Transitions Pathways and Risk Analysis for Climate Change Mitigation and Adaptation Strategies

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TRANSITION PATHWAYS AND RISK ANALYSIS FOR CLIMATE CHANGE POLICIES

The potential to implement Kenya's INDC

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'Assessing mitigation pathway risk and uncertainty: case studies in the Netherlands, Kenya and Chile'

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PURPOSE

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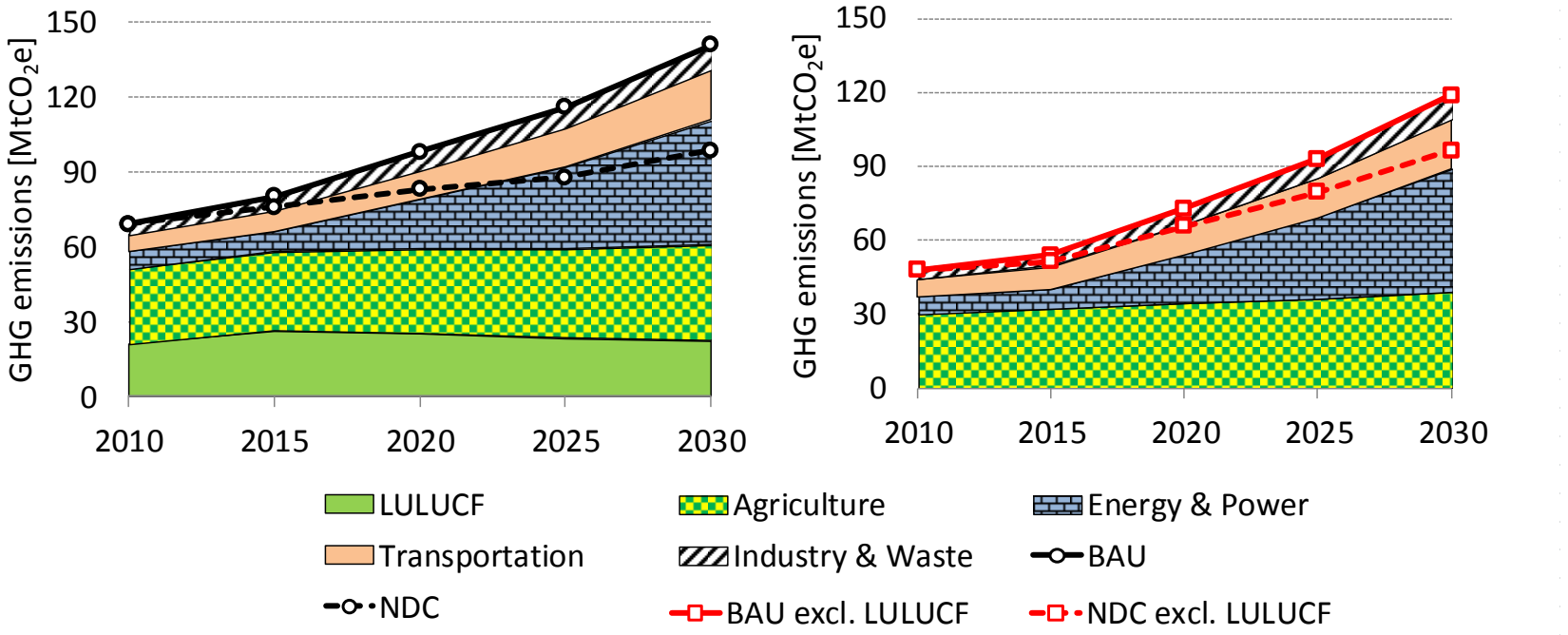
Provide a sample of our scenario analysis results which complement ongoing broader research in Kenya

Purpose of the analysis:

- Explore the necessity of large-scale RE deployment with respect to Kenya's GHG abatement ambitions (INDC):
  - Focus on power and energy demand sectors

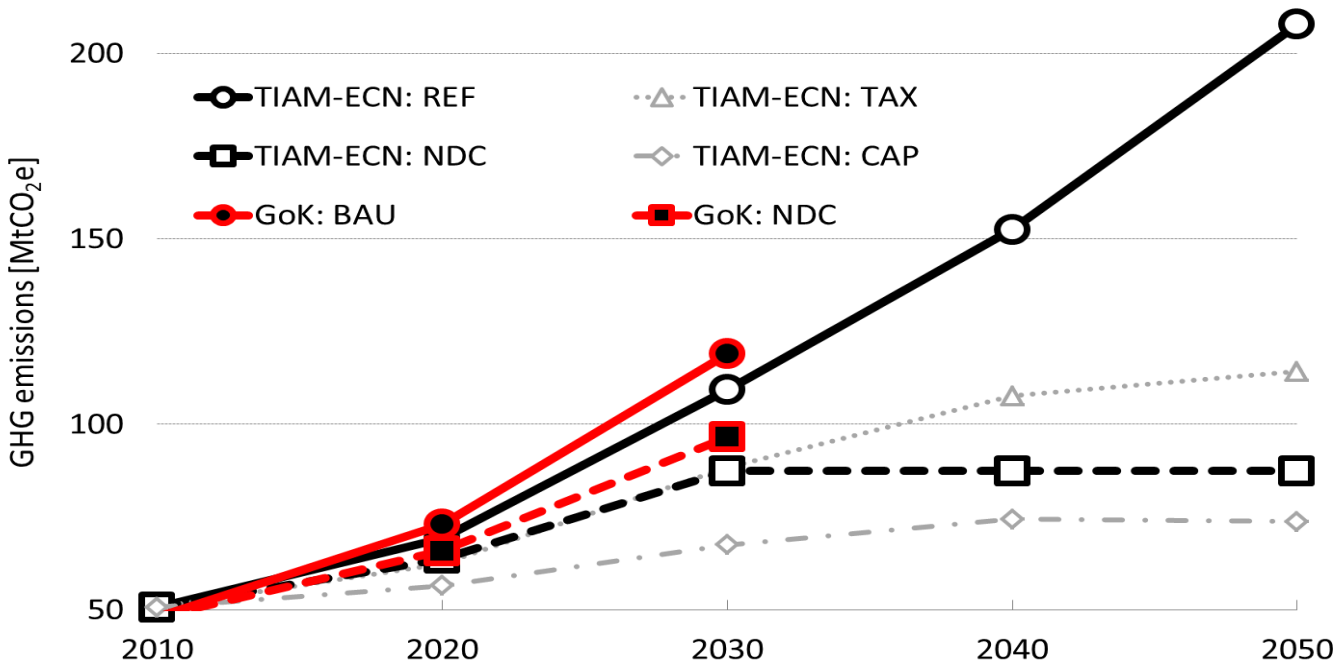
- Compare the Kenya INDC emissions projection with a range of climate policy scenarios up to 2030; make projections beyond to 2050.

KENYA'S INDC



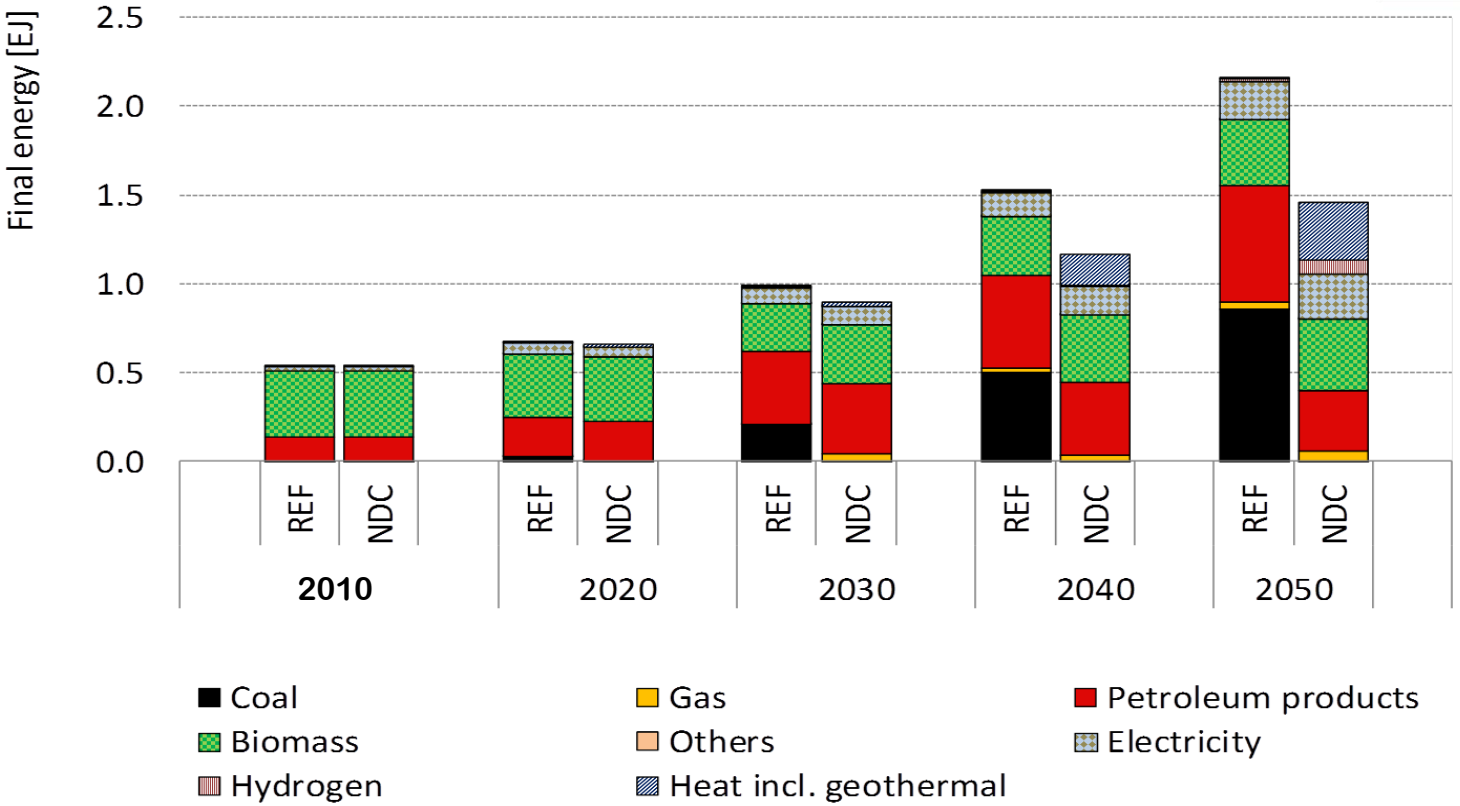
- Kenya's BAU emissions projections from the Second National Communication
- Uncertainty in LULUCF data, thus excluded from our analysis (right hand chart)
- 30% emissions reduction compared to BAU in INDC; 20% reduction excl. LULUCF
- We focus on blue area in our analysis – energy and power sector

Emission Trajectories: All Scenarios



- Scenarios from global TIAM-ECN work. Starting point for other scenarios relevant to Kenya
- 20% emissions reduction in *TIAM-ECN: NDC* scenario excl. LULUCF (30% reduction in Kenya INDC)
- INDC target plausible from an energy system and cost-optimality perspective
- Additional costs in 2050 of US$16 bln annually in NDC scenario (Kenya GDP (2015) is 63 bln US$)

Results:
Final energy consumption [EJ]



- Energy consumption currently dominated by use of biomass and oil (imported)
- In REF scenario (no GHG mitigation policies) mostly coal and oil products
- In NDC scenario coal and nuclear constrained; large role for Geothermal and Biomass

Why is biomass and charcoal important in Kenya?

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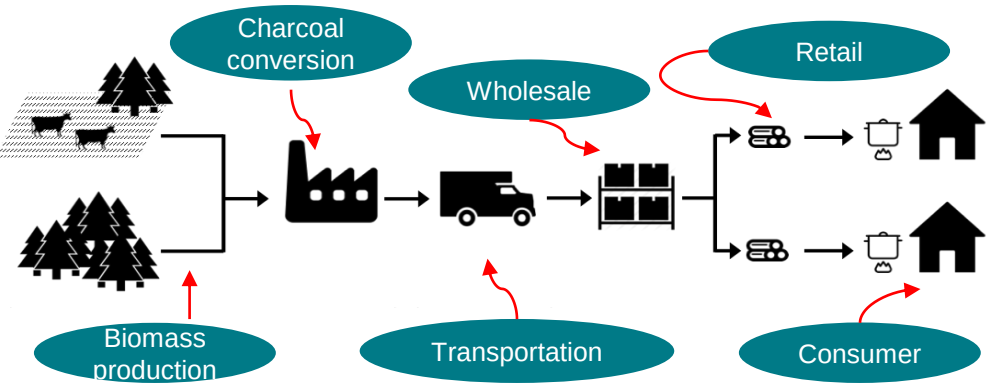
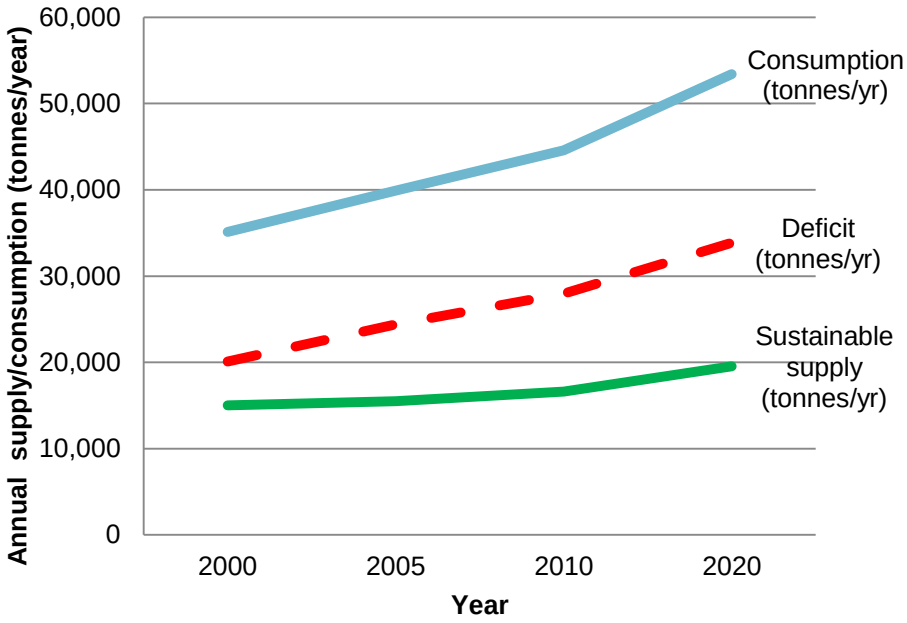
- Wood and charcoal is estimated at 68% of final energy consumption
- Charcoal consumption is much higher than sustainable supply
- GHG emissions reduction opportunities in value chain, but it is complex



Projected annual biomass (wood & charcoal) energy consumption and supply



What are the incentives for change for actors in the value chain?

How can actors and networks support innovation towards sustainable charcoal?

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Graphic: *Oliver Johnson*
Chart: *Ministry for Environment, Water and Natural Resources*

KEY MESSAGES

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- Kenya's NDC target is achievable with a timely deployment of RE; deeper emission reductions possible
- Complex and challenging societal shift going beyond energy sector e.g. sustainable charcoal

Charcoal production technologies: brick kiln, traditional earth kiln and improved earth kiln respectively

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Next steps/open questions

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- How could Kenya attract private capital to finance INDC implementation? What support other than financial is needed? Who should provide this support?

- What other factors should we be considering in our scenarios and case study?

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