Governance Innovations for Nature-based Solutions from Translocal Networks

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RESEARCH QUESTIONS

RQ1 - What is the **environmental governance innovation** in the context of **NbS**?
We **reclassify** the environmental governance innovations according to existing research and classification of **NbS**.

RQ2 - What are **the interaction paths of translocal networks** in environmental governance innovation?
We conclude the translocal networks **into three different types**, identify **the cause and effects** of policies events, and make **interaction and evolution graph** of policy events accordingly.

RQ3 - How do translocal networks **promote** environmental governance innovations?
We stash and establish **Event History database**, and use **Pooled Regression** to analyze the influence of **social, ecological, technological factors, distance** and **translocal networks** on the emergence of environmental governance innovation.

RESEARCH THEORY

According to **SETS** framework, the emergence of innovation arises from **social, ecological** and **technological** factors. For different innovations, even the same innovation in a different city or at a different time, the degree of its influence by the three types of factors varies

$Innovation=f(S, E, T, distance)$ **(1)**

Also, certain research has implied that the mechanism of generating governance innovation is related to **translocal networks**, integrating governments and other stakeholders. Therefore, it is assumed that how social, ecological and technological factors contributes innovation attributes to **different translocal networks**

$f(S,E,T)=F(\textbf{vertical, horizontal, external})$ **(2)**

RESEACH DESIGN AND METHODS

We reclassify the environmental governance innovations according to existing research and classification of NbS into a **5×3 matrix of types**

- **Concept Innovation, Technological Innovation, Institutional Innovation**
- **Ecosystem Service Utilization, Sustainable Infrastructure, Carbon Peaking and Carbon Neutrality, Green Economy,** and **Collaborative Environmental Governance**

Innovation Types	Concept Innovation	Technological Innovation	Institutional Innovation
Ecosystem Service Utilization	Green Development	Ecosystem Restoration	**GEP**
Sustainable Infrastructure	Green Infrastructure	New Infrastructure Construction	Eco-environment-oriented Development
Carbon Peaking and Carbon Neutrality	Safe Reduction of Carbon Emission	Carbon Accounting	Green-oriented Transition of Energy
Green Economy	Digital Economy	Management of Three Major Industrial Wastes	Green and Low-carbon Circular Economic Development System
Collaborative Environmental Governance	Integrated Environmental Development	Eco-environmental Monitoring	Collaborative Environmental Protection and Governance

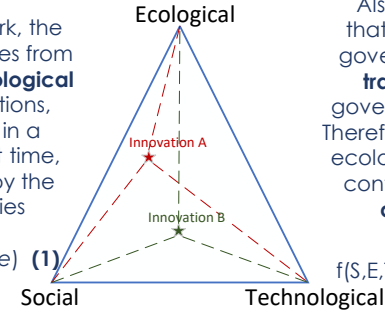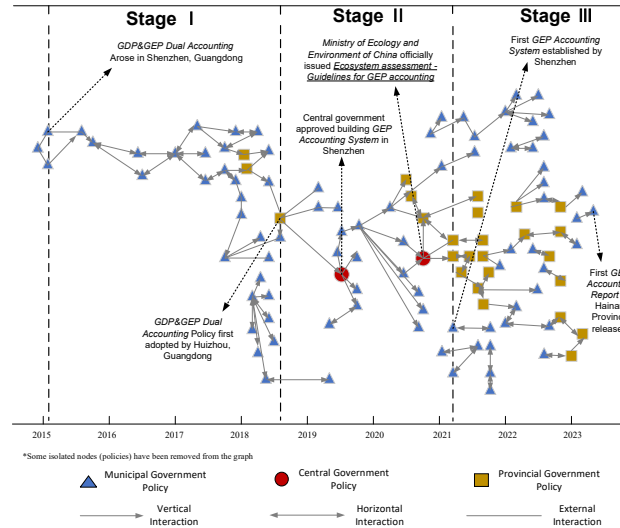| Types of Translocal Networks		Interaction Path	Interaction Act	Stakeholders
Intergovernmental	Hierarchical	**Vertical**	Assign and adopt	Government
	Cross-level Flat-level	**Horizontal**	Compete, imitate and collaborate	Multiple cities
Outer-governmental	Government-business			Enterprise
	Government-citizen	**External**	Exchange and cooperate	Citizens
	Government-society			Social groups

We further concluded the different types of translocal networks – **vertical, horizontal** and **external** as well.

EXPECTED RESULTS

Take **GEP** (Gross Ecosystem Product) innovation in China as an example, from the pre-established **Event History database**, we may identify the emergence and evolution of GEP policies from **2014** until now, concluding and dividing the process into **3 stages** -

Stage Ⅰ – Municipal Government Initiating (**Horizontal Interaction Dominated**)

Stage Ⅱ - Adopted by Province and Approval from Central government (**Vertical & External Interaction Dominated**)

Stage Ⅲ – Further Diffusion

In the meanwhile, with the graph we can intuitively see how the interaction merged and evolved, and identify the **key policy event nodes** of the whole process as well.

EXPECTED ANSWERS TO RQS

- Environmental governance innovations **mostly originate from external factors**, and are generated from **both central and provincial governments**.
- **Social and ecological** factors are expected to have **the most significant influence** on the probability of innovation generation
- Among social factors, **population density** could be **negatively correlated** with the probability of innovation generation.