Africa LEDS project: achievements & next steps – component 2

Presentation for (Kenya)

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Background of Kenya modeling actions

What modeling in the country entails?

- **The overall objective of the project was to assist partner African countries establish requisite modelling & analytical capacity to inform concrete LEDS policies and plans and their implementation for prioritized low emission, climate-resilient, and resource efficient socio-economic development consistent with Nationally Determined Contributions (NDCs) & other LEDS plans.**

Background of Kenya modeling actions

What it intends to achieve?

- **Training and demonstrating use of modelling & analytical tools to inform long term LEDS policy decisions and their implementation to actualize LED priorities as encapsulated in the country NDCs and LEDS plans**

- **Quantifying and assessing socio-economic impacts of mitigation options with a view to informing the policy-making process**

- **Transferring relevant modelling technologies / suit of models**

Background Kenya of modeling actions

- **clean cooking solutions (Improved cook stoves) under the Energy sector and Agro-forestry under AFOLU were selected as priority areas for modelling socio-economic impacts.**

- **LEAP tool was used to assess mitigation benefits of clean cooking solutions**

- **while Abacus model was use to examine the socio-economic gains of ensuring 10% agro forestry in Kenya.**

KENYA –CLEAN COOKING MODEL

Explain how the integrated model was built

- *Modelling Clean cooking solutions*:-biomass remains the dominant energy source in Kenya. Its use has greatly undermined national action on mitigation of climate change.

- The energy policy draft of 2015 and the energy bill of 2015 also calls for replacement of solid fuels with non-solid fuels. We build this forecast supported by NDC & NCCAP 2018/2022 targets and extend the forecast to 2030 by the use of LEAP tool to assess mitigation benefits.

Modelling Clean cooking solutions

The NDC on energy focuses on :

- **Improve energy efficiency and energy conservation**

- **Promote the transition to clean cooking with alternative fuels, such as liquefied petroleum gas (LPG), ethanol and other clean fuels in urban areas**

- **Encourage the uptake of clean biomass (charcoal and wood) cookstoves and alternatives in rural areas**

Clean cooking solutions- Moving from old to new technology

Ministry of Environment and Forestry- CCD-
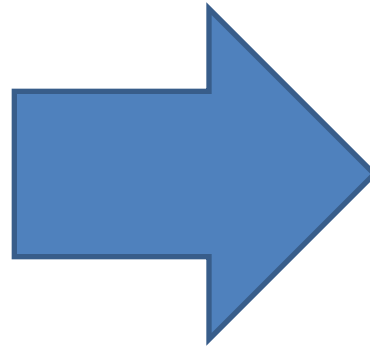
Modelling Clean cooking solutions

- **Modelled scenarios included, business as usual scenario, improved energy efficiency, energy transition and combined scenario (energy efficiency and energy transition).**

KENYA –AGROFORESTRY MODEL

- ***Modelling Agroforestry*** : We investigated the 10% agricultural land transformation as stipulated in the agricultural land act of Kenya 2009. Section five of the agricultural act requires 10% of land under farm forestry and the Kenya intended nationally determined contribution requires atleast 10% forest cover by 2030.We used Abacus model to examine the socio-economic gains of ensuring 10% agro forestry in Kenya.

Achievement-KENYA CLEAN COOKING SOLUTIONS MODEL


Projected household energy demand
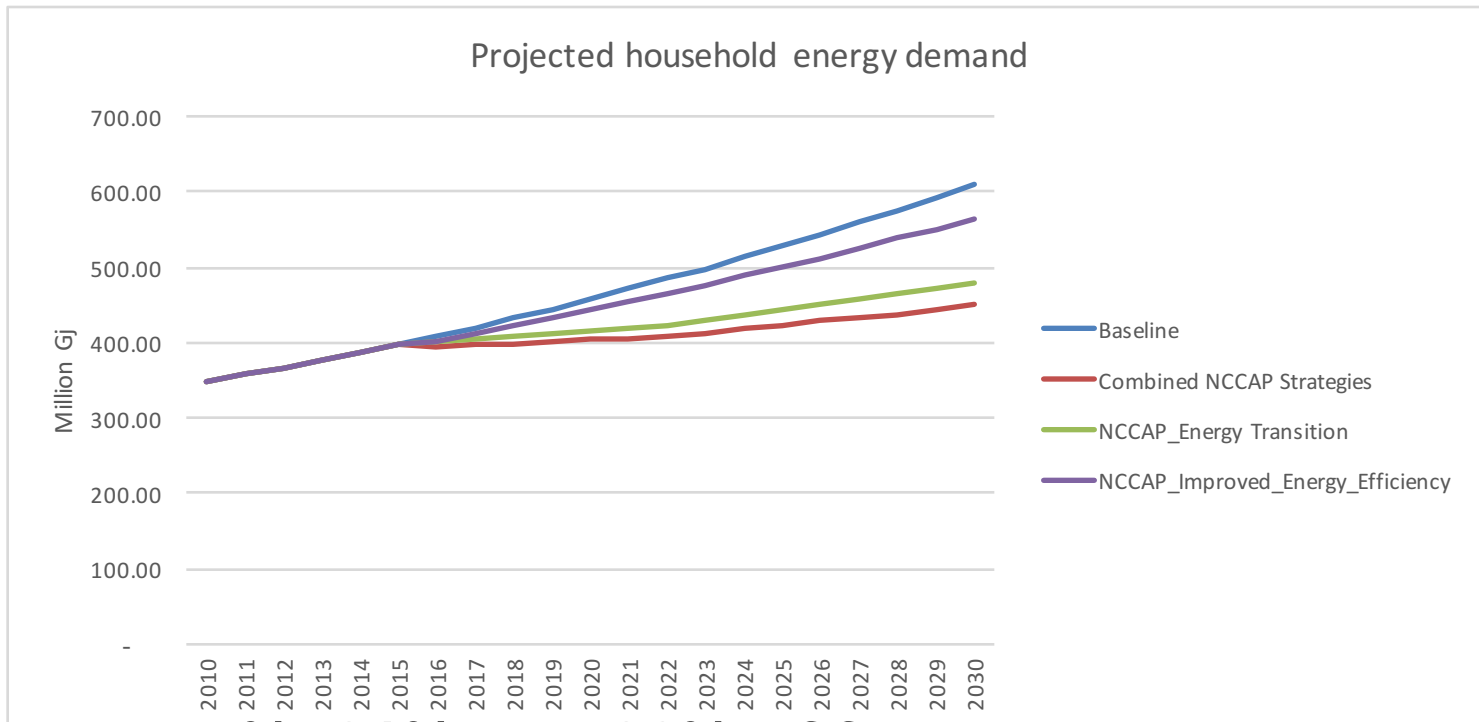
about 7%, 21% and 26% of final energy shall be saved from the baseline in deploying energy efficiency measure, transition to LPG and combined efficiency and transition scenarios respectively

# ACHIEVEMENT-Energy demand reduced-cost Savings and increasing incomes
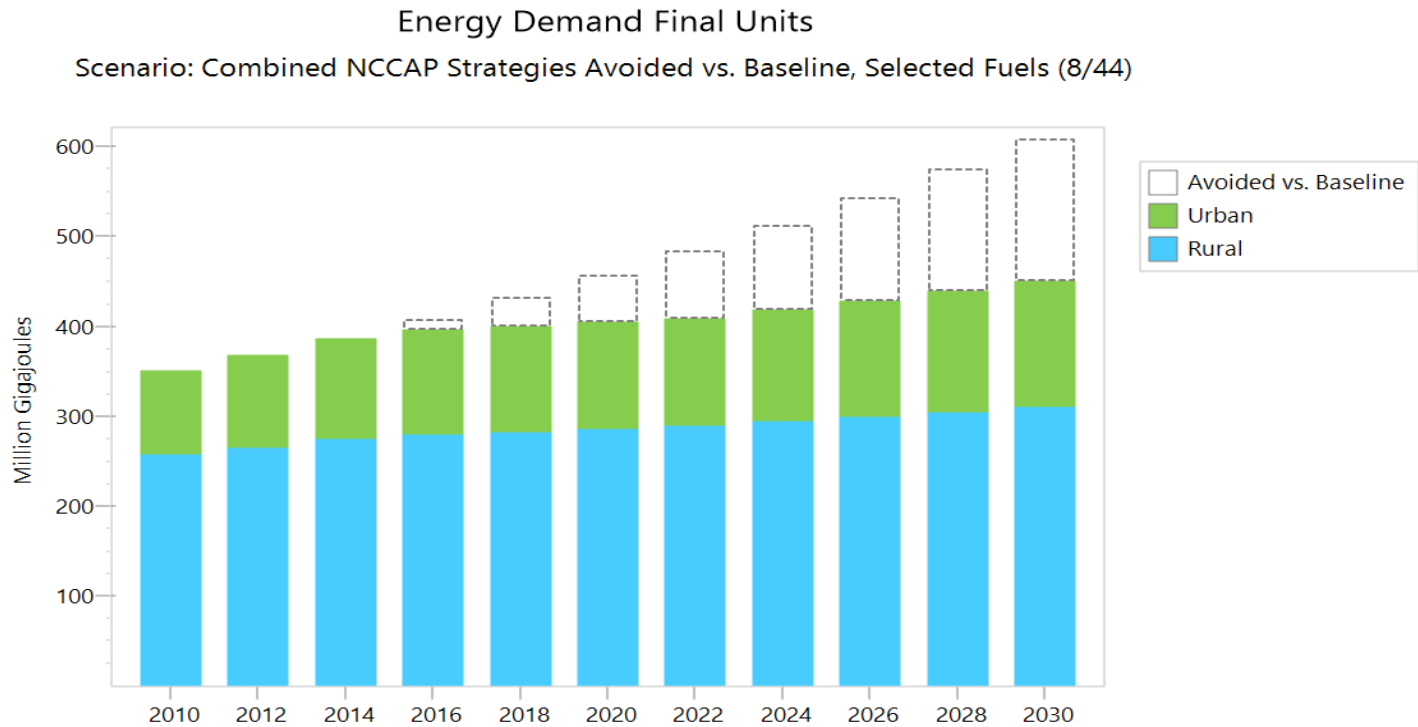
Energy demand avoided Vs Baseline(screenshot): Final demand shall decrease from *609 million* gigajoules to *450 million* gigajoules if all the proposed interventions are implemented.

Wood and charcoal demand reduced- saving our forest and cost savings.
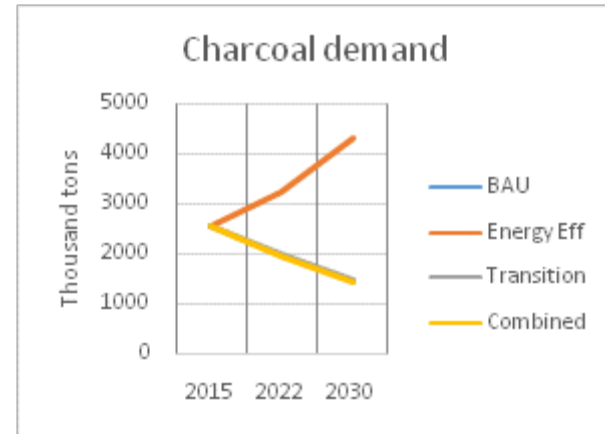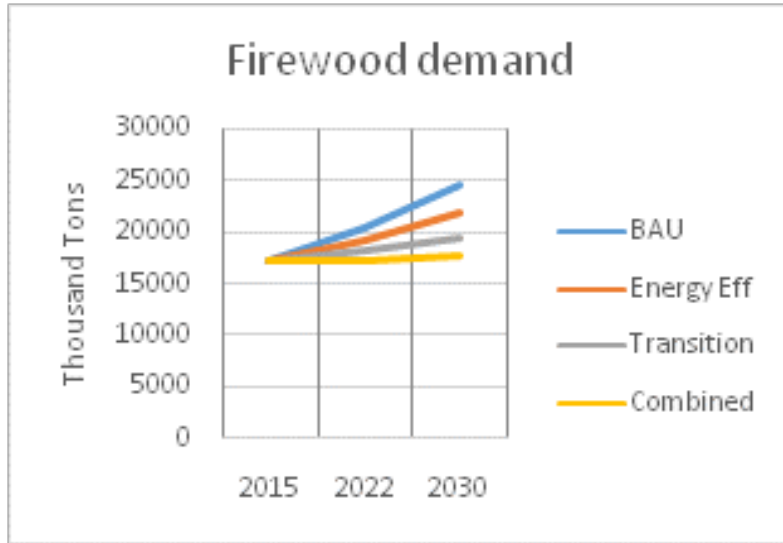
when the NCCAP combined intervention if implemented results to a reduction of **11.8 million** tons of wood biomass in 2022 and **26 million** tons in 2030

GHG emissions abated- achieving NDC targets

GHG Mitigation from Emission sources
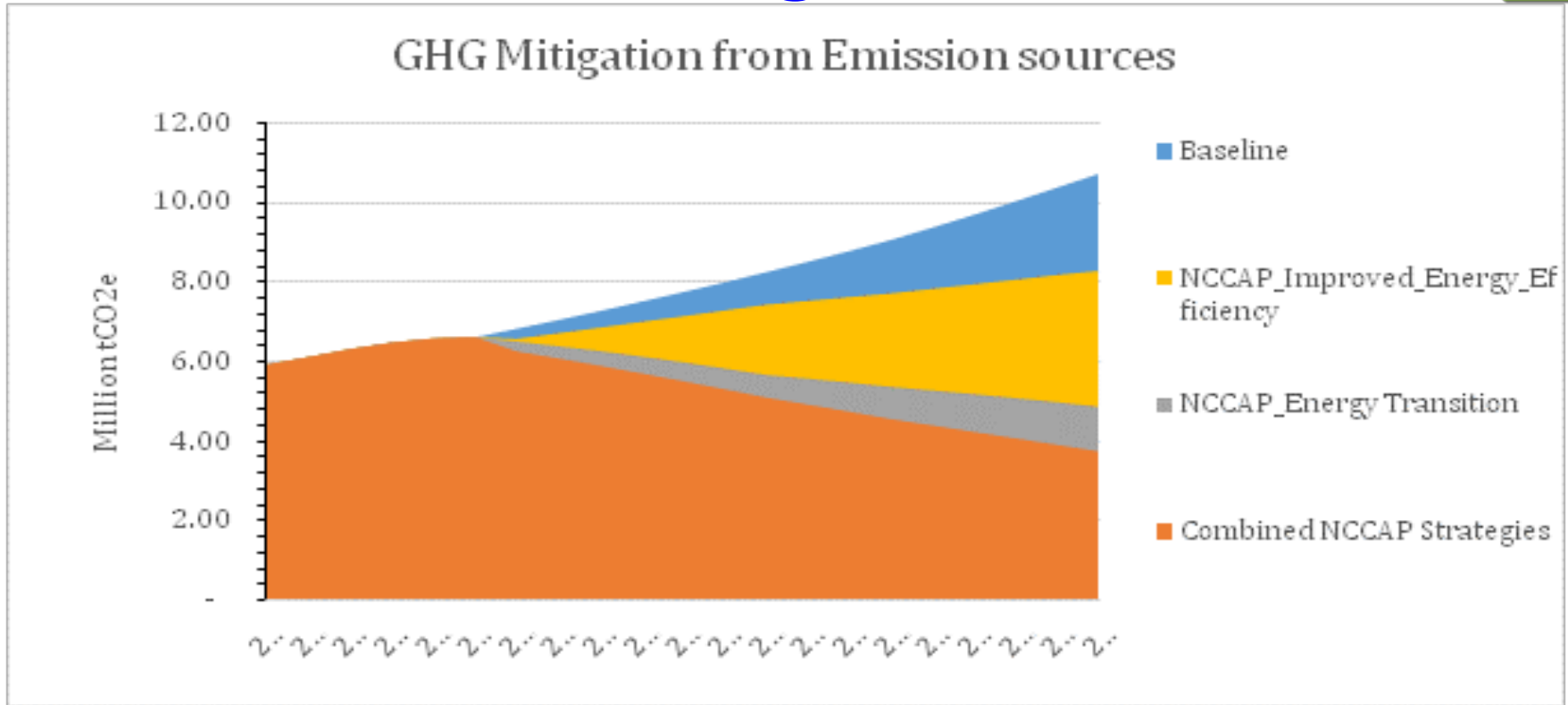
Clean cooking mitigation action shall result to about **2.6 million** tCO2 equivalent and **7million tCO2** equivalent reduction in 2022 and 2030 respectively in the combined mitigation strategies- helping the country towards achieving its NDC. In the energy demand, the NCCAP target to reduce **6.09 MtCO$_2$** by 2030.

Clean-cooking solutions- Family income Improved

❑ **Adoption of Kenya ceramic jiko reduce fuel use by 10% and other modern stoves on average would reduce expenditure by 23%.**

❑ **In a typical household annual charcoal consumption of 594 kg equivalent to 17 bags of charcoal annually a saving of 1.7 bags per year per family realizing Kshs. 3,500 annually.**

❑ **From the modelling results a possible saving of 2.9 million tons of charcoal could be achieved in 2030. Translating this into cost, the nation will save 165 billion Kenya shillings saving by 2030.**
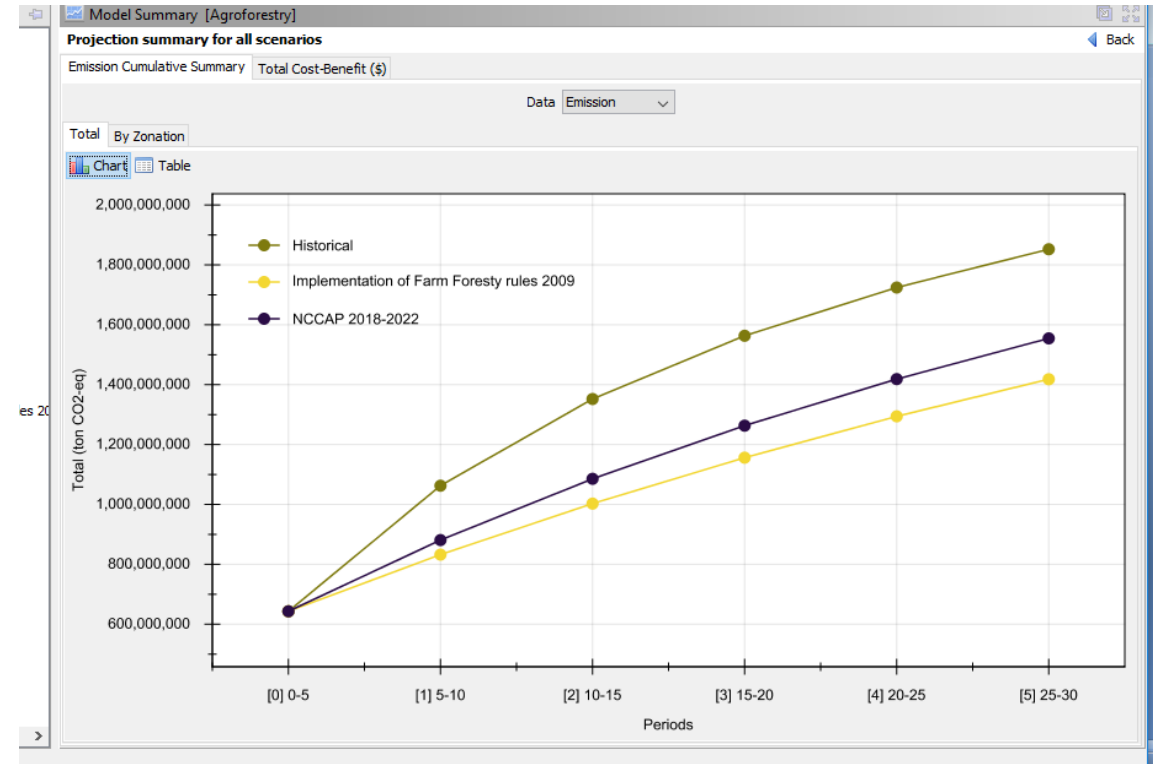
Health benefits

Deaths
Scenario: Combined NCCAP Strategies Avoided vs. Baseline
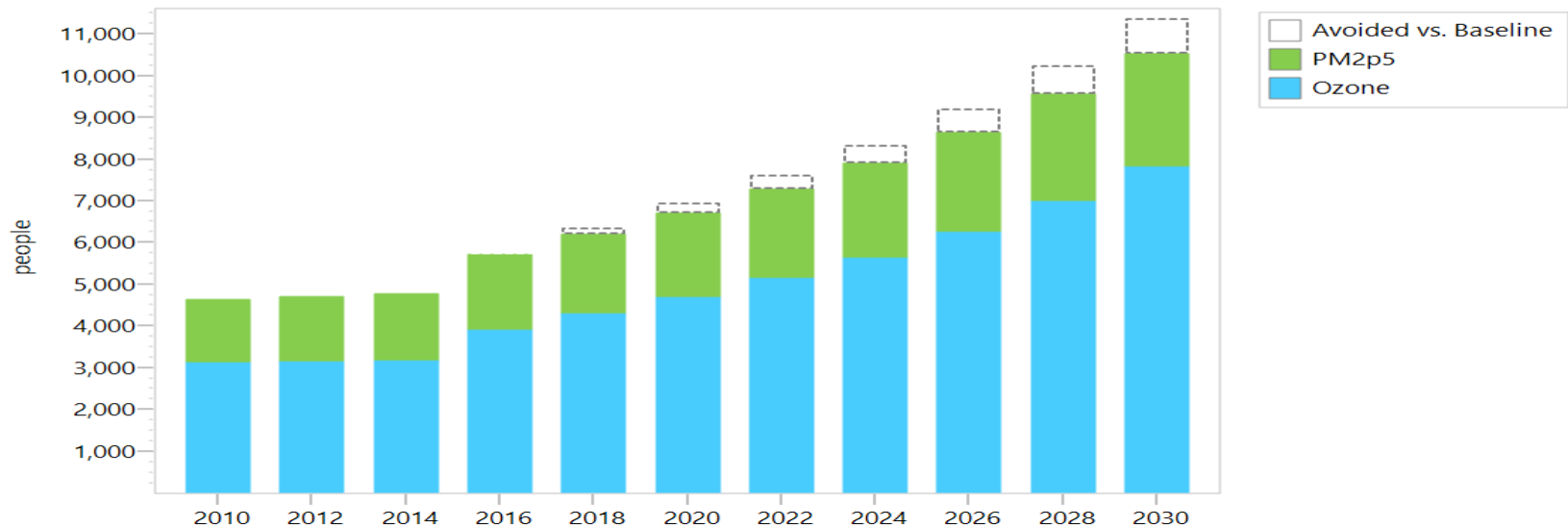
The limited action of reducing dependency on solid biomass for cooking would result to annual prevention of about **337 deaths** annually in 2022 and **848 deaths** in 2030
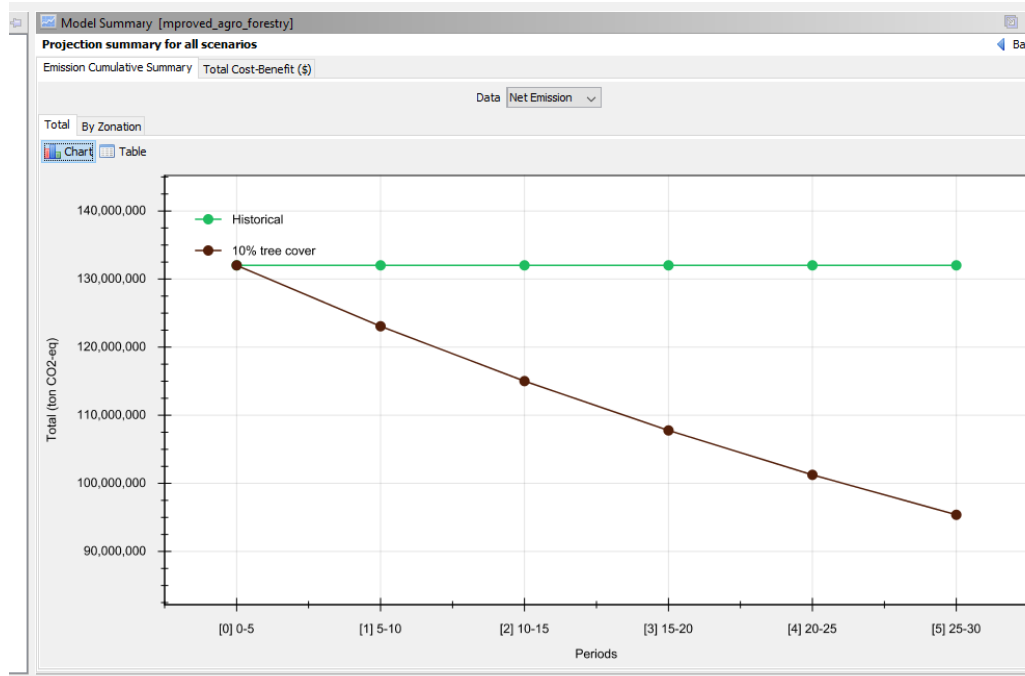
Enhancing Agroforestry, increased carbon sinks

implementing the farm forest rules 2009 will abate 434M tons of carbon dioxide by 2044 followed by implementation of NCCAP that has abatement potential of 297M tons.
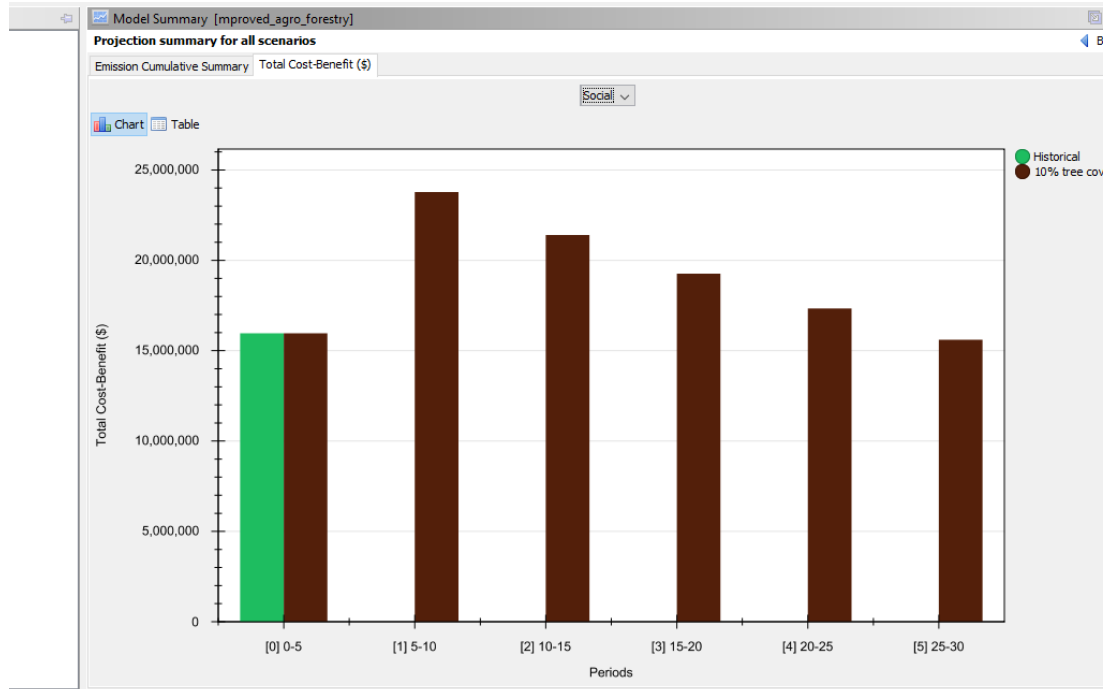
Enhancing Agroforestry Vs- slash and burn practices

The emission will reduce from 132 million tonnes to 95 million tonnes in a period of 30 years as compared to normal slash and burn practices
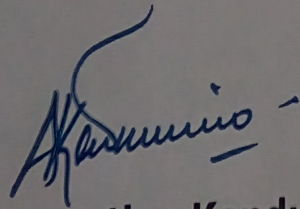
Enhancing Agroforestry –Cost Benefits

The cost benefits will increase from about 16million dollars to 24 million in the first 5-10 years.

Testimonials

"Climate action and socioeconomic development seem to be difficult to achieve simultaneously – but through this project, Kenya is set to leverage implementation of its NDCs as an enabler of its socioeconomic priorities – the vision 2030 and its derivatives like the BIG 4. This will be highly valuable as we prepare to submit second round NDC commitments – we thank the EC & UNEP for their support and look forward to full uptake of this project products going forward"

Augustine Kenduiwo
Ministry of Environment and Forestry

Conclusion

- **The Kenya <u>LEAP model</u> has shown that it is possible to forecast climate and socio-economic benefits of adoption of clean cooking solutions (carbon mitigated, forest sinks preserved enhanced jobs created, increases, cost savings).**

- **However Modelling Agro forestry in general stills requires more investment. This is compounded by lack of local experts on modeling socio-economic agro-forestry using ABACUS software.**

Next steps

- **Quantifying socio-economic benefits of climate change interventions poses a major challenge-need to *upscale this project products going forward*.**

- **The results were recently modeled, but need to be share with Policy makers- will help to inform investment policy decisions and contribute to implementing the NDCs.**

- **Adapt and test above model- improve the agroforestry model.**

- **Transfer and installation of relevant software and hardware in relevant line Ministries**

Thank You!

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