(REVIEW ARTICLE)

Check for updates

Energy justice: Ensuring equitable access to clean energy in underprivileged communities

Augusta Heavens Ikevuje [1, *], Jephta Mensah Kwakye [1], Darlington Eze Ekechukwu [2], Olorunshogo Benjamin Ogundipe [3] and Andrew Emuobosa Esiri [1]

[1] Independent Researcher, Houston Texas, USA.
[2] Independent Researcher, UK.
[3] Department of Mechanical Engineering, Redeemer's University, Ede, Osun-State, Nigeria.

Abstract

This review paper explores the concept of energy justice and its critical importance in ensuring equitable access to clean energy for underprivileged communities. By examining the core principles of energy justice—distributional justice, procedural justice, and recognition justice—the paper provides a comprehensive understanding of the multifaceted barriers that hinder clean energy access, including economic, technological, social, and policy-related challenges. It proposes various strategies to promote energy justice, emphasizing the need for community engagement, supportive policy frameworks, innovative technological and financial solutions, and strong partnerships between governments, NGOs, and the private sector. The paper concludes by highlighting the significance of these strategies in creating a more inclusive and sustainable energy future, suggesting future research directions, and calling for decisive actions from all stakeholders to advance energy equity.

Keywords: Energy justice; Clean energy access; Underprivileged communities; Renewable energy barriers; Community engagement

1. Introduction

Energy justice is a framework that emphasizes the equitable distribution of the benefits and burdens of energy systems, ensuring that all communities have access to affordable, reliable, and sustainable energy (Lacey-Barnacle, Robison, & Foulds, 2020). This concept stems from broader social justice movements and is intertwined with environmental justice, focusing on addressing the disparities in energy access and consumption. The importance of energy justice lies in its ability to advocate for marginalized communities that have historically been excluded from the benefits of modern energy systems. By ensuring that these communities are not left behind in the transition to clean energy, energy justice seeks to rectify past injustices and promote a fairer, more inclusive energy future (McCauley et al., 2019).

Despite the global push towards sustainable energy, there remains a significant issue of inequitable access to clean energy in underprivileged communities. These communities often face numerous barriers that prevent them from benefiting from renewable energy sources such as solar, wind, and bioenergy. Factors such as high initial costs, lack of infrastructure, and insufficient policy support contribute to this disparity (Jenkins et al., 2021). Consequently, these underprivileged areas rely on traditional, polluting energy sources that exacerbate health problems and environmental degradation. Addressing this inequity is crucial for achieving broader environmental and social goals, including reducing greenhouse gas emissions and improving public health outcomes (Feenstra & Özerol, 2021).

---

* Corresponding author: Augusta Heavens Ikevuje

The primary objective of this paper is to explore the concept of energy justice and its application in ensuring equitable access to clean energy in underprivileged communities. Specifically, the paper aims to:

- Define and elaborate on the principles of energy justice.
- Identify the barriers to clean energy access in underprivileged communities.
- Propose strategies to overcome these barriers and promote energy justice.
- Highlight the significance of policy interventions and community engagement in achieving energy justice.
- Discuss the broader implications of energy justice for sustainable development and social equity.

Ensuring equitable access to clean energy is a matter of justice and a critical component of sustainable development. Energy is a fundamental human need that impacts various aspects of life, including health, education, and economic opportunities. Without access to clean energy, underprivileged communities are trapped in a cycle of poverty and environmental harm. Addressing energy justice can promote social equity, improve quality of life, and contribute to global efforts to mitigate climate change. Moreover, equitable energy access can stimulate economic development by creating jobs, fostering innovation, and enabling more resilient and self-sufficient communities.

2. Theoretical Framework

2.1. Energy Justice Principles

The principles of energy justice form the bedrock of a framework to ensure equitable access to energy resources. These principles primarily concern distributional justice, procedural justice, and recognition justice (Bal et al., 2023). Distributional Justice focuses on the fair allocation of energy resources and the benefits and burdens associated with energy production and consumption. This principle asserts that all communities should have equal access to clean, affordable, and reliable energy regardless of socio-economic status. It addresses the inequities where underprivileged communities often bear the brunt of negative externalities from energy production, such as pollution and health risks while reaping fewer benefits (Samarakoon, 2019).

Procedural justice emphasizes the importance of inclusive and transparent decision-making processes in the energy sector. It ensures that all stakeholders, especially those from marginalized and underrepresented communities, have a voice in developing and implementing energy policies and projects. This principle aims to democratize energy governance by fostering participatory approaches that consider all individuals' needs, preferences, and rights, thereby enhancing energy initiatives' legitimacy and acceptance (Ruano-Chamorro, Gurney, & Cinner, 2022).

Recognition Justice deals with acknowledging and respecting different communities' diverse identities, experiences, and needs. This principle is crucial in addressing marginalized groups' historical and systemic injustices. It calls for an empathetic and inclusive approach that values these communities' unique contributions and knowledge in the transition to sustainable energy systems. Recognition of justice helps to ensure that policies and interventions are culturally sensitive and contextually appropriate (Thompson, 2020).

2.2. Interdisciplinary Perspectives

Energy justice is an inherently interdisciplinary field that draws on insights from environmental justice, social equity, and energy policy. Environmental justice highlights the disproportionate environmental burdens borne by marginalized communities (Revesz, 2022). These communities often reside near polluting industries and have limited access to green spaces and clean air. Environmental justice advocates for fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, in developing, implementing, and enforcing environmental laws, regulations, and policies. By integrating environmental justice into the energy justice framework, we can address the intertwined issues of environmental degradation and social inequity (Goldsmith & Bell, 2022).

Social Equity emphasizes the need for fairness in distributing opportunities, resources, and privileges within a society. It calls for addressing systemic inequalities that hinder certain groups from accessing basic services, including energy (Gurney, Mangubhai, Fox, Kim, & Agrawal, 2021). Social equity in the context of energy justice involves creating pathways for marginalized communities to benefit from renewable energy technologies and ensuring that the transition to clean energy does not exacerbate existing inequalities. This perspective also includes efforts to provide education, training, and employment opportunities in the clean energy sector to underrepresented groups (Svara & Brunet, 2020).

Energy Policy provides the regulatory and institutional framework necessary to support energy justice. Policies at local, national, and international levels shape the energy landscape by influencing the development, deployment, and accessibility of energy technologies. Effective energy policies promote sustainable energy practices, incentivize the adoption of renewable energy, and ensure that all communities have access to affordable and reliable energy. Integrating energy justice into policy-making requires a comprehensive approach that considers different communities' socio-economic and cultural contexts, along with their specific energy needs and challenges (Lacey-Barnacle et al., 2020).

2.3. Policy Context

The policy context for energy justice and clean energy access is complex and varies widely across regions and jurisdictions. While significant progress has been made in promoting renewable energy and addressing energy poverty, substantial gaps remain in ensuring equitable access for all communities (Van Bommel & Höffken, 2021). At the international level, initiatives such as the United Nations Sustainable Development Goals (SDGs), particularly Goal 7, aim to ensure access to affordable, reliable, sustainable, and modern energy for all. The Paris Agreement also underscores the importance of a just transition to a low-carbon economy, recognizing the need to address the social and economic dimensions of climate change mitigation. These international frameworks provide a broad policy direction and mobilize resources towards achieving energy justice (Lee & Byrne, 2019).

At the national level, policies and programs vary depending on each country's specific energy challenges and socio-economic conditions (Vogel, Steinberger, O'Neill, Lamb, & Krishnakumar, 2021). For instance, the United States has implemented various initiatives to promote clean energy and reduce energy poverty, such as the Low-Income Home Energy Assistance Program (LIHEAP) and the Weatherization Assistance Program (WAP). These programs provide financial assistance and energy efficiency upgrades to low-income households (Jones Jr & Reyes, 2023). Similarly, countries in the European Union have adopted the Clean Energy for All Europeans package, which aims to put consumers at the heart of the energy transition and ensure that energy markets are inclusive and fair (Shields, 2021).

At the local level, municipalities and communities often play a crucial role in advancing energy justice. Local governments can implement policies and programs that directly address the energy needs of their residents. Community-based initiatives, such as solar cooperatives and energy-sharing schemes, empower residents to take control of their energy future and ensure that the benefits of renewable energy are distributed equitably. Local policies can also promote the development of microgrids and decentralized energy systems that enhance energy resilience and security (Mundaca, Busch, & Schwer, 2018).

Despite these efforts, several challenges remain in creating an enabling policy environment for energy justice. These include insufficient funding, lack of political will, and regulatory barriers that hinder the deployment of renewable energy technologies in underprivileged communities. To overcome these challenges, it is essential to adopt a multifaceted approach that involves coordinated actions across different levels of government and active participation from all stakeholders (Lacey-Barnacle et al., 2020).

3. Barriers to Equitable Clean Energy Access

3.1. Economic Barriers

Economic barriers are among the most significant impediments to achieving equitable clean energy access in underprivileged communities. The high upfront costs associated with renewable energy technologies, such as solar panels, wind turbines, and bioenergy systems, often put them out of reach for low-income households. These technologies require significant initial investment for purchase and installation, creating a substantial financial burden for communities already struggling with economic hardship (Carley & Konisky, 2020).

In addition to the initial costs, the lack of access to affordable financing options exacerbates the problem. Many low-income households do not have sufficient credit history or collateral to secure loans for clean energy projects. Traditional financial institutions are often reluctant to lend to these communities due to perceived risks, leaving them with few viable options for funding clean energy investments. Even when financing is available, the interest rates can be prohibitively high, further discouraging adoption (Singh & Ru, 2022).

Moreover, renewable energy systems' ongoing maintenance and operational costs can also be a barrier. Underprivileged communities may lack the financial resources to cover these costs, leading to the underutilization or neglect of clean energy systems once installed. Innovative financing mechanisms such as subsidies, grants, and low-

interest loans are essential to address these economic barriers. Additionally, community-based financing models like cooperatives and crowd-funding can provide more accessible and affordable financing option (Mulugetta, Ben Hagan, & Kammen, 2019)s.

3.2. Technological Barriers

Technological barriers are crucial in limiting the deployment of clean energy solutions in underprivileged communities. One of the primary challenges is the lack of infrastructure to support renewable energy technologies. Many of these communities are located in remote or rural areas with limited access to reliable electricity grids, making it difficult to integrate renewable energy sources. The absence of necessary infrastructure, such as transmission lines and distribution networks, hampers the effective deployment and utilization of clean energy systems (Cantarero, 2020).

Furthermore, there is often a lack of technical expertise and capacity to install, maintain, and operate renewable energy technologies in these communities. The successful implementation of clean energy projects requires skilled technicians and engineers who can ensure the proper functioning and longevity of the systems. However, underprivileged areas may have limited access to training and education programs that provide the necessary technical skills. This skills gap can lead to poor installation practices, frequent system failures, and increased maintenance costs (Arkorful et al., 2020).

Additionally, some renewable energy technologies may not be well-suited to the specific conditions of underprivileged communities. For example, solar panels may be less effective in regions with low sunlight exposure, and wind turbines may not be viable in areas with insufficient wind resources. Adapting and developing technologies that are tailored to the local environmental conditions and energy needs is crucial for overcoming these technological barriers (Barakabitze et al., 2019).

3.3. Social and Cultural Barriers

Social and cultural barriers are significant obstacles to equitable clean energy access. These barriers include resistance to change, lack of awareness and education about the benefits of clean energy, and cultural preferences for traditional energy sources. In many underprivileged communities, there is a strong attachment to conventional energy practices and a skepticism towards new technologies. This resistance can stem from a lack of understanding of how renewable energy works and its potential benefits (Carley & Konisky, 2020).

Educational and awareness campaigns are essential to overcoming these social and cultural barriers. By providing information about clean energy's environmental, economic, and health benefits, communities can become more open to adopting new technologies (Nathwani & Kammen, 2019). Additionally, involving community leaders and local organizations in promoting clean energy can help build trust and acceptance. Tailoring clean energy solutions to align with local customs and practices is also important. For example, designing culturally appropriate communication materials and involving local artisans in producing renewable energy technologies can foster greater acceptance and adoption (Johnson et al., 2020).

3.4. Policy and Regulatory Barriers

Policy and regulatory barriers significantly impact the deployment of clean energy in underprivileged communities. These barriers include restrictive regulations, a lack of supportive policies, and bureaucratic hurdles that delay or prevent the implementation of renewable energy projects. In many regions, energy policies and regulations are not designed with the specific needs of underprivileged communities, leading to gaps in coverage and support (Zhou & Noonan, 2019).

For instance, zoning laws and permitting processes can be particularly onerous for small-scale renewable energy projects in low-income areas. Lengthy and complex approval procedures can discourage investment and delay project implementation. Furthermore, existing energy policies may prioritize large-scale, centralized energy projects over decentralized, community-based renewable energy solutions more suitable for underprivileged communities (Wolf, 2021).

Supportive policies and regulatory frameworks are essential for creating an enabling environment for clean energy access. This includes streamlining regulatory processes, providing incentives for renewable energy investments, and ensuring that policies are inclusive and responsive to the needs of marginalized communities. Policymakers should focus on removing barriers and creating pathways for underprivileged communities to participate in and benefit from the clean energy transition (Cantarero, 2020).

4. Strategies for Promoting Energy Justice

4.1. Community Engagement

Community engagement is a cornerstone of promoting energy justice and ensuring equitable access to clean energy. Involving local communities in the planning, developing, and implementing clean energy projects is crucial for their success and sustainability. When communities are actively engaged, they are more likely to support and participate in clean energy initiatives, leading to better outcomes and greater acceptance of new technologies (Suboticki, Heidenreich, Ryghaug, & Skjølsvold, 2023).

One effective strategy for community engagement is participatory planning. This approach involves community members in decision-making processes, ensuring that their voices are heard and their needs are addressed. Participatory planning can take various forms, including public meetings, workshops, and focus groups. These forums allow community members to express their concerns, preferences, and ideas, which can then be incorporated into project designs (Baker, 2020).

Education and awareness campaigns are also vital components of community engagement. By providing information about the benefits of clean energy, such as cost savings, health improvements, and environmental protection, communities can make informed decisions about their energy use (Khatibi, Dedekorkut-Howes, Howes, & Torabi, 2021). Tailored educational programs can address specific knowledge gaps and dispel misconceptions about renewable energy technologies. Additionally, involving local schools, community centers, and religious institutions in outreach efforts can help build trust and support within the community (Koirala et al., 2018).

4.2. Policy Recommendations

Effective policies are essential for creating an enabling environment that promotes equitable access to clean energy. Policymakers need to develop and implement policies addressing the unique challenges underprivileged communities face. These policies should focus on removing barriers and providing incentives for clean energy adoption. One key policy recommendation is the implementation of subsidies and financial incentives for renewable energy projects in low-income areas. These incentives can help offset the high upfront costs of clean energy technologies, making them more accessible to underprivileged communities. For example, tax credits, grants, and low-interest loans can reduce the financial burden on households and encourage investment in renewable energy.

Another important policy measure is the simplification of regulatory processes. Streamlining permitting and approval procedures can reduce the time and cost of developing clean energy projects. Policymakers should also consider creating special zones or exemptions for renewable energy projects in underprivileged areas to facilitate deployment. Furthermore, policies should promote the development of decentralized energy systems. Decentralized systems, such as microgrids and community solar projects, can provide reliable and affordable energy to underserved communities. These systems are often more resilient to disruptions and can be tailored to meet the specific energy needs of local populations.

4.3. Innovative Solutions

Technological and financial innovations are crucial in enhancing clean energy access and promoting energy justice. Innovative solutions can help overcome the economic, technical, and social barriers that hinder the adoption of renewable energy in underprivileged communities. One promising technological innovation is the development of low-cost, off-grid renewable energy systems. These systems, such as solar home kits and small-scale wind turbines, can provide reliable electricity to remote and rural areas not connected to the main grid. Advances in battery storage technology also enable these systems to store energy for use during periods of low generation, ensuring a consistent and reliable power supply.

Financial innovations, such as pay-as-you-go (PAYG) models, can make clean energy more affordable for low-income households. The PAYG model allows households to pay for their energy use in small, manageable increments rather than making a large upfront investment. This model has been successfully implemented in various countries, providing millions of people access to clean and affordable energy.

Innovative business models, such as energy cooperatives and community-owned renewable energy projects, can empower communities and promote energy justice. These models enable community members to invest in and benefit from clean energy projects collectively. By sharing the costs and benefits, communities can achieve greater energy independence and financial stability.

4.4. Partnerships and Collaboration

Partnerships and collaboration between governments, non-governmental organizations (NGOs), and the private sector are essential for promoting energy justice and ensuring equitable access to clean energy. These collaborations can leverage the strengths and resources of different stakeholders to achieve common goals.

Governments are critical in setting the policy framework and providing funding and support for clean energy projects. By partnering with NGOs and private companies, governments can enhance the effectiveness of their efforts and ensure that projects are designed and implemented to meet the needs of underprivileged communities.

NGOs often have deep connections with local communities and a strong understanding of their needs and challenges. They can act as intermediaries, facilitating communication and cooperation between communities and other stakeholders. NGOs can also provide technical assistance, capacity-building, and advocacy to support clean energy initiatives.

The private sector brings innovation, expertise, and investment to clean energy projects. Companies can develop and deploy new technologies, create innovative financing solutions, and contribute to the scaling up of successful projects. By collaborating with governments and NGOs, private companies can ensure that their efforts align with broader social and environmental goals

5. Conclusion

The exploration of energy justice and its significance for underprivileged communities reveals a multifaceted issue that requires a comprehensive and collaborative approach. The key principles of energy justice—distributional justice, procedural justice, and recognition justice—provide a framework for addressing the inequities in clean energy access. Economic, technological, social, and policy barriers significantly hinder the adoption of clean energy in these communities. Strategies for promoting energy justice, such as community engagement, policy recommendations, innovative solutions, and partnerships, are essential for creating an inclusive energy future. These strategies emphasize the need for financial support, regulatory reform, technological advancements, and collaborative efforts to ensure that all communities can benefit from clean, sustainable energy.

Future research in energy justice should focus on developing more inclusive and participatory models for energy governance. Investigating the effectiveness of different community engagement strategies and their impact on clean energy adoption can provide valuable insights. Additionally, research should explore integrating emerging technologies, such as smart grids and blockchain, to enhance the efficiency and accessibility of renewable energy systems. Another important area for future research is the evaluation of policy interventions and their outcomes in various socio-economic contexts. Understanding the long-term impacts of different policies can help design more effective and equitable energy frameworks. Furthermore, interdisciplinary studies that combine insights from social sciences, engineering, and environmental studies can provide a holistic understanding of the complex dynamics of energy justice.

To advance energy justice and promote equitable access to clean energy, stakeholders must take decisive actions. Governments should prioritize developing and implementing supportive policies that provide financial incentives, streamline regulatory processes, and promote decentralized energy systems. Policymakers should also focus on creating inclusive policies that address the specific needs of underprivileged communities. The private sector should invest in innovative technologies and business models that make clean energy more affordable and accessible. Companies can also form partnerships with NGOs and local communities to ensure their projects align with social and environmental goals. NGOs and community organizations should continue to advocate for energy justice and provide education and technical support to empower local communities. Finally, individuals and communities should actively participate in clean energy initiatives, support local projects, and advocate for policies that promote energy equity. We can create a more just and sustainable energy future for all by working together

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

[1] Arkorful, V. E., Basiru, I., Anokye, R., Latif, A., Agyei, E. K., Hammond, A., . . . Abdul-Rahaman, S. (2020). Equitable access and inclusiveness in basic education: Roadblocks to sustainable development goals. International Journal of Public Administration.

[2] Baker, S. H. (2020). Fighting for a Just Transition: Climate change mitigation does not guarantee social justice. To avoid deepening inequalities, clean energy transitions must prioritize communities over profit. NACLA Report on the Americas, 52(2), 144-151.

[3] Bal, M., Stok, M., Bombaerts, G., Huijts, N., Schneider, P., Spahn, A., & Buskens, V. (2023). A fairway to fairness: Toward a richer conceptualization of fairness perceptions for just energy transitions. Energy Research & Social Science, 103, 103213.

[4] Barakabitze, A. A., William-Andey Lazaro, A., Ainea, N., Mkwizu, M. H., Maziku, H., Matofali, A. X., . . . Sanga, C. (2019). Transforming African education systems in science, technology, engineering, and mathematics (STEM) using ICTs: Challenges and opportunities. Education Research International, 2019(1), 6946809.

[5] Cantarero, M. M. V. (2020). Of renewable energy, energy democracy, and sustainable development: A roadmap to accelerate the energy transition in developing countries. Energy Research & Social Science, 70, 101716.

[6] Carley, S., & Konisky, D. M. (2020). The justice and equity implications of the clean energy transition. Nature Energy, 5(8), 569-577.

[7] Feenstra, M., & Özerol, G. (2021). Energy justice as a search light for gender-energy nexus: Towards a conceptual framework. Renewable and Sustainable Energy Reviews, 138, 110668.

[8] Goldsmith, L., & Bell, M. L. (2022). Queering environmental justice: unequal environmental health burden on the LGBTQ+ community. American Journal of Public Health, 112(1), 79-87.

[9] Gurney, G. G., Mangubhai, S., Fox, M., Kim, M. K., & Agrawal, A. (2021). Equity in environmental governance: perceived fairness of distributional justice principles in marine co-management. Environmental Science & Policy, 124, 23-32.

[10] Jenkins, K. E., Sovacool, B. K., Mouter, N., Hacking, N., Burns, M.-K., & McCauley, D. (2021). The methodologies, geographies, and technologies of energy justice: a systematic and comprehensive review. Environmental Research Letters, 16(4), 043009.

[11] Johnson, O. W., Han, J. Y.-C., Knight, A.-L., Mortensen, S., Aung, M. T., Boyland, M., & Resurrección, B. P. (2020). Intersectionality and energy transitions: A review of gender, social equity and low-carbon energy. Energy Research & Social Science, 70, 101774.

[12] Jones Jr, E. C., & Reyes, A. (2023). Identifying Themes in Energy Poverty Research: Energy Justice Implications for Policy, Programs, and the Clean Energy Transition. Energies, 16(18), 6698.

[13] Khatibi, F. S., Dedekorkut-Howes, A., Howes, M., & Torabi, E. (2021). Can public awareness, knowledge and engagement improve climate change adaptation policies? Discover Sustainability, 2, 1-24.

[14] Koirala, B. P., Araghi, Y., Kroesen, M., Ghorbani, A., Hakvoort, R. A., & Herder, P. M. (2018). Trust, awareness, and independence: Insights from a socio-psychological factor analysis of citizen knowledge and participation in community energy systems. Energy Research & Social Science, 38, 33-40.

[15] Lacey-Barnacle, M., Robison, R., & Foulds, C. (2020). Energy justice in the developing world: a review of theoretical frameworks, key research themes and policy implications. Energy for Sustainable Development, 55, 122-138.

[16] Lee, J., & Byrne, J. (2019). Expanding the conceptual and analytical basis of energy justice: beyond the three-tenet framework. Frontiers in Energy Research, 7, 99.

[17] McCauley, D., Ramasar, V., Heffron, R. J., Sovacool, B. K., Mebratu, D., & Mundaca, L. (2019). Energy justice in the transition to low carbon energy systems: Exploring key themes in interdisciplinary research. In (Vol. 233, pp. 916-921): Elsevier.

[18] Mulugetta, Y., Ben Hagan, E., & Kammen, D. (2019). Energy access for sustainable development. Environmental Research Letters, 14(2), 020201.

[19] Mundaca, L., Busch, H., & Schwer, S. (2018). 'Successful' low-carbon energy transitions at the community level? An energy justice perspective. Applied Energy, 218, 292-303.

[20] Nathwani, J., & Kammen, D. M. (2019). Affordable energy for humanity: a global movement to support universal clean energy access. Proceedings of the IEEE, 107(9), 1780-1789.

[21] Revesz, R. L. (2022). Air pollution and environmental justice. Ecology LQ, 49, 187.

[22] Ruano-Chamorro, C., Gurney, G. G., & Cinner, J. E. (2022). Advancing procedural justice in conservation. Conservation Letters, 15(3), e12861.

[23] Samarakoon, S. (2019). A justice and wellbeing centered framework for analysing energy poverty in the Global South. Ecological Economics, 165, 106385.

[24] Shields, L. (2021). Bolstering Federal Energy Assistance and Weatherization With State Clean Energy Programs. Paper presented at the National Conference of State Legislators (NCSL).

[25] Singh, S., & Ru, J. (2022). Accessibility, affordability, and efficiency of clean energy: a review and research agenda. Environmental Science and Pollution Research, 29(13), 18333-18347.

[26] Suboticki, I., Heidenreich, S., Ryghaug, M., & Skjølsvold, T. M. (2023). Fostering justice through engagement: a literature review of public engagement in energy transitions. Energy Research & Social Science, 99, 103053.

[27] Svara, J. H., & Brunet, J. R. (2020). The importance of social equity to prevent a hollow public administration. The American Review of Public Administration, 50(4-5), 352-357.

[28] Thompson, N. (2020). Anti-discriminatory practice: Equality, diversity and social justice: Bloomsbury Publishing.

[29] Van Bommel, N., & Höffken, J. I. (2021). Energy justice within, between and beyond European community energy initiatives: A review. Energy Research & Social Science, 79, 102157.

[30] Vogel, J., Steinberger, J. K., O'Neill, D. W., Lamb, W. F., & Krishnakumar, J. (2021). Socio-economic conditions for satisfying human needs at low energy use: An international analysis of social provisioning. Global Environmental Change, 69, 102287.

[31] Wolf, M. A. (2021). Zoning reformed. U. Kan. L. Rev., 70, 171.

[32] Zhou, S., & Noonan, D. S. (2019). Justice implications of clean energy policies and programs in the United States: A theoretical and empirical exploration. Sustainability, 11(3), 807.