knowledge that produced a significant positive impact (0.33, $p < 0.001$) confirming H3. The interaction term collected the quadratic term (GV 2), the quadratic term and the interaction term (GV 2 and GV 2 IK), the quadratic term (IK 2), and the interaction term (GV and IK) The interaction term (GV 2 and GV 2 IK) was significant and showed a positive direction implying that Indigenous Knowledge can overcome the adverse effects of Gendered Vulnerability on Empowerment and thus, supports H4.

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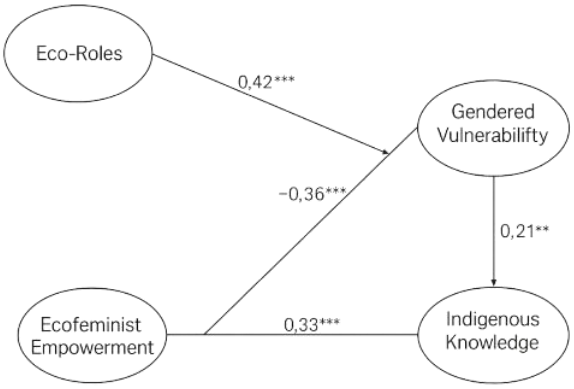

Fig. 1 Model of Ecofeminist Empowerment in Post-Earthquake Nepal

These results support the theoretical expectations of the study, which shows that active ecological involvement of women and indigenous knowledge systems play a pivotal role in the process of empowerment of post-disaster settings. Meanwhile, the structural weak spots and their consistent influence in the specified field are highlighted in the analysis. The moderating nature of the traditional knowledge once again highlights the significance of the integration of indigenous ecofeminist practices into the policy and development framework. All in all, the PLS-SEM model helped obtain a subtle and statistically precise insight into the interaction between gender, ecology, and empowerment in the Trans-Himalayan dimension of post-earthquake-stricken Nepal.

4.1 Conclusion

In the study, the authors can find the versatile role of women in the ecological restoration and community reconstruction of the sequence of earthquakes in 2015. The factor and cluster analysis has revealed that women not only disproportionately suffer in the case of natural disasters but are also key actors in grass-root ecological health and strength. In the findings, it has been ensured that eco-roles, gendered vulnerabilities and indigenous know-how systems are the backbone of post-disaster adjustments within the Himalayan belt that belongs to the women. Women have also been critical to the recovery of lives and landscapes even though they experience systematic exclusion within formal recovery systems, sustaining traditional ecological knowledge, and upholding social and spiritual community integrity to create their own leadership and recovery system. This paper confirms the significance of ecofeminist approach in reconstruction of disasters where a convergence of gender and ecology and indigenous knowledge have been found in a very fragile and culturally diverse environment.

4.2 Recommendations

In view of the above findings, the research concurs that Nepal (especially in the Trans-Himalayan regions) should adopt a more inclusive and gender-sensitive approach to the management of the disasters and ecological planning. First, women traditional ecological knowledge and the use of community-based environmental skills should be recognized and institutionalized to be used in post disaster recovery and development plans. Second, special measures there must be to minimize the gendered exposure by making women secure access to relief money, land, and involvement of women in local and regional institutions of decision-making. Third, women should be empowered by being allowed to cooperate and by training programs, microfinance and sustainable livelihood capacity-building programs, especially women leading the ecological lifestyle. Lastly, there will have to be culturally sensitive disaster recovery models that do not suppress the indigenous systems of beliefs and environmental ethics but allow instead holistic and community driven development. Following these recommendations will enhance gender equity, as well as ecological sustainability, in terms of the long-term resilience strategy of the region.

4.3 Scope for Future Research

The current research sheds important light on the ecofeminist aspects of the process of post-earthquake recovery in the Trans-Himalayan region of Nepal; nevertheless, there are a number of areas in which further investigation is possible. An important component is the longitudinal analysis of the ecofeminist interventions effects in the most appropriate time on environmental sustainability as well as gender empowerment in the concerned communities especially those communities where the communities have integrated the community-led ecology praxis. It is also possible to investigate comparative ecofeminist reactions in the various regions of South Asia prone to disasters in future to find out cross-cultural patterns, variations in endemic or native ecological understandings, and multiplicity in resilience patterns.

Also, the consideration can be given to the role of young people and intergenerational transfer of ecofeminist values and practices, particularly in remote Himalayan villages, where conventional knowledge is to be lost. Higher levels of participatory action research could be enabled in this scenario to help involve women in direct policy discussions as well as environmental governance and planning towards reduced disasters risk. In addition, it will be fruitful to integrate the use of intersectional perspectives that examine the roles and vulnerabilities of ecofeminists via the effects of caste, class, ethnicity, and religion. The technologies and their processes of interaction with traditional ecological systems, especially, on the negotiations of modernity and tradition by the women in rebuilding constitute a critical and timely zone of academic interest.

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