Rendering the Risks: A Political Ecology of Tourism Development Impact Assessment in Karst of Gunung Sewu, Indonesia

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NEW ZEALAND ASSOCIATION FOR IMPACT ASSESSMENT
Annual Conference 2024
New Challenges: the Future of Impact Assessment
22-23 October 2024, Chateau on the Park, Christchurch

Introduction

- The Karst of Gunung Sewu is a complex and unique landscape with inherent risks and vulnerabilities, including thin soil layers that poorly filter water, easily erodible slopes, and fragile cave ecosystems.
- These complexities and vulnerabilities create economic growth challenges.
- Capitalizing on the tourism boom of the 2010s, the government views tourism as a key solution to balancing ecological preservation and economic growth.
- However, tourism development brings concerns due to its massive infrastructure, water exploitation, and socio-cultural disruptions, prompting the government to rely on Environmental Impact Assessments (EIA) to mitigate these issues

Political ecology of impact assessment

- From a post-structuralist political ecology perspective, EIA and risks are discursive processes and sites of knowledge contestation (Neuman, 2005; Siddique, 2024).
- EIs are part of the "rendering technical" process that converts natural complexities into technicalities, reflected in EIA reports, regulations, and the discourse of the "risk society" (Beck, 1992; Li, 2011; Spiegel, 2017).
- This discursive process aims to establish a regime of truth that privileges Western scientific knowledge and reflects power dynamics among experts (Cooper & Bulmer, 2013; Escobar, 2007).

Tourism development and Karst of Gunung Sewu in pictures. Figure A shows thin soil with no surface water resources, making agriculture sector is hard to develop. Road infrastructures that cut open a karst hill as shown in Figure B. Tourists flocked to Pindul Cave, one of the most popular tourism destinations (Figure C). (Source: Author)

Research questions

1. How are risks and impacts technically constructed for tourism development in karst areas?
2. What roles do experts play in the construction of risks and impacts?

Methods

- This study departs from a constructionism paradigm to see that EIs are constructed through a political process of 'rendering technical'.
- The data are drawn from online news articles and regulations and analyzed using content and thematic analysis (Kodir, 2019).

Results and Discussion

Risk-based impact assessment: regulation from Indonesia

The Indonesian government requires EIA as a part of business permits. The latest Omnibus Law stipulates that EIA has to be done for a **high-risk activities**. It can be read as: (1) an effort to include EIA into bureaucracy and administration, and (2) a risk-based approach.

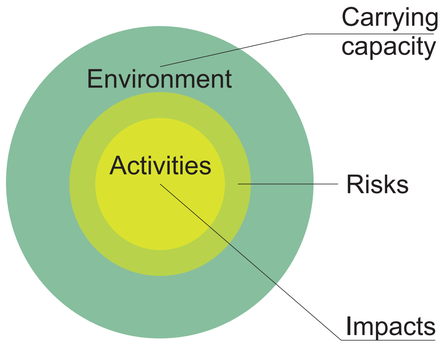

Figure D. Risks as an interface of activities and environment

Risks in this context arise at the intersection of environmental and business activities. They are assessed using regional-scale tools like Spatial Planning, Strategic Environmental Analysis, and Carrying Capacity studies, as well as site-specific tools like EIAs.

Under the Omnibus Regulation, Provincial and Regional Governments must conduct regional studies to create a 'whitelist' of areas where EIAs are not required, simplifying the investment process.

How does this work in Karst of Gunung Sewu?

Constructing risks from the intrinsic characteristic of karst area

Experts, including academics and NGOs, assign risk based on the intrinsic characteristics of the karst landscape. The limestone, as the host rock, contains voids and cavities, making it unsuitable for heavy infrastructure.

> *"The **formation of karst rock** is like a hollow ant nest (not solid). So, if there is a load on top, it **could collapse**"*
>
> Academic (https://www.kompas.id/baca/english/2024/02/06/en-pertaruhan-besar-di-pegunungan-sewu?utm_source=link&utm_medium=shared&utm_campaign=tpd_-_android_traffic), 2024

Another risk comes from the epikarst disturbance. The epikarst is a thin layer near the limestone surface that regulates water function in karst area. As shown in Figure B, a road construction cuts a karst hill, removing the epikarst, and disturbing the water flow regime

> *"A road expansion of Southern Bypass also cuts the karst hills that function as an **epikarst**"*
>
> NGO (https://www.detik.com/jogja/berita/d-7551814/pakar-ungkap-bahaya-pengurangan-luas-karst-gunung-sewu-gunungkidul), 2024

This illustrates how the intrinsic characteristics of karst areas create risk, which informs the governance and administration of EIAs in these regions.

Aggregation of risks: designation of Karst Landscape Area

Karst of Gunung Sewu' characteristics have led to its designation as a protected Karst Landscape Area (Fig. E) under Spatial Planning Policy.

> *"Where's the justice in it? Due to its designation as a Karst Landscape Area, the small-scale enterprises by the local communities must be equipped by EIA."*
>
> Local Environmental Agency (https://www.detik.com/jogja/berita/d-7552882/dlh-gunungkidul-pastikan-tidak-ada-pengurangan-karst-gunung-sewu), 2024

This means that any activity in these areas is considered **high-risk** and requires an EIA. However, the regional government feels this hampers investment and economic growth. In response, they have requested the central government to reconsider the boundaries of Karst Landscape Areas, aiming to ease business permits by reducing the need for EIAs. A local community, however, opposes this move.

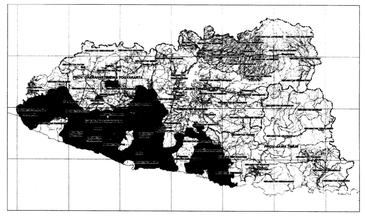

Figure E. Gunung Sewu Karst Landscape Area
Source: MoERM Decree 3045/2014

> *"If it's merely for economic development, we can empower (ourselves), but behind that we would incur losses. Water source, animals and their ecosystems will be damaged in the long-term"*
>
> A head of village (https://www.mongabay.co.id/2023/03/12/bila-geopark-gunung-sewu-susut-berisiko-bagi-ekosistem-karst-dan-kehidupan-warga/), 2023

Concluding Remarks

- ***Political economy of risks and impacts***. The "rendering technical" process embeds political economy within economic growth and tourism, with the EIA acting as a non-neutral regulatory tool for business permits, exposing power dynamics and makes environmental governance a contested space of competing interests and knowledge.
- ***The role of expertise***. Experts shape a political framework for geological knowledge by transforming karst characteristics into unmanageable risks, which scales uncertainties from site-level to landscape implications while bureaucratizing environmental governance.
- ***Future remark***. Rendering the risks within the "wicked trinity" of the late capitalism green state: environmental deterioration, economic growth, and population dynamics (Alami, et al., 2024).

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Acknowledgement

This study is a preliminary part of the author's Ph.D. dissertation. The author would like to thank Dr. Marcela Palomino-Schalscha and Dr. Eli Elinoff as supervisors in guiding the author. The author also thank the scholarship endower, LPDP, and School of Geography, Environment and Earth Science, Te Herenga Waka-Victoria University of Wellington for providing the financial supports.