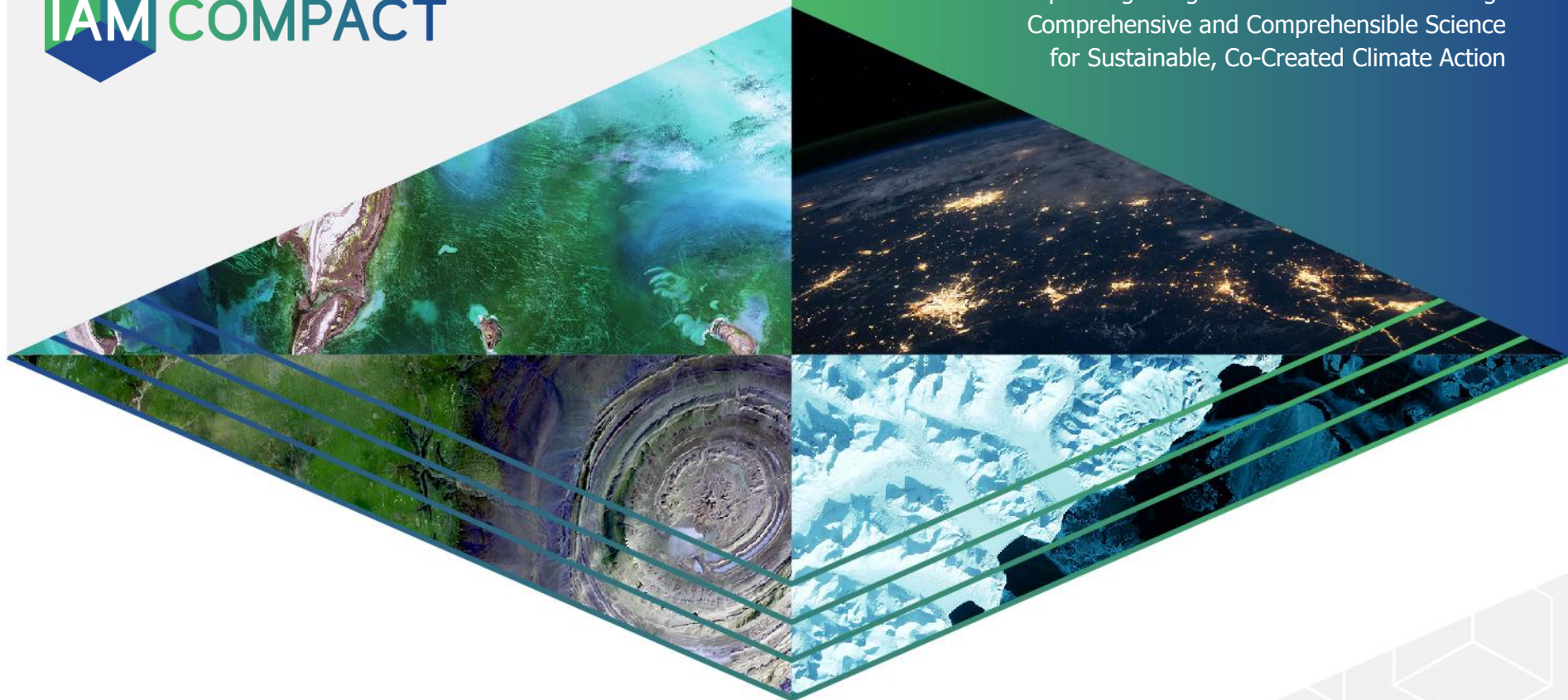




Expanding Integrated Assessment Modelling:
Comprehensive and Comprehensible Science
for Sustainable, Co-Created Climate Action



Responsive science in support of climate policymaking
IAM COMPACT Final Conference, Athens, 29 August 2025

Capacity building in Kenyan academia

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Focus on broadening the capacity base for integrated assessment modelling

- ❑ **Who:** led by the Renewable Energy & Climate Change Research Center @ Technical University of Mombasa.
- ❑ **What:** grassroot capacity broadening for climate, land, energy, water systems (CLEWs) modelling.
- ❑ **How:** on-the-job training for trainers, modelling, courses in university.



A four-day workshop on integrated assessment modelling and its use, to a large extent for a group of students from TUM, in August 2023 and Kenyan stakeholders.



❑ **Grassroot capacity broadening** for climate, land, energy, water systems (CLEWs) modelling.

- **The approach:** needs-based, locally-led, locally-owned and locally-linked capacity development
- Expanding upon existing initiatives;
- Focussing on training for students, at Technical University of Mombasa, Meru University and Strathmore University;
- Stakeholder engagement (via a policy steering group);



- ❑ On-the-job **training for trainers**, modelling, courses in university.
 - A student from TUM completed a journey from learning how to use CLEWs to becoming a trainer at international events and teacher of students from 3 Kenyan Universities;
 - The same **trainer** will now start, a new modelling course at the Renewable Energy & Climate Change Research Center@TUM, mostly for students at Technical University of Mombasa (with interest by Strathmore and Kisii);
 - The same trainer has led the preparation of ***Kenya-CLEWs national model infrastructure***, in collaboration with partners, to result in publications and policy briefs.



- **What:** A model using the OSeMOSYS tool
- **Who:** TUM – Technical University of Mumbasa
- **How:** developed in a span of 2 years with 2 versions (D6.7 & D6.8)
- **Why:** assess Kenya's energy transition while safeguarding water resources and supporting sustainable land management

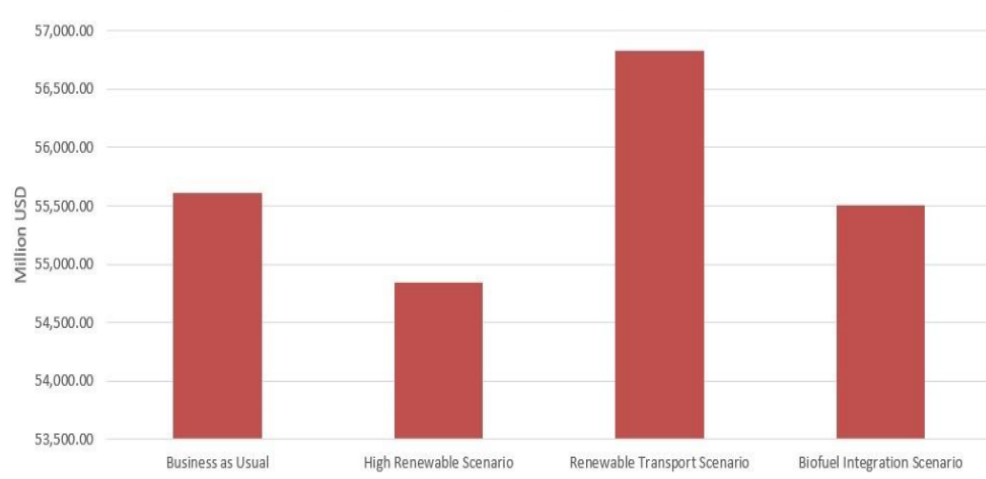


Name	Description
BAU – Business As Usual	The model follows Kenya's current growth trends with current implemented policies. • Emphasis on the implementation of policies on Coal and Nuclear powerplants by 2030 and 2034 respectively. • Implementation of afforestation targets set; 15 billion trees by 2032.
High Renewable	Rescinding of implementation of Coal and Nuclear in prioritisation of renewables. Afforestation targets remain the same as the Business as usual scenario.
Biofuel Integration	In the Biofuel Integration Scenario, the model explores the use of crop waste to produce biofuels. This impacts both emissions and energy production.
Renewable Transport	This scenario explores the electrification of the transport sector to reduce dependency on fossil fuels. Due to high renewable percentage in the energy mix it aims to reduce emissions to meet NDC targets. No intervention in Land or other energy policies

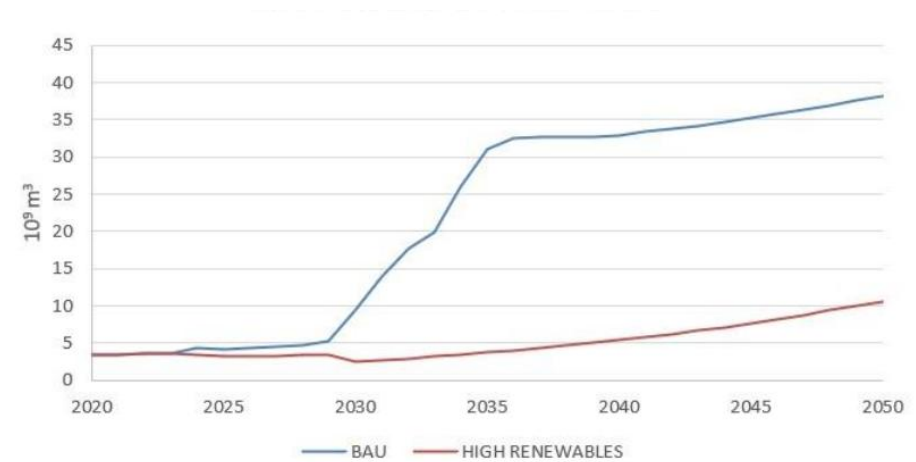


□ Key Results and Insights:

- **High Renewable** Scenario proved to be the least-cost option, the least climate and water intensive
- **Biofuels Integration:** Using crop waste reduces methane emissions and supports local energy access
- **Transport Electrification:** Increases electricity demand but reduces oil dependence.
- **Afforestation (30% tree cover by 2050):** Expanding forest cover would allow for higher carbon sequestration contributing greatly to Kenya's NDC target



Cumulative costs comparison



Water demand in power sector





For Kenya to achieve its NDC targets, a mix of **policy actions is required**. Some, such as forest cover expansion, are already underway, while others, such as coal and nuclear power plant development, should be reconsidered. **Given its vast renewable energy potential, Kenya would benefit from prioritizing renewables**, which are more cost-effective and less climate and resource-intensive in the long term. Considering Kenya's diversified energy mix would the country can mitigate intermittency challenges and enhance energy security.





Thank you!

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