

Energy Governance and Sustainable Energy Resilience in the Context of Federal Restructuring in Nepal

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INTRODUCTION + RESEARCH QUESTION

There is growing intensity and frequency of threats and shocks to energy supply systems.

Socio-ecological resilience perspective provides framework for consideration of adaptive capacity and learning from disaster experiences of the energy actors who are trying to adapt to multiple disruptions and changing environment.

Resilience theory is complex and difficult to operationalise but a useful concept for scholars of governance.

Centralised governance structures does not foster the requirements of multiscale, multilevel and multisectoral coordination and communication. Balance of power, clarity in roles and responsibilities, capacity among multiple level energy actors of energy governance is important for the effective governance of complex energy sector.

Nepal's unique empirical context provides an interesting case study with the transitioning governance structure, major natural disaster, continuous disruptions in energy sector.

How changes in governance structures in Nepal in the wake of a major disaster have influenced the governance roles and responsibilities of energy actors and institutions and its impact on energy resilience activities?

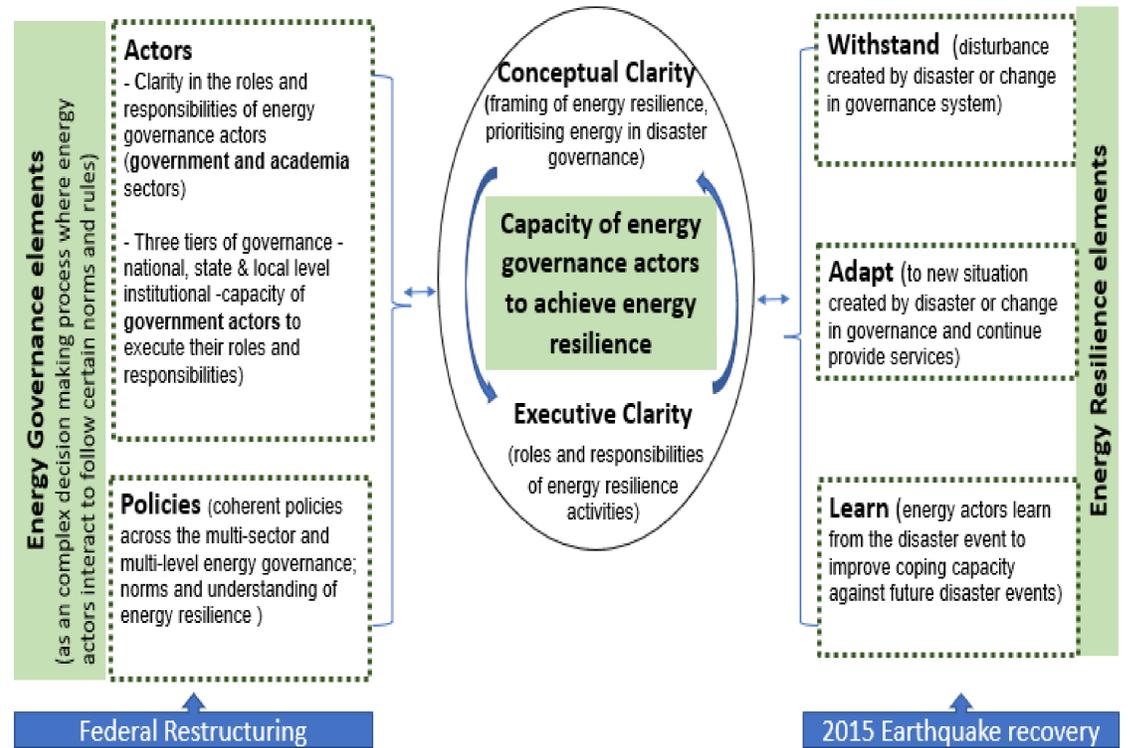
GAPS IN THE LITERATURE

- Energy resilience studies have mainly focused on short term disruptions instead of long-term planning from a resilience perspective.
- Lack of understanding how energy resilience has been conceptualised in Nepal's energy sector – both in policies and by energy actors and if it can be operationalised.
- Gaps in understanding the interplay of structural elements of both energy governance and resilience in diverse contexts and how it could help translate resilience theory into practice.

CONCLUSION

- Capacity of energy actors in energy governance is interlinked with conceptual clarity and executive clarity of energy resilience and activities, essential for being prepared for future disruption of the energy supply systems.
- Balance of power and equitable provisions supports ability of energy actors to actively engage in energy governance so that they have capacity to manage energy resilience activities locally as well as maintain coordination and collaboration for resilience activities across multiple scale, levels and sectors.
- This paper serves as stepping stone for further research to underpin the interplay of energy resilience and governance, such integrated framework is essential to govern the complex energy system and achieve energy resilience.

ANALYTICAL FRAMEWORK



Cross-fertilisation of the concept of energy resilience with energy governance and interplay of their elements

FINDINGS

- Ambiguity in understanding of energy resilience among energy actors - Opportunity for contextualized conceptualisation of energy resilience in Nepalese energy sector
- Multilevel governance systems have gaps in capacity to achieve energy resilience - Transitioning governance structures provides constructive space to build capacity
- Slow transfer of power; mismatch of existing local capacity and policy provisions - Balance of power distribution among energy actors at all levels allows understanding of local priorities to manage energy resilience activities
- Need clarity in concurrent energy roles and opportunities defined under the federal system - Operationalise resilience to manage short-term as well as long-term disruptions in energy system

REFERENCES

- Duit, A., et al., *Governance, complexity, and resilience*. Global Environmental Change, 2010. 20(3): p. 363-368.
- Choudhury, M.-U.-I., C. Emdad Haque, and B. Doberstein, *Adaptive governance and community resilience to cyclones in coastal Bangladesh: Addressing the problem of fit, social learning, and institutional collaboration*. Environmental Science & Policy, 2021. 124: p. 580-592.
- Berkes, F., *Environmental Governance for the Anthropocene? Social-Ecological Systems, Resilience, and Collaborative Learning*. Sustainability, 2017. 9(7): p. 1232.
- Hodobod, J. and W.N. Adger, *Integrating social-ecological dynamics and resilience into energy systems research*. Energy Research & Social Science, 2014. 1: p. 226-231.
- Hamborg, S., et al., *Rethinking resilience: A cross-epistemic resilience framework for interdisciplinary energy research*. Energy Research Social Science, 2020. 59: p. 101285
- Stritzke, S., P.A. Trotter, and P. Twesigye, *Towards responsive energy governance: Lessons from a holistic analysis of energy access in Uganda and Zambia*. Energy Policy, 2021. 148: p. 111934
- Underwood, G., *Energy Resilience in Nepal: Response and Future Directions after the 2015 Earthquake and 2015-2016 Blockade (Thesis, Master of Planning)*. 2019, University of Otago.
- Wang, X., L. Reardon, and L.S. To, *Visualizing Nepal's electricity supply resilience from a whole-systems perspective: A participatory approach*. Energy Research & Social Science, 2022. 85: p. 102409.
- OPMCM, *Unbundling/Detailing of List of Exclusive and Concurrent Powers of the Federation, the State (Province) and the Local Level Provisioned in the Schedule 5, 6, 7, 8, 9 of the Constitution of Nepal 2017*, Federalism Implementation and Administration Restructuring Coordination Committee.
- Akhmouch, A. and F.N.J.U.P. Correia, *The 12 OECD principles on water governance—When science meets policy*. 2016. 43: p. 14-20.