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Theory article

A preliminary study on developing a culturally grounded ecovillage framework for sustainable communities in the Cherokee Nation, Oklahoma

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Abstract: This research aims to develop a holistic framework for ecovillage development tailored to the Cherokee Nation in Oklahoma. Globally, ecovillages are gaining immense popularity as ideal models for sustainable living. Most existing models are shaped by middle- and upper-middle-class white people, thus limiting their relevance for Cherokee contexts, which are grounded in distinct traditions of land, governance, and mutual aid. Hence, this research addresses that gap by developing a holistic approach that represents Cherokee cultural values, governance traditions, and environmental ethics. A mixed-method design is employed, where the first stage of data collection consists of an exploratory factor analysis to determine the key dimensions grounded in Cherokee perspectives. In the second stage, a confirmatory factor analysis is used to validate the internal coherence of these dimensions across a broader sample. The third stage, which is a longitudinal data collection method, spans six months and incorporates diverse community voices, elders, youth, planners, and cultural leaders. The expected outcomes include an empirically grounded ecovillage framework, consisting of core pillars and the practices that constitute the identified pillars. The framework is intended to support policy development, guide sustainable infrastructure planning, and revitalize traditional lifeways.

Moreover, the framework provides a broader applicability for indigenous and rural communities that seek culturally anchored approaches to sustainability through the concept of ecovillages.

Keywords: Cherokee Nation; ecovillages; sustainable human settlements; ecovillage framework; indigenous communities

1. Introduction

The urgency to create self-sufficient and sustainable lifestyle models has been increasingly important due to the severe consequences of polycrisis, where multiple crises converge [1]. These crises are creating socio-economic and environmental challenges globally [2]. Empirical studies have shown that global crises have a disproportionate impact on indigenous communities [3]. Amidst the global crises, decentralized lifestyle models, namely ecovillages, are gaining scholarly attention, where researchers are exploring various aspects of ecovillages [4]. Moreover, recently, the United Nations [5] named ecovillages one of the most sustainable human settlements on the planet. Ecovillages are small-scale, decentralized human communities that strive to maintain a balance across ecological, social, economic, and cultural dimensions [6].

This suggests that ecovillages have the potential to contribute to more comprehensive solutions for addressing global crises. In this regard, this research argues that ecovillages can be one solution to make indigenous communities, such as Cherokee communities, more resilient to global crises. One of the challenges of ecovillages is that most of the ecovillages fail within the first few years [7], in part due to the limited understanding of establishing ecovillages. Thus, a defined ecovillage framework, especially one tailored to indigenous communities, could guide the transformation of such tribes into contemporary community settlements such as ecovillages. Several ecovillage frameworks exist [8]; however, they may not represent the environmental, social, and cultural values of Cherokee tribes. Ecovillages are often associated with broad indigenous resilience. However, the Cherokee Nation offers a unique context due to its long-standing systems of decentralized governance, communal responsibility, and land-based spirituality, which differentiate Cherokee sustainability pathways from other indigenous communities [1,9]. This creates a noticeable literature gap in relevance and applicability when such frameworks are used to guide sustainability efforts in indigenous settings. To address this, the current research narrows its focus to develop a culturally grounded framework specifically for the Cherokee Nation. In addressing the main aim of the research, three research objectives are proposed: 1) to explore and document the Cherokee Nation's conceptualization of ecovillages, thus ensuring alignment with their cultural values, lifestyle, and environmental philosophies; 2) to identify key pillars that are essential to develop a holistic ecovillage framework that resonates with the cultural and practical realities of the Cherokee Nation; and 3) to empirically validate sustainable practices through a statistical analysis, thus establishing a robust and culturally appropriate ecovillage model. For the Cherokee Nation, this means that integrating ecovillage practices is not just about sustainable living, but rather safeguarding their cultural identity, promoting self-sufficiency, and building a resilient community. In doing so, the present research contributes to the field of human geography studies and to the practical advancement of indigenous-led community development in the 21st century.

1.1. Literature review

1.1.1. Ecovillage formal recognition

The contemporary ecovillage movement traces its origins to several counterculture movements, including the back-to-the-land counterculture of the 1960s and 1970s, when communities across Europe and North America rejected consumerism and reconnected with environmental and communal values. Some scholars argue that ecovillages have evolved from intentional religious communities such as the Shakers [10], which later shifted their focus to being more environmentally sustainable. The term "ecovillages" was formally recognized during the 1990s by Gilman and Gilman [11], who coined the term to represent several small-scale, sustainable communities. Some of the classic examples of ecovillages include Findhorn Ecovillage in Scotland, Auroville in India, Twin Oaks and EcoVillage at Ithaca in the United States, and Sieben Linden in Germany. According to the Global Ecovillage Network [12] directory, there are roughly 1200 ecovillages globally, predominantly in America and Europe. Global Ecovillage Network defines ecovillages as "intentional communities consciously designed through locally owned, participatory processes in all four dimensions of sustainability: Social, cultural, ecological, and economic". This shift helped distinguish ecovillages from purely spiritual communes or intentional communities, thus positioning them as viable ideal models for sustainable futures [13]. The Global Ecovillage Network was established in 1995 to support ecovillage-like communities by bringing them together on a single platform. The Global Ecovillage Network has several regional networks: Europe, America, Oceania & Asia, and Africa [14].

1.1.2. Sustainability traditions in Cherokee Nations

In general, ecovillage literature is sometimes associated with indigenous practices [15]; however, few studies highlight the specific contributions of the Cherokee Nation to sustainability thinking. The Cherokee have historically practiced participatory agriculture, sustainable land use, and community-led governance rooted in clan systems. Traditions such as Duyuktv (the right path) and Gadugi (cooperation) are culturally grounded values [1,9]. This aligns with ecovillage practices yet remains underrepresented in global models. This research intentionally centers on Cherokee-specific values, rather than using generic indigenous frameworks, to develop the ecovillage model. Oklahoma is home to 39 federally recognized tribes, each with unique sociopolitical structures and histories. The tribe headquartered in Tahlequah in eastern Oklahoma is the largest tribe in the U.S. and operates a sovereign government, health system, and education network. There are other major tribes, including the Choctaw Nation (Durant), Muscogee Nation (Okmulgee), and Comanche Nation (Lawton). This study focuses on the Cherokee Nation due to its scale, strong governance, and long-standing cultural practices related to community and sustainability.

Revitalizing these traditions in a modern context offers more than cultural preservation—it offers a strategy for addressing today's global crises. Integrating Cherokee values into a statistically validated ecovillage framework could guide community-led development and support sovereignty over land, food systems, and education. Despite these deep cultural resources, there is a limited number of existing empirical models that integrates them into a systematic approach for sustainable community building, which is a critical gap this research aims to fill.

1.1.3. Theoretical foundation

This research draws on the Transformative Social Innovation (TSI) Theory as its foundation, thereby examining how social innovations, such as grassroots movements like ecovillages, organizations, and networks, challenge, alter, or redesign the fundamental structure to facilitate systemic change. The TSI argues that grassroots communities, such as ecovillages, alter the dominant social institutions by adopting alternative ways of living, which include participatory decision making, decentralized governance, and shared ownership of resources [16] observed that TSI is gaining increasing attention due to its new ways of doing things and living together. The TSI theory was developed within the Transformative Social Innovation Theory (TRANSIT) project, which was based on in-depth case studies of 20 networks [17]. The TSI framework consists of 12 propositions that collectively explain how social innovation takes place: Value alignment and reflexivity; new social relations; empowerment; transformative impacts; transactional networks; discourse formation; institutional home; engagement with dominant institutions; scaling and embedding; path dependencies; influence of game changers; and diverse transformation [17].

The key rationale for using the TSI framework is that it provides a conceptual lens to understand how ecovillages emerge as a way for systemic change in society. This highlights the interaction between initiatives such as ecovillages and dominant systems that show how such alternative networks emerge and evolve, thus challenging the conventional systems. Moreover, the TSI framework is employed as the conceptual model that links the development of the Cherokee ecovillage framework to the development of how grassroots initiatives contribute to systematic change. Hence, it frames the importance of ecovillages as social innovations that challenge the dominant structures. Moreover, it provides a reference point against which the empirically valid ecovillage pillars and practices can be interpreted as the driving forces of transformation. In doing so, the TSI framework elevates the results from a local model to a theoretically informed contribution. One key limitation of the TSI framework is that it offers limited insights into the key pillars and the practices of ecovillages that constitute those pillars. However, the findings of the current research aim to advance the TSI theory by providing a holistic ecovillage framework. These additional insights will explain what key pillars and practices allow these new ways of living models, as this is what TSI primarily focuses on, and how grassroots movements emerge.

2. Research methodology

This research adopts a three-step research design to ensure a robust development of the ecovillage framework tailored for the Cherokee Nation. The sequential use of an exploratory factor analysis (EFA), a confirmatory factor analysis (CFA), and the data collection process ensures the best practice in quantitative research when developing and validating new theoretical constructs. The highlighted 12 propositions of the TSI framework provide a comprehensive overview of how bottom-up innovations lead to systematic change. In this research, these propositions will serve as a sensitizing framework to ensure that the empirical model we propose remains aligned with broader propositions, such as empowerment, scaling, and embedding, as well as discourse formation. The interpretation of the validated ecovillage framework pillars will be linked to the propositions to guide the interpretive stage of the findings, while ensuring that statistical stages (EFA and CFA) of the research remain exploratory in nature.

2.1. Stage 1: Exploratory factor analysis

The first stage involves conducting an EFA to initially explore and identify the key dimensions of ecovillages based on the data collected from Cherokee community members. Since there are limited insights regarding the predefined framework tailored to this specific cultural and environmental context, the EFA will help uncover the most relevant factors by grouping related variables without prior assumptions. An EFA is essential in this research as it allows for an open-ended, data-driven identification of key components without pre-existing assumptions, thus ensuring the dimensions accurately reflect the community's perceptions and priorities. The primary goal of an EFA is to reduce a large set of observed variables into meaningful clusters that reflect the perspectives, priorities, and sustainability principles valued by the community. This will ensure that the resulting framework accurately reflects the perspectives and priorities of the Cherokee Nation.

The reliability of an EFA largely depends on having an adequate sample size to ensure stable results. A commonly accepted rule is that a sample size of at least a 10:1 participant-to-item ratio is needed, or a minimum of 200 respondents is recommended [18]. A larger sample size enhances the statistical power, reduces the risk of overfitting, and ensures that the structure remains stable across different subsets of data. The proposed research aims to achieve a sample size of over 200. This is especially important in this research, as it aims to develop a framework that can be reliably applied across the broader Cherokee community.

The outcome of the EFA in this research will be a set of statistically derived constructs that represent the most important elements of an ecovillage framework for the Cherokee Nation. These factors will provide a clear structure that reflects the community's needs and perceptions. After the EFA, the refined framework is used for further validation through a confirmatory composite analysis. The items for the questionnaire are adapted from the established ecovillage framework developed by Saadi et al. [8] to ensure an alignment with evidence-based sustainability practices. The items are reworded to reflect the Cherokee Nation's cultural, environmental context, and governance structures. Accordingly, each question is presented as a clear statement that describes a potential ecovillage practice, and the respondents are asked to rate the importance of the practices. Each statement is measured using a seven-point Likert scale (1 = Not Important, 7 = Extremely Important), thus allowing the respondents to express the relative importance of each ecovillage practice. It is worth noting that the entire ecovillage framework and its indicators are adopted and adapted, as they comprehensively cover the dimensions of sustainability. Hence, none of the items are deleted, thus allowing the Cherokee community members to assess whether the entire framework is relevant for their community.

After this, the questionnaire is reviewed by academic experts and representatives from the Cherokee community. Subsequently, to ensure the content validity and cultural relevance, the adapted questionnaire is put through a pilot test with a sample to refine the items before distributing it for data collection.

2.2. Stage 2: Confirmatory factor analysis

Following the exploratory phase, a CFA is conducted to validate the pillars identified through the EFA. A CFA provides a systematic method for verifying the factor structure, thereby ensuring the reliability and validity of the identified constructs [19]. While an EFA is exploratory and helps uncover underlying patterns or constructs in the data, a CFA is confirmatory and tests whether the identified

factors statistically hold up in a structured model [20]. The CFA will assess whether the factors identified through the EFA accurately represent the identified dimensions of the ecovillage framework, thus confirming whether these dimensions are statistically valid and reliable. This step is crucial to ensure that the ecovillage framework is not only data-driven but also generally applicable in real-world settings. The CFA is conducted using the same seven-point Likert scale as in the EFA to ensure consistency in the measurements. Since the EFA identified factor groupings based on responses from this scale, it is important to maintain the same format during the CFA to confirm whether the relationships between variables remain stable. Changing the response scale may potentially create inconsistencies, thus affecting the reliability and validity of the model. A new sample of at least 200-300 respondents is used for the CFA to avoid overfitting the model to the same dataset used in the EFA. This ensures that the findings remain stable across different groups and do not result from random variations. It is worth noting that since the ecovillage field is a niche research domain, a large sample size to statistically validate the framework is not required. Hence, a minimum of 200 respondents is desirable in accordance with J. Hair's (2020) [19] SmartPLS data analysis guidelines.

2.3. Stage 3: Longitudinal data collection

Upon the EFA and the CFA, a multi-cross-sectional data collection strategy is implemented over six months to ensure the richness, diversity, and validity of the data collected from the Cherokee community in multi-cross-sectional settings. In the six-month longitudinal phase, structured surveys are employed to collect the data. Hence, the respondents are selected from multiple demographic groups within the Cherokee Nation, including elders, youth, and community leaders, to ensure that a wide range of perspectives of the community members are captured. The survey is repeated at regular intervals to observe stability and changes in response over time. In doing so, this ensures that the ecovillage framework is grounded in the diverse voices of the Cherokee community members. This is because rather than relying on a single round of data collection, this approach involves multiple waves of data gathering, spaced at regular intervals, for example, every two months across different demographic groups and geographic locations within the community.

Each wave will function as an independent cross-sectional snapshot, thus enabling the capture of temporal variation, shifts in attitudes or practices, and emerging patterns that may not be observable in a single time frame. Additionally, this iterative approach facilitates an internal comparison between cohorts, potentially highlighting the consistency (or divergence) of perspectives across time.

By collecting data at multiple points, the study aims to minimize recall bias, account for seasonal or contextual influences, and reduce the effect of one-off anomalies. This enhances the credibility and generalizability of the findings, especially in community-based research where cultural events, environmental factors, or social developments can influence responses [13,21]. Moreover, the strategy strengthens the foundation for the subsequent CFA, thus offering a more robust validation of the emergent framework. Together, these rounds of data support a nuanced understanding of ecovillage principles, priorities, and feasibility as viewed by different segments of the Cherokee population.

3. Expected findings

The expected findings present an empirically valid ecovillage framework suitable for the Cherokee Nation. The developed ecovillage framework is a visual demonstration of ecovillages and is

expected to consist of interrelated pillars that reflect a holistic understanding of ecovillages in the indigenous contexts. The findings may reveal that ecological, social, economic, and cultural dimensions of sustainability are relevant across diverse contexts. Moreover, the pillars may constitute practices such as sustainable agricultural practices, participatory decision-making, and a healthier communal economy for holistic sustainability. These pillars are expected to be intertwined to achieve holistic sustainability, addressing environmental, social, economic, and cultural challenges. The findings are expected to reveal the key practices that constitute the dimensions of ecovillages. The identified ecovillage practices are based on the level of significance in forming self-sufficient and sustainable communities. The practices serve as actionable strategies for communities that seek to transition toward greater sustainability and resilience in the face of global crises.

4. Expected theoretical implications

The expected theoretical implication of the current research is to contribute to the field of human geography, particularly to the body of knowledge on ecovillages. The findings are expected to offer new perspectives to the TSI theory regarding the conventional models of ecovillages. This is achieved by providing an indigenous community-based ecovillage framework, which is expected to significantly differ from existing ecovillage frameworks designed for middle- and upper-middle-class residents in developed nations. By doing so, the research contributes to the decolonization of sustainability science. It foregrounds the role of cultural continuity, ancestral land relationships, and self-determined governance in shaping sustainable futures, which are concepts often marginalized in mainstream theoretical discourse. In doing so, the findings will explain what pillars and practices these new ways of living models, as described by the TSI theoretical framework, consist of, which make the sustainable models of communities. Although the developed framework is grounded in the Cherokee Nation, it can also serve as a representative of other indigenous communities with a similar context, such as their governance structure, cultural values, and sustainability challenges. Resultantly, the findings of this research provide an exemplar and a representative framework, which can guide similar ecovillage initiatives.

5. Expected practical implications

The practical implication of this research is to provide a framework of ecovillages to practitioners to address the global crises by transforming indigenous communities into more sustainable communities through the concept of ecovillages. The developed framework guides the ecovillage developers and community leaders by suggesting which thematic areas they need to focus on to make the communities more resilient to the global crises and make communities more prosperous and sustainable. The community-defined practices related to each sustainability pillar serve as actionable indicators to design culturally aligned development initiatives for indigenous tribes and similar communities.

6. Conclusion

The current research aims to propose a culturally grounded and empirically valid ecovillage framework suitable for the Cherokee Nation. The proposed ecovillage framework places indigenous

knowledge and values at the forefront, thus acknowledging that meaningful sustainability needs to be locally grounded. The Cherokee Nation offers a unique lens through which to explore sustainable living, thereby considering its strong historical connection to land, community, and balance. To this end, the current research is inspired by a rigorous methodological foundation, which combines qualitative insights with robust statistical validation. The first stage uses an EFA to ensure that the framework is not pre-imposed but organically emerges from within the community, which makes the current research unique. In the second stage, a CFA is employed to guarantee that the results are not isolated interpretations but empirically reliable and representative. Moreover, a six-month longitudinal data collection approach, which is the third step of data collection, ensures diversity of the input and reduces the risk of seasonal or contextual bias. Each step of data collection adds a layer of insight into the ecovillage framework. The significance of the proposed research lies in its contribution to the advancement of sustainability science, providing a replicable and data-driven ecovillage framework that serves as a reference point for building ecovillages. Using the TSI theory, this research enables future researchers to assess how transformation happens in various contexts. In doing so, the current research enables ecovillage developers and Cherokee community leaders to establish ecovillages in more structured ways. Moreover, the findings of the current research potentially lay the groundwork for comparative research, which may refine and strengthen the global understanding of ecovillages as laboratories for experiments in sustainable living. The authors of the current research would like to express their views by stating that this research lays the groundwork for comparative studies across other Indigenous and rural communities, thus helping to develop a global evidence base for culturally grounded sustainability models. In this way, the Cherokee Nation becomes both a unique exemplar and a representative case that can inspire future research, practice, and policies in the field of sustainable community development.

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

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Conflict of interest

The authors declare no conflict of interest in this paper.

Author contributions

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References

1. Pickerill J, Chitewere T, Cornea N, et al. (2024) Urban ecological futures: Five eco-community strategies for more sustainable and equitable cities. *Int J Urban Reg Res* 48: 161–176. https://doi.org/10.1111/1468-2427.13209
2. Monteith H, Checholik C, Galloway T, et al. (2024) Infant feeding experiences among Indigenous communities in Canada, the United States, Australia, and Aotearoa: A scoping review of the qualitative literature. *BMC Public Health* 24: 1583. https://doi.org/10.1186/s12889-024-19060-1
3. Reyes-García V, García-Del-Amo D, Porcuna-Ferrer A, et al. (2024) Local studies provide a global perspective of the impacts of climate change on Indigenous Peoples and local communities. *Sustain Earth Rev* 7: 1. https://doi.org/10.1186/s42055-023-00063-6
4. Gausset Q, Jensen PD (2024) Living sustainably in a Danish eco-community: How social and physical infrastructures affect carbon footprints. *NPJ Clim Action* 3: 33. https://doi.org/10.1038/s44168-024-00113-5
5. United Nations (2024) Ecovillage initiative for achieving the SDGs. Available from: https://sdgs.un.org/partnerships/ecovillage-initiative-achieving-sdgs.
6. Tres GS, de Souza WJ, de Moura Ferraz J (2023) Communal labor in ecovillages: Contradictions, impasses, and possibilities within the notion of self-sufficiency. *Voluntas* 34: 922–932. https://doi.org/10.1007/s11266-022-00537-9
7. Magnusson D (2018) Going back to the roots: The fourth generation of Swedish eco-villages. *Scott Geogr J* 134: 122–140. https://doi.org/10.1080/14702541.2018.1465199
8. Saadi S, Antoni JP, Karimzadeh H, et al. (2022) Determining the proportions of the ecovillage based on the resident's preferences in relation to the geographical location in France. *Sustain Cities Soc* 87: 104226. https://doi.org/10.1016/j.scs.2022.104226
9. Stremlau R (2011) *Sustaining the Cherokee Family: Kinship and the Allotment of an Indigenous Nation*, University of North Carolina Press. https://doi.org/10.5149/9780807869109_stremlau
10. Farkas J (2017) 'Very little heroes' history and roots of the eco-village movement. *Acta Ethnographica Hungarica* 62: 69–87. https://doi.org/10.1556/022.2017.62.1.4
11. Gilman R, Gilman D (1991) *Ecovillages and Sustainable Communities: A Report for Gaia Trust*, Context Institute.
12. Global Ecovillage Network (2025) Concepts. Available from: https://ecovillage.org/about/about-gen/concepts/.
13. Koduvayur Venkitaraman A, Joshi N (2022) A critical examination of a community-led ecovillage initiative: A case of Auroville, India. *Clim Action* 1: 15. https://doi.org/10.1007/s44168-022-00016-3
14. Global Ecovillage Network (2024) Eco-fest 2025: Cultivating hope, community and resilience in the Sahel. Available from: https://ecovillage.org/.
15. Rojas-Jimenez HH (2024) Experimental Center EL Remanso ECER in Choachi-Colombia. A laboratory eco-village to learn and co-build a circular learning. *Circ Econ Sustain* 5: 2593–2608. https://doi.org/10.1007/s43615-024-00454-7
16. Pel B, Wittmayer JM, Avelino F, et al. (2022) Paradoxes of transformative social innovation: From critical awareness towards strategies of inquiry. *Novation-Crit Stud Innovation* 2022: 35–62. https://doi.org/10.5380/nocsi.v0i4.91113

17. Haxeltine A, Avelino F, Pel B, et al. (2016) A framework for transformative social innovation (TRANSIT working paper).
18. Lorenzo-Seva U, Ferrando PJ (2024) Determining sample size requirements in EFA solutions: A simple empirical proposal. *Multivar Behav Res* 59: 899–912. https://doi.org/10.1080/00273171.2024.2342324
19. Hair Jr JF, Howard MC, Nitzl C (2020) Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *J Bus Res* 109: 101–110. https://doi.org/10.1016/j.jbusres.2019.11.069
20. Lewis TF (2017) Evidence regarding the internal structure: Confirmatory factor analysis. *Meas Eval Couns Dev* 50: 239–247. https://doi.org/10.1080/07481756.2017.1336929
21. Wittmayer JM, Backhaus J, Avelino F, et al. (2019) Narratives of change: How social innovation initiatives construct societal transformation. *Futures* 112: 102433. https://doi.org/10.1016/j.futures.2019.06.005

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