ABSTRACT SUBMISSION

Title: Infrastructure Networks, Climate Adaptation and Hotspots - Researching the Interconnections, Exploring Adaptation

Abstract No. 1712

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Abstract

Aim and scope of the INCAH program is to provide strategic but scientifically underpinned intelligence on the interconnection between climate change, hotspots, infrastructures and governance for adaptation. INCAH is a four year research program encompassing 12 projects in 4 work packages. The focus is on transport, energy and water networks. Case studies focus on infrastructure in the Rotterdam-Rijnmond and Amsterdam/Schiphol Mainport, with the objective to contribute to robust adaptation strategies.

In the *research* we use a socio-technical systems approach to bring together and advance knowledge from multiple domains to analyze climate change effects and to develop adaptation strategies. Thus, we (1) establish what climate change effects will impact which infrastructures, (2) construct models to simulate effects on the operation of single and interconnected infrastructures, their reliability, availability, capacity and socio-economic productivity and (3) adopt a complex systems perspective to investigate how to "grow" resilient infrastructure networks -- networks where the reinforcing effects of single or multiple links failing are contained to prevent system breakdown and crisis due to effects rippling through interconnected infrastructures

Results include models of infrastructure networks to test policies, strategies and governance for adaptation of infrastructure components, asset management and network design. Simulation is used to assess whether these measures provide robustness and resilience to climate change and help to explore what change of institutional structures, governance and decision making may be required. Currently, an agent-based model of the Dutch electricity system is being developed. A transport network model for Amsterdam is in development and will be connected to the electricity model to explore infrastructure interdependency. Furthermore, we model cooling water availability for thermal power plants to assess electricity supply reliability and economics. In the presentation, these models and results obtained will be elaborated, and their usability for decision support on infrastructure adaptation to climate change discussed.

Approval Confirm

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Categories 0348-2-B-Infrastructure Systems

Keyword1 Infrastructure networks

Keyword2 Climate adaptation

Keyword3 Agent-based models

Keyword4 Socio-technical systems

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