Social Ecological Resilience to River Floods and Coastal Disasters

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Causes and Effects of Dam Disasters in India: A Case study

Research Rationale

- Many past events indicated that when the rivers used to flow independently, there were not many issues related to natural disasters (Aldunce, et al., 2015).
- In many instances, the construction of dams affected the free flow of environment due to which natural calamities took place (Jongman, 2014).
- In India, Dams are funded by the government for providing the drinking water, for creating hydroelectric renewable energy, for controlling the situation of flood control, for recreation, to positively impact the local economies, etc.
- However, there are various threats due to the failure of proper Disaster risk strategies which can be minimized by focusing on the surrounding environment and the factors that influence the disaster risk reduction in dam projects.

Research Aim & Objectives

The research aims to investigate the causes and effects of dam disasters, and the influencing factors in order to provide strategies that would minimise dam disasters in India.

1. Understand the structures of dams and examine how disasters occur in dams
2. Investigate the causes and the effects of dam disasters on its surrounding environment.
3. Identify the factors that influence disaster risk reduction in dams
4. Explore the disaster risk reduction initiatives adopted by the local and central governments for dams
5. Recommend strategies that needs to be adopted to minimise future disasters in Dam projects

Research Findings

- **Causes:** Seismically stable ground; Pressure from water; Pressure from near mountains; poor maintenance.
- **Effects:** Change in water; impact on bio-diversity; sedimentation; inundation of land; dam induced seismicity; increase in water borne diseases; major damage to near by built environment; possibility for future disasters due to structural issues
- **Recommendations**: Focus on the structure as well as surrounding environment during the construction of dam; need to educate the people regarding the disaster risk; proper maintenance.

Research Approach and Methods

Research Approach: Qualitative approach

Research Strategy: Case Study approach

Research methods:

Data Collections: Semi-structured interviews

Data Analysis: Content analysis

Case details: Name: Koyna Hydro-electric project

Location: Karad, Satara district, Maharashtra.

Type: Rubble concrete dam

Capacity: 105 TMC

Purpose: Irrigation, Hydro-power and flood control.

Conclusions

- Dam projects have a power of creating disaster risk which can affect the economy, life & surrounding environment.
- The improper structure, less consideration towards surrounding environment and less maintenance of dams cause high risk of disaster.
- The highlighted that although government has taken various corrective actions those actions are not sufficient to eliminate dam disaster risks in India and presence of corruption makes the process harder.

References

Aldunce, P., Beilin, R., Howden, M. and Handmer, J. (2015) Resilience for disaster risk management in a changing climate: Practitioners' frames and practices. Global Environmental Change, 30, pp. 1-11.

Jongman, B., Hochrainer-Stigler, S., Feyen, L., Aerts, J. C., Mechler, R., Botzen, W. W., and Ward, P. J. (2014) Increasing stress on disaster-risk finance due to large floods. Nature Climate Change, 4(4), pp. 264-268.

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