Kyoto University
Institute of Advanced Energy

CHALLENGES AND INNOVATIONS IN THE USE OF HARD DATA IN ENERGY-RELATED RESEARCH FROM SOCIAL SCIENCE AND HUMANITIES (SSH)

JORDI CRAVIOTO

DATA-ORIENTED APPROACHES TO SSH
データーサイエンス総合地域研究ユニット (DASU)
CENTER FOR SOUTHEAST ASIAN STUDIES

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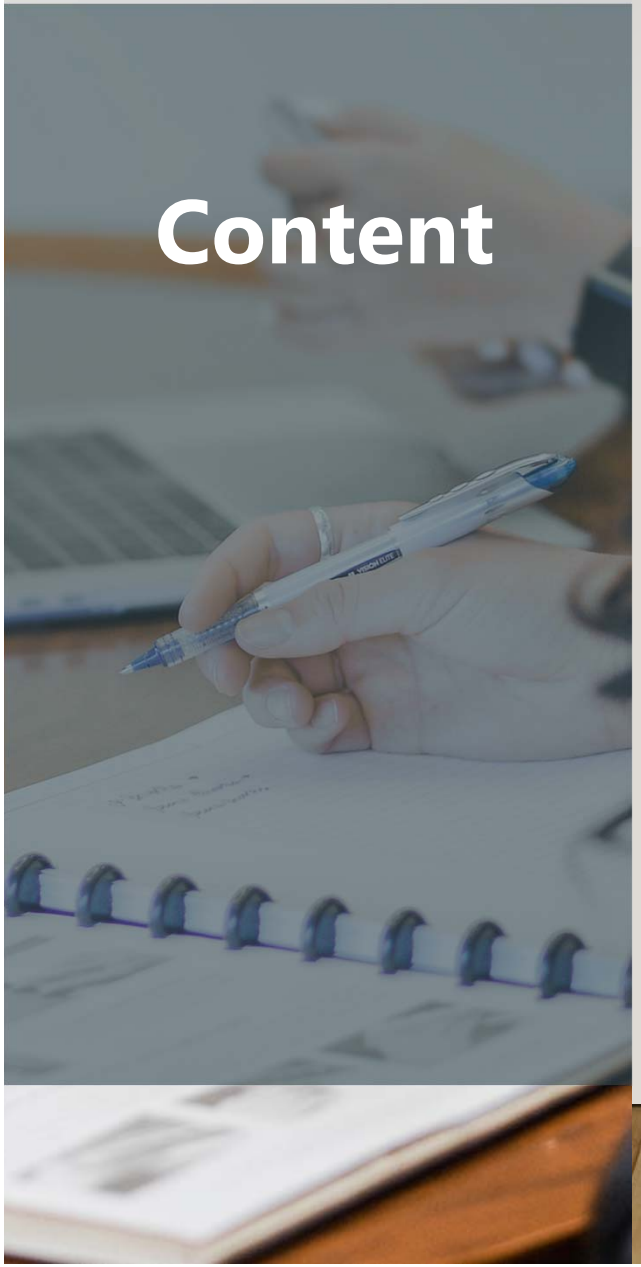


Content

1 *Brief research summary*

- Introduction, Methods
- Findings, Agendas

2 *Challenges / Innovations*

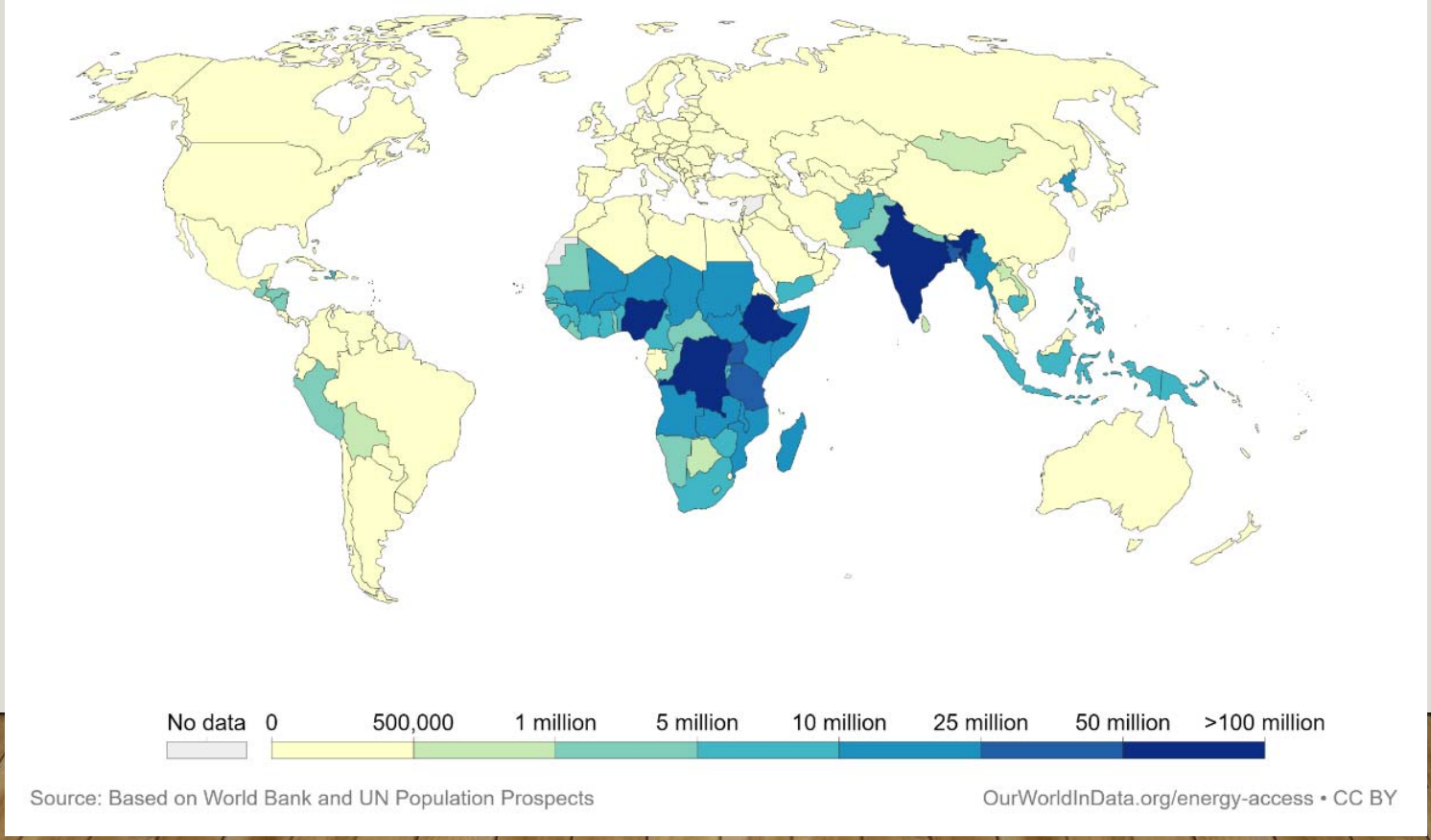
- Frameworks
- Nexuses
- Methodologies

3 *Conclusions*

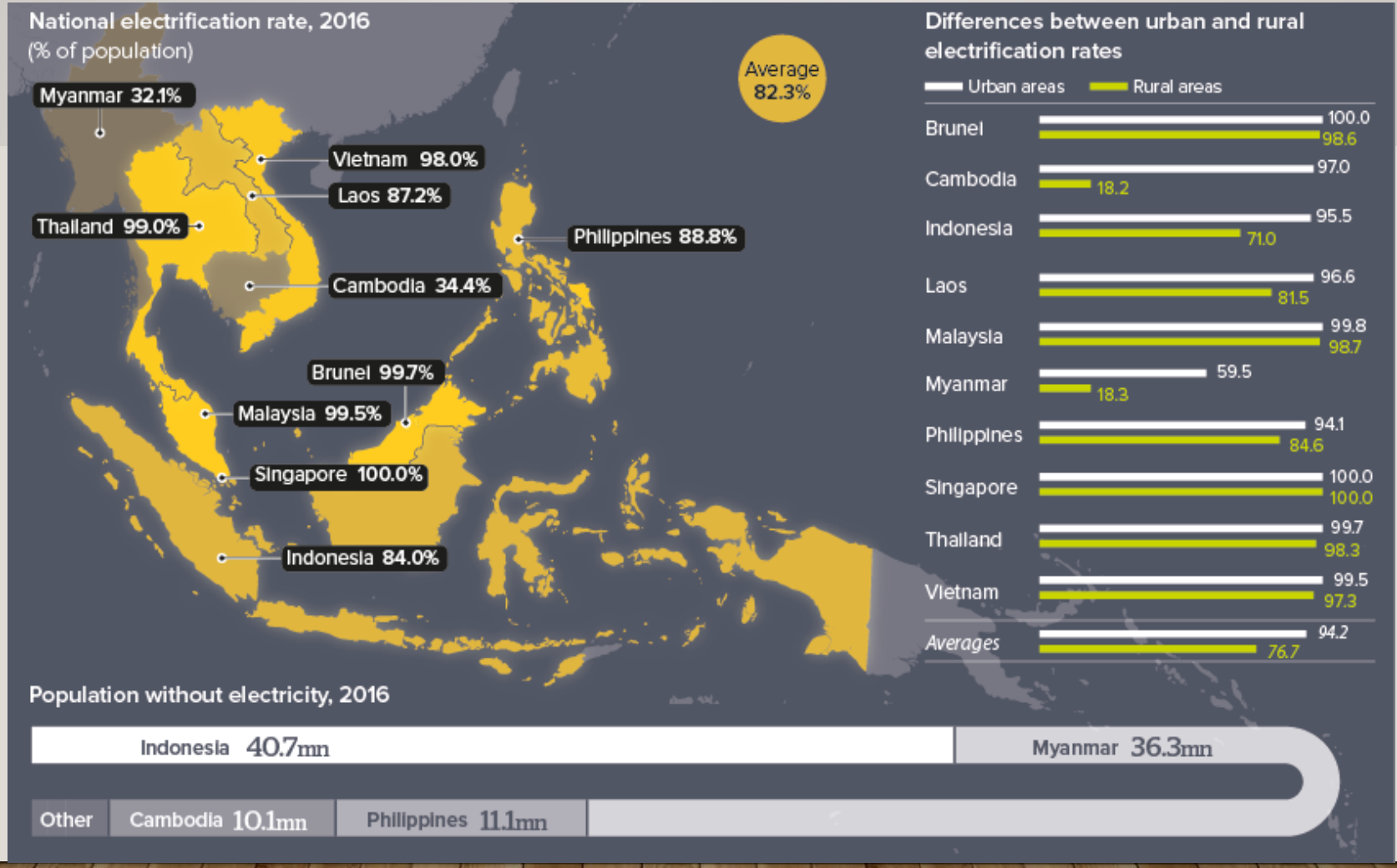
BRIEF RESEARCH SUMMARY

ELECTRIFICATION IN THE WORLD (2020)

- 850 million people have no access to electricity
  11% of 7.8 billion (total pop) / 7-times pop JAPAN
- Most live in *rural areas* of *developing countries*



ELECTRIFICATION IN SOUTH EAST (SE) ASIA



https://dailybrief.oxan.com/Analysis/GA220581/Uneven-electrification-will-affect-ASEAN-competition

PROBLEM

- Solid knowledge about:
  - Economic effects (income, productivity, etc.)
  - Technology options, applications
  - Institutional effectiveness, etc.
- Less so for social effects
  - Innovative but difficult to examine
  - Transdisciplinary (SSH tools and hard data)
- Information on SE Asia is limited
  - Myanmar and Cambodia critical contexts,
  - Indonesia/Phillipines (by population)

OBJECTIVE

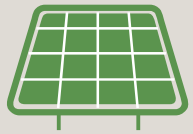
- Research objective assess electrification effects using quality of life (QoL) domains
- Focus on challenges and innovative ideas (data, frameworks, etc.) in energy-related SSH research

Detailed research content in:

- Cravioto et al. (2020) *The effects of rural electrification on quality of life: A Southeast Asian perspective.* Energies, 13, 2410

RE-QOL METHODOLOGY

1. Villages selection:
   - No electrification, similar conditions
   - Community willingness to take part in the project
2. Electrification scheme based on:



   - Geographical location and proximity to grid
   - Economic capacity in the project
3. Surveys (QoL questionnaire):

   - Prior (baseline) and after (endpoint) electrification
4. Post-collection analysis:

   - Use statistical methods to reveal differences between stages.

QOL QUANTITATIVE MEASUREMENT

No.	Category	Dimensions	Domains	Items	Type of Variable
I	Demographics	-	(1) Gender, (2) age, (3) education, (4) family type, (5) occupation	5	Nominal
II	Quality of Life	Quality of life (Self-reported and satisfaction sub-domains)	Self-reported quality of life	1	Ordinal (10p scale)
			Satisfaction sub-domains: (1) Time use, (2) time alone, (3) housing, (4) cooking, (5) personal safety	5	Ordinal (5p-likert scale)
		Psychological well-being	Self-reported mental health	1	Ordinal (5p-likert scale)
		Physical health well-being	Self-reported physical health	1	Ordinal (5p-likert scale)
		Social well-being	Perception on social support from family and friends	1	Ordinal (5p-likert scale)
		Economic well-being	(1) Feelings about personal wealth, (2) regularity of lack of money preventing activities, (3) income	3	Ordinal (5/4p scale)/Scale
III	Occupations	-	Satisfaction with (1) main activity, (2) hours of work	2	Ordinal (5p-likert scale)/Scale
IV	Time of activities	-	Total active time	1	Time scale

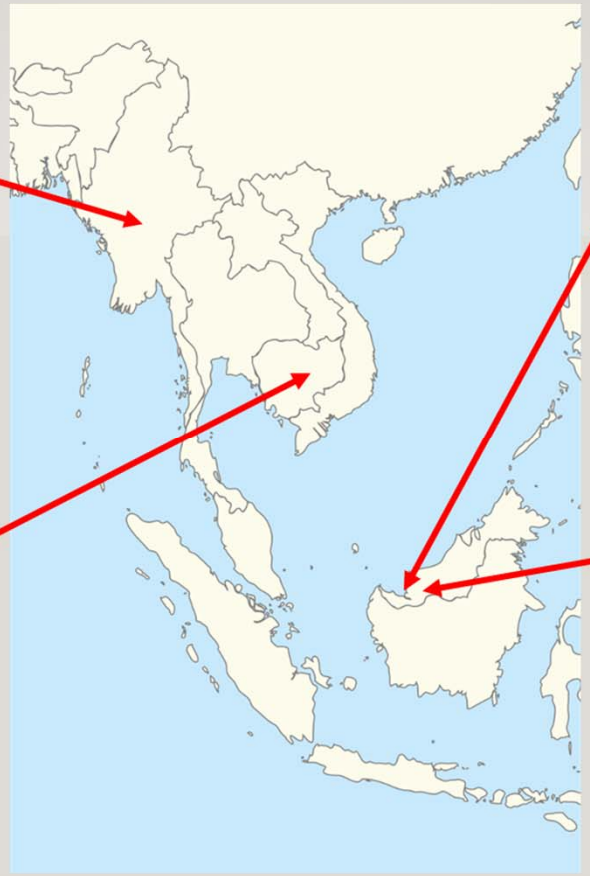
5p likert Scale: very unsatisfied (1) – very satisfied (5)

Elements from the Wisconsin Quality of Life Index (Diamond, 1999)

LOCATIONS

Oak Pho, Myanmar

Thmor Keo, Cambodia



Kampung Sungai Merah, Malaysia

Menangkin, Malaysia

- Income levels below national average
- Similar economic activities (mostly farming and fishing)
- Similar climate (tropical typical of the South-east Asian region)

SUMMARY OF FINDINGS

- Overall, electrification has positive effects on Quality of Life
- Yet, effects on specific QoL domains are positive, neutral, or negative
  - Ways of spending time and housing, no effect
  - Social well-bieng, no effect
  - Increase on inequalities (negative)
- The results only reflect short-term effects
  - longer-spans require further analysis

CHALLENGES IN THE USE OF HARD DATA IN ENERGY-RELATED SSH RESEARCH

HARD DATA AND SSH FRAMEWORKS

Diversity of Energy SSH sub-discipline lenses

- Human nature (universals/commonalities) vs differences (singularities/conflict)
- Environment: untouched vs constructed community
- Paradigms: 'developmentalist' vs 'natural embeddedness'
- Relations: symbiosis vs competition

Data types and collection methods are influenced by framework

CHALLENGES IN NEXUSES

- Complexity in the analysis
  - Diverse paths in the RE-QoL nexus (context-sensitive)
- Need for careful examination
  - Look into people priorities (ethnographies)
  - Consider alternative social interactions

    Collective systems (systems of exchange / use of objects)
  - Family life and roles

Data is context sensitive and driven by theory

COGNITIVE TRAPS
WELL-BEING DATA / QUESTIONNAIRES

1. Reluctance to admit complexity
   - Notions applied to many things
   - We have to adopt a more complicated view of well-being
2. Confusion between experience and memory
   - Being happy in your life (experience)
   - Being happy about your life (storytelling)
3. Focusing illusion
   - We can't think about any circumstance without distorting it's importance.

Quantitative data is easier to capture w questionnaires, but questionnaires have inherent limitations

OTHER CHALLENGES METHODOLOGIES

Data collection

- Limitations to interact remotely (no electricity, limited access)
- High dependency on informants/collaborators (diverse languages, community access)
- Risk of cultural bias (from researchers/informants)

Complementary methods needed?

- In-depth interview / focus groups (active local collaboration)
- Immersion & field notes (longer field work)
- Day reconstruction methods (energy diaries)

CONCLUSIONS

1. Use of hard data in the context of QoL-RE nexus
   - Create/verify theories
   - Design effective scales
   - Compare outcomes
2. Hard data in QoL domains
   1. Innovative
   2. Deepen measure of domains
   3. Identify trade-offs

1. Challenges for hard data:
   - Explore cultural meanings in detail
   - Underlying explanations of the outcomes (diverse frameworks)
2. Complexity in nexus
   - Diversity of paths in nexus
   - Diverse lenses (inequalities): gender relations, family types, occupations, stakeholders, etc.
3. Questionnaire limitations:
   - What has changed in daily life
4. Longer spans of observation

Thank you
for your attention

Jordi Cravioto
jordi.cravioto@gmail.com