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Renewable Energy Systems Co-Benefits Assessment Tool (RES-CAT)

Over the past several decades, research has increasingly highlighted that investments in renewable energy can simultaneously generate a wide range of environmental, economic, and social benefits**.** These benefits, often referred to as co-benefits, include improved air quality, better public health, employment opportunities, enhanced energy security, and local economic development. Recognizing these broader outcomes provides a more comprehensive perspective on the value of renewable energy, particularly when the costs and benefits of climate action are evaluated over different spatial and temporal scales. However, assessing renewable energy co-benefits in practice remains challenging.

Professor Hooman Fazraneh and his team at the Energy and Environmental Systems (EES) Laboratory at the Interdisciplinary Graduate School of Engineering Sciences (IGSES) have developed the Renewable Energy Systems Co-benefits Assessment Tool (RES-CAT), which provides an integrated framework for assessing the multiple co-benefits associated with renewable energy deployment across environmental, economic, and social dimensions. By bringing these dimensions together within a single assessment framework, RES-CAT enables users to quantify and compare the broader impacts of renewable energy systems and supports more informed and holistic decision-making. The development of this tool was financially supported by the Institute for Global Environmental Strategies (IGES) through a Wellcome Trust-funded project entitled "Leveraging Co-benefits for Healthy Net-Zero Transitions in Japanese and Other G7 Cities: A Scalable Approach for Transformative Change."

Reference:
Suliman M., Farzaneh H., Zusman E., Mulumba A., Lestar P., Permadi P.A. and Janardhanan N. (2024). Quantifying the Climate Co-Benefits of Hybrid Renewable Power Generation in Indonesia: A Multi-Regional and Technological Assessment, Climate, 12(2), 23

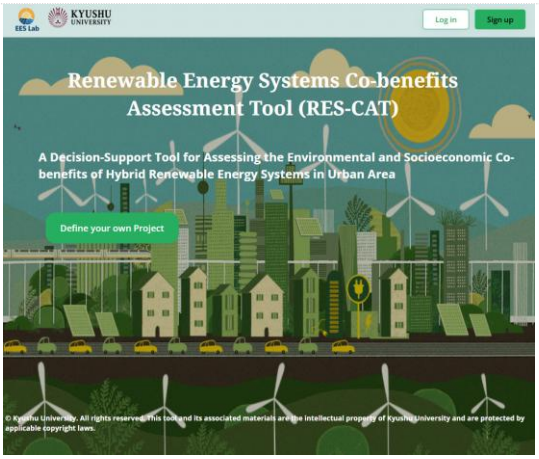

Fig. 1. RES-CAT web-based tool

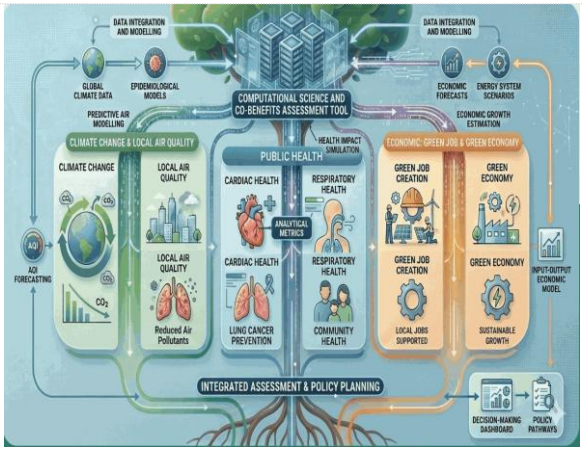

Fig. 2. RES-CAT modeling framework

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