Review of: "Successful Community Infrastructure Risk Management in a Decarbonized Future"

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Potential competing interests: No potential competing interests to declare.

The paper proposes an ambitious plan for effectively managing the shift towards a carbon-free economy by utilizing a system of systems (SoS) methodology. Hay contends that the intricate nature of community transitions and the unforeseen dangers linked to decarbonization necessitate a transition from conventional asset-focused planning to a more comprehensive and interconnected viewpoint. This research highlights the significance of involving stakeholders, building social connections, and fostering a common understanding of infrastructure systems.

Advantages of the paper: The SoS method recognizes the interconnectedness of community infrastructure and advocates for a thorough comprehension of their worth and functionality. Emphasizing the importance of community engagement and ownership in successful transitions is a notable advantage, promoting the need for more inclusive and participatory planning procedures. The concept of integrating data models across natural, physical, and virtual domains to enhance planning and decision-making is an innovative and potentially revolutionary approach.

Obstacles or hindrances that impede progress or success

The main challenge of the SoS technique lies in its complexity when applied in real-world scenarios. Effectively managing and coordinating a wide array of stakeholders, each with its own distinct priorities and limitations, may be an exceedingly difficult task. For numerous communities, particularly those with low resources, the practicality of coordinating these interests and upholding a collective vision may be unfeasible. Additionally, the SoS technique requires a significant allocation of time, specialized knowledge, and financial resources. Smaller towns or underdeveloped regions may struggle to gather the required resources to implement and maintain such an approach, which could result in uneven implementation and benefits. Although systems thinking is essential for tackling the intricacy of contemporary problems, its practical implementation can be intimidating. The paper fails to fully acknowledge the challenges involved in transitioning from standard linear models to a dynamic, systems-oriented approach. This transition necessitates substantial alterations in thinking and practices, which may prove challenging to accomplish for all stakeholders. The given theoretical notions, such as the common reference model and vitae system of systems (VSOS), although original, may seem abstract and detached from actual, real-world situations. Practitioners may have difficulties in converting these abstract concepts into practical measures that are applicable to their own local circumstances. Achieving quantifiable and easily observable advancement in the process of community transition, preferably with external verification, is essential. Nevertheless, the report does not provide thorough instructions on how to develop uniform criteria and approaches for evaluating advancement and achievement in various communities and initiatives. This discrepancy has the potential to

result in incongruities and challenges when evaluating the efficacy of the suggested methods. Smaller governments and organizations may find the entire SoS strategy overwhelming, which could cause them to skip or insufficiently carry out the essential reforms. This has the potential to worsen the disparities between communities that have many resources and those that have fewer resources in their capacity to shift efficiently.

Conclusion:

The study presents a forward-thinking approach for effectively managing community transitions towards a future that is free from carbon emissions. Although it excels in promoting a comprehensive, system-oriented strategy and highlighting the significance of social capital, it nevertheless encounters substantial practical and operational obstacles. The intricacy of coordinating several parties, the resource-intensive nature of the approach, and the possibility of excessively complicated solutions are significant disadvantages. Furthermore, the article might be further enhanced by providing more specific instructions on measurement and independent validation, as well as addressing any assumptions made regarding stakeholder engagement. Hay's work is a significant contribution to the current discussion on sustainable community development and infrastructure design, despite the problems it faces. It stimulates significant conversations over strategies for effectively handling the hazards and intricacies associated with the shift towards a decarbonized economy.