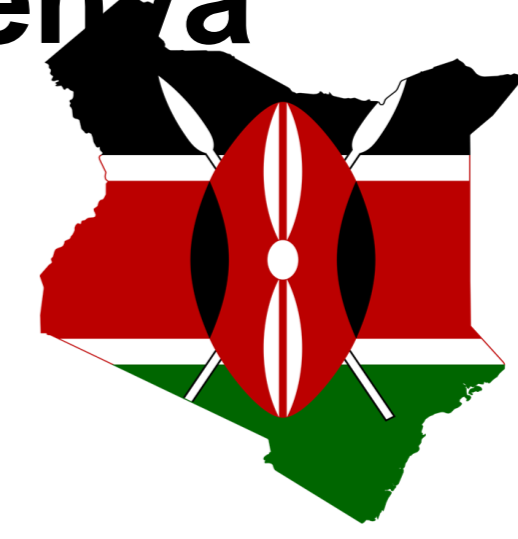


ICTP JOINT SUMMER SCHOOL FOR SUSTAINABLE DEVELOPMENT | 2023

Modelling the Impacts of Accelerated Urbanization and Clean Energy Access on Energy Demand in Taita Taveta County, Kenya

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1. Context

Indicator	Value in 2019
Population	340,671
Area	17,084 km ²
GDP (USD Million)	467.10
Electricity Access	99% Urban, 69% Rural
Clean Energy Access	17%
Urban Population	27.53%
Persons/Urban Household	3.5

2. Aim

The purpose of the study is to investigate the impacts of accelerated urbanization and obtaining clean energy access in urban areas.

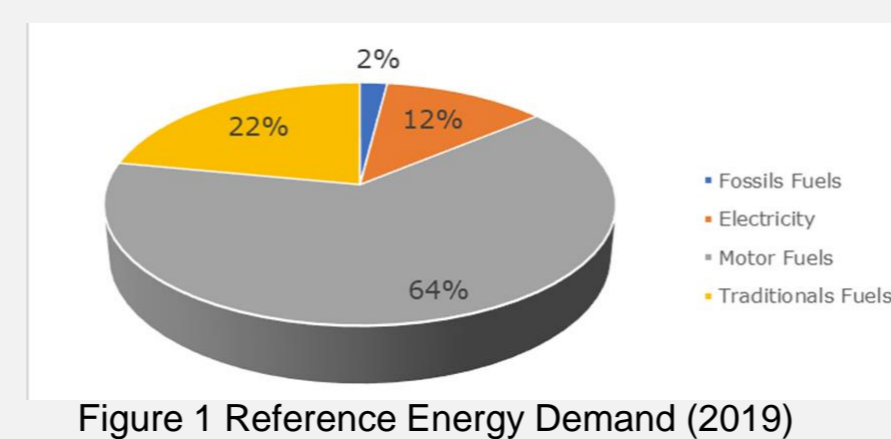


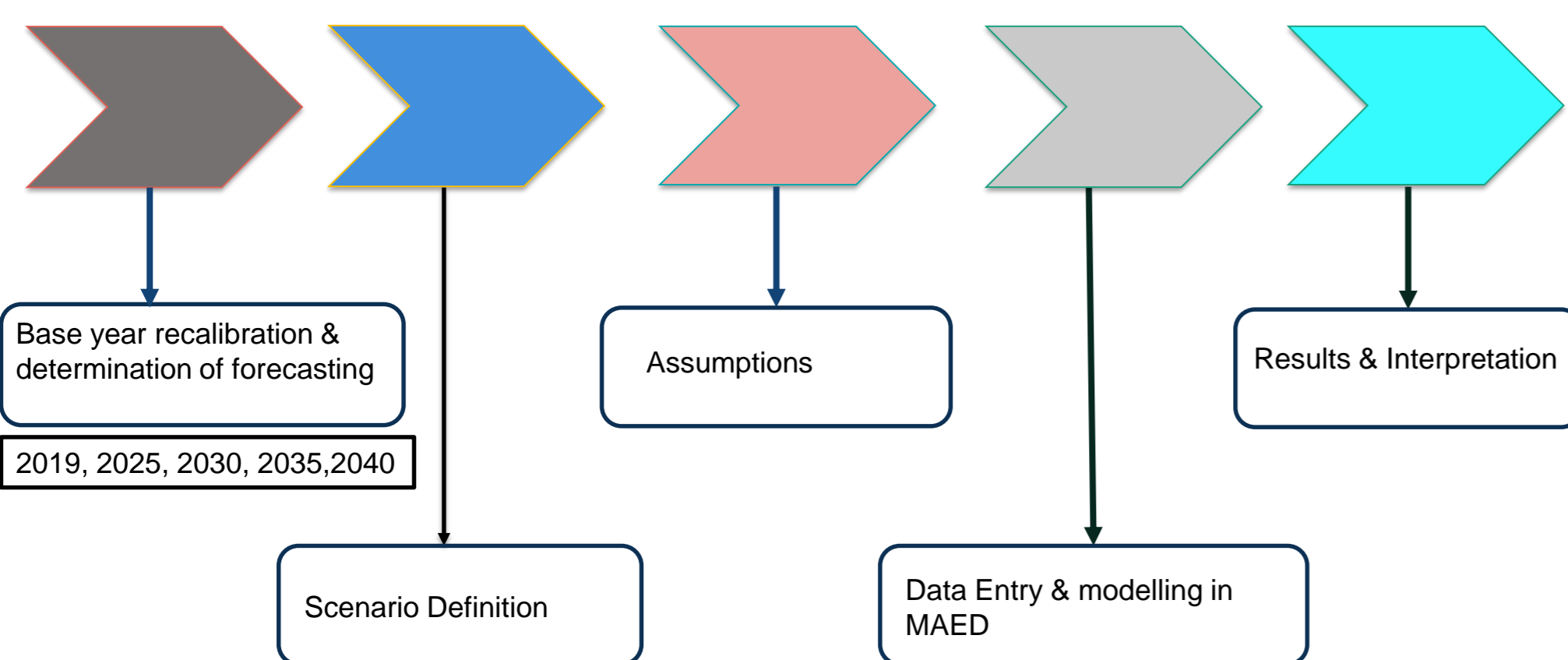
Figure 1 Reference Energy Demand (2019)



Figure 2: A map of Taita Taveta County (shaded green)

3. Methods & Scenarios

Methodology



Scenarios

Base Scenario

Key Assumptions

- Business As Usual Scenario
- Moderate growth in GDP and Population based on historical trends.
- Moderate adoption of modern clean cooking services.
- Moderate Urbanization based on historical trends

Accelerated Urbanization with Clean Energy Access

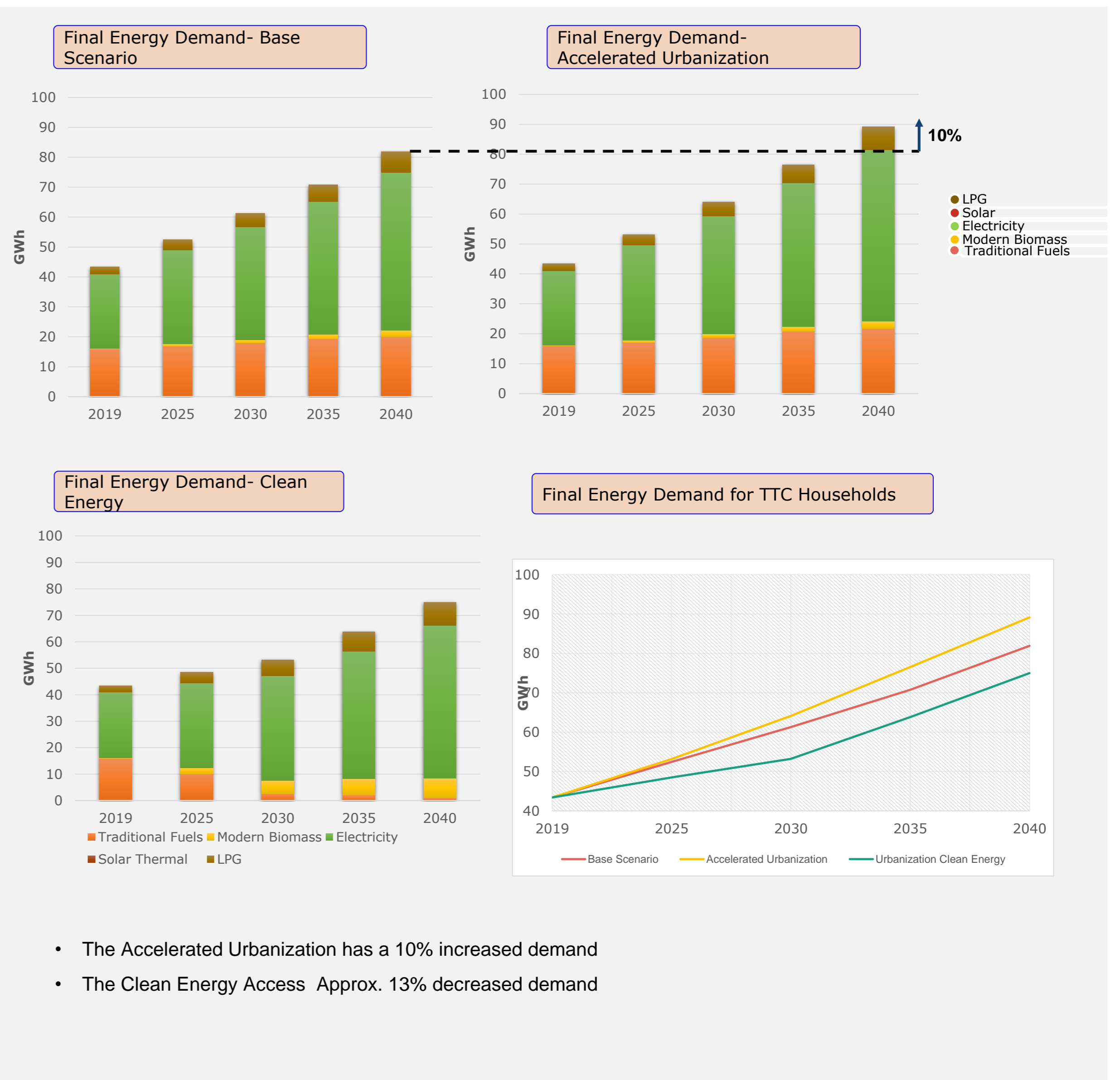
Accelerated Urbanization

- Moderate growth in GDP and Population based on historical trends.
- Moderate adoption of modern clean cooking services.
- Accelerated Urbanization. Achieve the 50% urbanization by 2050.

Accelerated Urbanization +Clean Energy

- Same assumptions as accelerated Urbanization case
- Achieve the Kenya NDC of Universal Access to Clean Cooking by 2030 (90% Clean Cooking)
- High Penetration of Modern Biomass
- Moderate Penetration of E-cooking

4. Results



5. Policy insights, conclusions and future work

Conclusions:

- Utilization of Clean energy is more efficient.
- The high urbanization rate calls for better energy demand management and Planning.
- Adoption of renewable and decentralized energy solutions is Key in achieving Universal Clean Energy
- Data driven policy development is crucial.

Policy insights:

- Fiscal incentives should be put in place to promote the uptake of modern clean energy
- Realistic implementation framework to achieve government NDCs, Vision 2030, and other Targets
- Promote investments in Renewable Energy

Future work:

- Using official data from various sectors to improve the model.
- Advanced Modelling of the Household Sector to include the Rural Sector
- Integration of MAED tool in research and teaching
- Support Taita Taveta County government in decision making

6. References

- [1] SDG7 energy compact of kenya on Clean Cooking Energy a next decade ... (no date) UN. Available at: https://www.un.org/sites/un2.un.org/files/2021/11/kenya_clean_cooking_energy_compact_08_november_2021.pdf (Accessed: 12 July 2023).
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A Cost-benefit analysis of Policy, Programs and Projects (C3PO) that is Retrievable, Reusable, Repeatable, Reconstructible, Interoperable and Auditable (u4RIA)