P19 / Just and Justice guided energy transitions – beyond rhetoric and single cases

Topic : ENVIRONMENT, SDGs, ENERGY

Chair : Daniel del Barrio Alvarez (The University of Tokyo)

Second Chair : Warathida Chaiyapa (Chiang Mai University School of Public Policy)

GENERAL OBJECTIVES, RESEARCH QUESTIONS AND SCIENTIFIC RELEVANCE

In recent times there has been an outstanding growth in the academic and practical interest on “Just Transition” and “Energy Justice”. Both reflect on the idea that the transition to sustainable energy systems is not only a technological change (towards decarbonization) but, rather, a socio-technological system, one in which the broader social impacts need to be considered. And aim to incorporate moral concerns of not leaving anyone behind and creating new opportunities, as well as practical issues such as avoiding unfair negative impacts on those more vulnerable and possible social backlash against this change. Governments and international organizations across the globe have embraced both concepts, and, as a result, it is relatively common to be these associated to an increasing number of energy policies, such as the Just Transition Energy Partnerships, to name a few.

However, the concepts of just and justice are, at times, very open and include cultural aspects, making them challenging to (i) operationalize beyond rhetoric and (ii) generalize beyond specific sectors or geographies. Furthermore, as with any sociotechnical change, the energy transition brings winners and losers, within local and national contexts but also internationally. Also, to ensure a Just or Justice based energy transition may require a slower pace, which might be incompatible with the emergency of Climate and Sustainable Development targets. What lead to (iii) conflicts between just, justice, and other strategic priorities.

To address these, researchers across disciplines and geographies are conducting theoretical and empirical numerous studies to guide energy transition policy makers in this endeavor. For example, several frameworks have been proposed in the literature.

This session aims to provide a platform for researchers to discuss these issues and propose a way forward. Specific topics of interest include

· Identification and measurement of synergies and trade-offs across the multiple dimensions and issues of Just and Justice Energy Transition frameworks

· Innovative approached to incorporate Just and Justice elements into the energy policy making and planning processes, examining the roles of different stakeholders (government, private sector, civil society) in co-creating these policies.

· Merits and perils of Just Transition and Energy Justice to achieve the Climate Goals and the Sustainable Development Goals (on time)

· Integrating Gender Equality, Disability and Social Inclusion (GEDSI) in Energy policy design and implementation, examining intersectionality—exploring how different social categories overlap and intersect in the energy transition context.

· Policy instruments to implement Just Transition and Energy Justice, incorporating multi-level governance, i.e., the role/authorities of each different levels of governments in designing and implementing each policy instrument

· Developing new framework to measure and evaluate Just Transition and Energy Justice policy

· Drawback or concern of having pursue Just Transition and Energy Justice i.e. discussing on potential conflicts between rapid transitions and justice goals could spark a more nuanced debate.

Other beyond these will be also considered, in particular when helping to answer the specific question

CALL FOR PAPERS

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Session 1

Thursday, July 3rd 16:00 to 18:00 (A2)

Gender, Energy, and Inequality: Barriers to Clean Cooking in Rural India

Anandi Yadav (Indian Institute of Technology, Bombay)

Energy access is vital for economic and social development, yet over 2.5 billion people worldwide lack affordable, reliable energy. This issue is particularly evident in rural areas, where access to modern cooking fuels and electricity are inadequate, limiting households' ability to perform essential tasks and engage in productive activities. Energy poverty, defined as a lack of access to reliable and clean energy, deepens socio-economic inequalities, creating a cycle of poverty and underdevelopment.

Although women are principally involved in kitchen-centric activities, domestic chores, such as cooking, are often perceived as non-decision-making tasks and are thus assigned to women, while fuel purchases are viewed as household-level decisions dominated by men. This exclusion perpetuates gender inequalities and undermines the effectiveness of energy policies. Lack of cooking access is particularly severe for women, as the time-consuming and physically taxing task of collecting and using biomass fuels leads to poor health outcomes, limits income-generating opportunities, and restricts participation in political and social spheres. For girls, the opportunity cost of education increases as they miss school to help with household chores, further entrenching cycles of inequality.

The Indian government’s Pradhan Mantri Ujjwala Yojana (PMUY), launched in 2016, seeks to address these challenges by providing LPG connections to women in below-poverty-line (BPL) households. While PMUY has significantly increased LPG adoption, persistent challenges in rural areas hinder its full potential. According to the National Family Health Survey (2019-21), only 43.2% of rural households have access to clean cooking fuels, compared to 89.7% in urban areas. Financial constraints, infrastructure gaps, and entrenched patriarchal norms continue to limit sustained LPG use, disproportionately affecting marginalized groups, including women from lower castes and economically disadvantaged communities.

This study examines the challenges women face in accessing and utilizing PMUY benefits, focusing on socio-economic and cultural barriers that perpetuate energy poverty. Fieldwork conducted in nine villages of Uttar Pradesh, India, through household surveys and qualitative interviews, highlights the persistent barriers to clean cooking transitions. The research explores how gender, caste, and economic status intersect to shape women’s experiences with clean cooking transitions. While PMUY targets marginalized communities, patriarchal norms often restrict women’s decision-making autonomy, limiting sustained LPG use. Additionally, affordability issues and logistical barriers disproportionately affect women from lower-income households, further leading to socio-economic inequalities. By exploring overlapping social categories—such as gender and caste—this paper aligns with the panel’s objective of understanding intersectionality in energy transitions, particularly in the context of cooking access and its policy outcomes. This research contributes to the discourse on just energy transitions by advocating for a nuanced policy design that recognizes and addresses socio-cultural barriers to energy access.

Just and Sustainable Energy Transitions in Africa: Addressing Biofuel Land Grabs and Social Equity

Erdoo Paula Awai (Osaka Metropolitan University)

FLORENT NOULEKOUN (Korea University)

Energy access and sustainability are critical challenges in Sub-Saharan Africa, where approximately 600 million people lack reliable electricity. Traditional biomass accounts for 85% of household energy use,

highlighting the urgent need for Africa to transition to sustainable energy systems. However, without inclusive policies, the shift to renewable energy risks exacerbating socio-economic inequalities and further marginalizing vulnerable communities. Biofuels have been promoted as a solution to enhance energy security, generate employment, and reduce emissions. Yet, their expanding production across the continent raises significant concerns. While biofuels are viewed as a means of addressing energy challenges, large-scale biofuel production driven by both domestic and international demand has led to land grabbing, food insecurity, and environmental degradation. In countries such as Tanzania, Mozambique, and Ethiopia, large land acquisitions for biofuel plantations often prioritize export-oriented crops like jatropha and oil palm over local food crops, worsening food shortages. Weak land tenure systems leave rural populations with limited protection against dispossession, exacerbating the negative socio-economic impacts of large-scale biofuel production. Additionally, extensive biofuel plantations contribute to deforestation, soil erosion, water scarcity, and loss of biodiversity. On the other hand, the adoption of biowaste-to-energy (BtE) technologies aligns with the goals of promoting equitable land management, ecosystem conservation, and sustainable development. This approach empowers local communities and reduces land-use conflicts, paving the way for a more resilient, just, and sustainable energy future for Africa. By supporting fair land management practices, prioritizing local rights, and integrating sustainable energy solutions, Africa can navigate its energy transition in a way that benefits both people and the environment. This paper advocates for biowaste-to-energy (BtE) systems as a more sustainable and equitable alternative to biofuel plantations, urging African countries to implement inclusive policies, encourage regional collaboration, and prioritize participatory governance in the energy transition process.

Can India balance development and climate action? Assessing our state of knowledge

Medhavi Sandhani (Indian Institute of Technology, Delhi)

India is a striking example of a large and diverse country facing both developmental and climate change mitigation imperatives. In 2022 India ranked the 3rd largest CO2 emitter in absolute terms, but 124th in per-capita terms. The severity of the development-mitigation dichotomy India faces is corroborated by other developmental indicators such as the SDG index, where India ranked 121st, and the HDI where we ranked 134th in 2022. Although India announced a target of achieving net zero emissions by 2070 in COP27, current policies and governance priorities are largely and justifiably, driven by developmental considerations.

To resolve this dichotomy, India will need to chart its own path where development and mitigation can be reconciled. Yet, our understanding of how this can be done is limited. In this study, we elucidate the state of the art in terms of the interplay between development and mitigation in India; specifically, we describe the developmental outcomes of mitigation pathways based on an extensive literature review of over a 100 modelling-based mitigation studies conducted for India in last 10 years. We find that while research focusses on mitigation, insufficient attention is paid to development-related trade-offs of diverse mitigation pathways.

Our study identifies key research gaps in India's mitigation strategies in addressing developmental outcomes, particularly in areas like employment shifts, energy security, and equity considerations. Behavioral and demand-side measures, such as promoting sustainable consumption and lifestyle changes are underexplored revealing a gap related to how shifts in individual and collective behaviors can impact mitigation efforts. Equity concerns, including regional equity concerns and the distributive impact of the energy transition on vulnerable communities, remain inadequately addressed in the existing literature. Similarly, natural resource constraints, such as land and water conflicts arising from renewable energy deployment pose significant challenges to aligning mitigation with sustainable development goals. Qualitative aspects such as strong institutions and governance capacity, that play a key role in ensuring well-functioning market mechanisms are underrepresented in current modeling studies due to the techno-economic nature of commonly used models.

Further, our study highlights different analytical approaches, which include newer complexity methods such as Agent-Based Simulation Models, empirical approaches such as actor and institutional analysis, and novel decision-making frameworks like Dynamic Adaptive Planning and Pathways (DAPP) that can effectively bridge these critical gaps in analysis and enhance policy-making processes to facilitate a just transition. Addressing these gaps is vital for India to reconcile their developmental and mitigation goals, serving as a model for other developing nations grappling with similar challenges.

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Session 2

Friday, July 4th 08:00 to 10:00 (A2)

Motivations, Drivers and Barriers to Just Energy Transitions in Sub-Saharan Africa: A Case Study of Mozambique

Krinah Jani (Kyoto University)

Like many sub-Saharan African countries, Mozambique possesses abundant fossil fuel reserves and significant renewable energy potential, yet it struggles to meet its own domestic energy needs. Although energy production primarily targets export markets, over half the population remains without electricity, with pronounced urban-rural disparities. These inequalities are rooted in the country's colonial legacy, which continues to shape its grid and institutional frameworks. Corruption and regulatory inefficiencies further hinder equitable energy access and undermine development.

In contrast to most sub-Saharan African nations, Mozambique has introduced a "Just Energy Transition Strategy," requiring an estimated $80 billion in investments. This ambitious plan articulates key justice objectives—such as gender equality and community engagement in decision-making—while simultaneously positioning the country as a regional "energy hub" through expanded hydropower and natural gas exports. However, this dual emphasis raises important questions about the trade-offs between justice-oriented goals and urgent economic development imperatives.

To explore these dynamics, this study investigates the motivations, drivers, and barriers to advancing energy justice from the perspectives of decision-making stakeholders in Mozambique's energy sector. Fourteen semi-structured interviews were conducted with government officials, energy utility representatives, private sector actors, donor organizations, academics, and NGOs. The analysis reveals that the strategy's emphasis on "justice" often functions more as a rhetorical device to attract international investment than a substantive commitment to addressing entrenched systemic inequities. Although Mozambique's energy policies are ambitious, weak governance structures, dependence on external funding, and limited institutional capacity continue to impede meaningful progress toward a just transition.

Mozambique's experience underscores the complexity of operationalizing justice principles under real-world constraints. While "justice" in policy discourse may signal progress, performative policymaking persists, leaving local communities with minimal tangible benefits. Ultimately, by interrogating the motivations behind adopting a just energy transition strategy, pinpointing the forces that drive or obstruct its implementation, and examining the barriers to meaningful progress, sheds light on the merits and perils of pursuing a just transition to meet climate and sustainable development goals, including potential conflicts between rapid transitions and justice objectives. In doing so, it offers valuable lessons for integrating justice principles more effectively into energy policies and projects—both in Mozambique and across other Global South contexts facing similar tensions.

NIMBYism or Lack of Self-relevance?: Policy implications from studies on nuclear waste management in Japan

Shunsaku Komatsuzaki (Tokyo Metropolitan University)

So Morikawa (The University of Tokyo)

Reona Hayashi (Hosei University)

Many countries with nuclear power generation have been struggling to find socially acceptable sites for nuclear waste management, especially its deep geological disposal as a current best available method. Past

research on the societal aspects of nuclear waste management has focused mostly on communication and the distribution of benefits and risks to achieve social consensus under democracy. This has assumed a NIMBY (Not-In-My-BackYard) nature of the policy and thus a conflicting structure of local “victims” to accept disposal sites with potential risks and many “beneficiaries” of the policy, especially in urban cities.

Although the deep geological disposal of nuclear waste objectively benefits the residents far from the site, the “beneficiaries” might lack the awareness that they are “benefiting” from the project. If this is the case, the analysis of the negotiations and communication between the beneficiaries and the victims of a geological disposal project as a NIMBY issue could be misaligned with the actual situation.

We employed the implicit association test to examine whether NIMBY attitudes toward geological disposal differ by residential area. The results suggest that NIMBY attitudes are found more clearly in urban areas where the likelihood of geological disposal is low and the benefits of the project are objectively expected, and not significant in areas where nuclear facilities are already located. In our different study, survey respondents were asked to spend a certain amount of time looking at a “Nationwide Map of Scientific Features relevant for Geological Disposal”, which illustrated the suitability of geological disposal based on scientific safety factors such as geology and transportation, but about half of the respondents did not correctly understand the suitability of their places of residence. This suggests that many respondents did not have a self-relevance perception of the policy, even though they were “forced” to scrutinize the information provided and a certain number of respondents lived in areas with higher suitability on the map. Further research is needed to determine whether urban citizens show NIMBYism toward the disposal project, or whether there is a significant proportion of the population with low self-relevance perception toward the disposal project in the whole country.

If the problem is not NIMBYism but a lack of self-relevance perception, compensation as a policy tool for consensus building on NIMBY issue could produce unintended effects (e.g., opposition by “beneficiaries”, or stigmatization of “selling the local community in exchange for money” to the victims), which may hinder social consensus. In the case of a long-term project such as geological disposal, moreover, intergenerational fairness could be questioned as only the present generation that receives compensation will benefit and future generations will be the victims.

A similar problem structure may exist in the development of future large-scale energy sources, such as wind/solar farms. We would like to raise issues that contribute to future research, such as empirical verification of the NIMBY nature that current policies tend to assume, investigation on the legitimacy and effectiveness of current policy measures (e.g., compensation), and comparison across project areas and nations.

Hydrogen for a just transition? Experts' perspectives on the future of hydrogen in Japan and Spain

Daniel del Barrio Alvarez (The University of Tokyo)

Antonio Atienza-Márquez (Universidad de Málaga)

Benjamin McLellan (Kyoto University)

PABLO DEL RIO (CSIC)

Hydrogen has gained notoriety as a promising solution to foster a just transition to sustainable energy systems, including hard-to-abate emissions. In recent years, governments worldwide have announced investments and support mechanisms for streamlining green hydrogen. Nevertheless, the extent to which hydrogen will contribute to the future of energy systems and the implication of the possible future pathways remain uncertain. This research aims to shed light on this through a comparative analysis of experts’ view in Japan and Spain, two of the countries with more ambitious plans to incorporate hydrogen in their energy and climate plans. The research is based on Q-methodology combining both qualitative and quantitative analysis to investigate subjectivity. The results are expected to show the different pathways for hydrogen considered by experts in both countries. This comparative analysis can support a better understanding of the relevant factors leading to the different pathways and impacts on the just transition by considering both country and stakeholder levels. The findings are expected to contribute to the improvement of hydrogen plans in both countries and could be of interest to other countries.