Session 4.1
Strengthening Urban Resilience: Integrating Inclusive Infrastructure, Energy and Health systems

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I. Study Aims

To develop an integrated multi-disciplinary approach to strengthening urban and community resilience to climatic, biological, economic and social challenges with a focus on gender equality and social inclusion (GESI) impacts.

The country of focus will be India.
II. Rationale
III. Covid-19 Impacts

a. Electricity demand

Lockdowns are sharply reducing electricity demand

Electricity demand drops to Sunday levels under lockdown, with dramatic reductions in services and industry only partially offset by higher residential use. Service-based economies suffer the most.
Gender, Women, Vulnerable Groups

- UN: “a horrifying surge in domestic violence”
- A majority of frontline healthcare workers are women
- Social distancing measures have a large impact on female employment
- Women have increasing unpaid work burden
- Negatively affecting people with disability, severe health problems, isolated populations, elderly, etc.
IV. Infrastructure, health and gender equality

- Romania, Egypt, Malta, Azerbaijan, Cyprus, Russia, Bahrain, Iceland, New Zealand, Turkey, Serbia, Saudi Arabia, Norway, Malaysia, Greece, China, Croatia, Qatar, Oman, Ireland, Hungary, Poland, Australia, Canada

- Madagascar, Ethiopia, Guinea, Bangladesh, Kyrgyz Republic, Philippines, Mongolia, Nepal, Pakistan, Cambodia, Tajikistan, Lao PDR, Algeria, Iran, Vietnam, Jordan, Georgia, Indonesia, Thailand, India, Kazakhstan, Ecuador, Sri Lanka, Brunei Darussalam

- Israel, Finland, Portugal, Sweden, Italy, Luxembourg, Denmark, Belgium, United Arab Emirates, United Kingdom, Austria, France, Germany, Spain, Republic of Korea, Switzerland, Netherlands, Singapore

- R² = 0.58

- Non-A11B Member • Non-Regional • Regional

- Quality of Overall Infrastructure, 0-100 (best)
Figure: Correlation between Infrastructure and Health Security, in Countries with High and Low Gender Equality, 2019
V. Resilience: Guidelines, concepts

Multi-disciplinary, Multi-sectoral

OECD Guidelines

- Different types of risks, shocks and stresses -- acute shocks, seasonal shocks, and long-term stresses
- Sustainable livelihoods framework
- Six different types of capital – financial, human, natural, physical, political and social
- Three different capacities: absorptive, adaptive, and transformative
- Participatory process
Power systems resilience

Planning for Resilience: The Resilience Trilemma

- Smarter?
  - Make the network more responsive (e.g. faster restoration), self-adaptive, resourceful, etc.

- Stronger?
  - Upgrade existing infrastructure, asset life extension, etc.

- Bigger?
  - Build new infrastructure, e.g. transmission lines, substations, etc.

Need for advanced mathematical modelling (simulation and optimization)

VI. Community Resilience: Some criteria

- Household employment & income
- Access to information and communication
- Early warning systems & shelters
- Local skilled labor
- Access to backup local power generation
- Ongoing operation of & access to health facilities
- Access to water & sanitation, transport, healthcare, food and housing.
- Capacity of local government institutions
Take-Aways

➢ Being better prepared & learning how to become more resilient, is a more viable long-term option than waiting for disasters to occur.

➢ The Covid-19 pandemic has shown the importance of multi-sectoral approaches required for building resilience.

➢ Preparedness requires an integrated approach that combines infrastructure, service delivery and population response initiatives.

➢ Resilience depends on the capacity of government to provide effective leadership & to develop appropriate strategies & policies.
Thank you!
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