Building Capacity for enhancing bioenergy sustainability through the use of the Global Bioenergy Partnership Indicators

GBEP meeting
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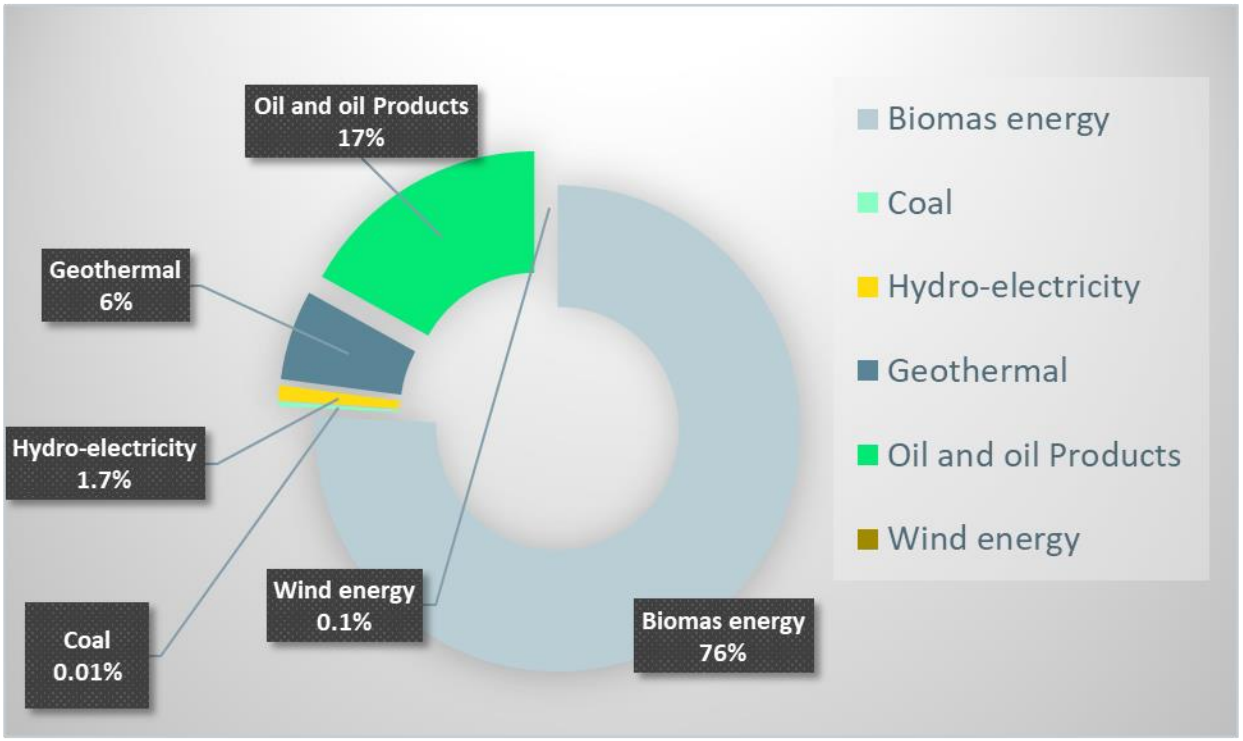
Outline

- Background Kenya
- GBEP Kenya
- Pathways
- Outcomes
- Challenges
- Links to bioeconomy and circular economy
- Conclusions Strategic view

Sources of energy in Kenya



(KNBS 2018 &World Bank report, 2017)

Cont.

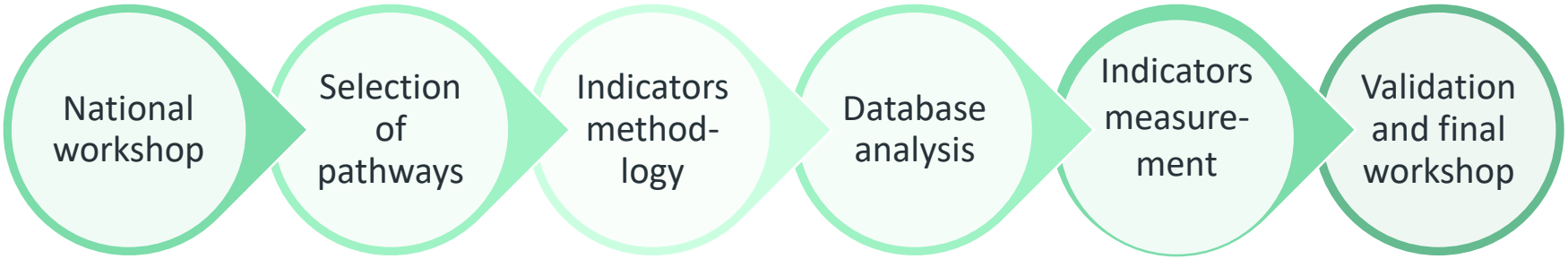
Kenya	%
Access to Electricity (% of population)	56.00 (2018)
Energy Imports Net (% of energy use)	17.17 (2014)
Fossil Fuel Energy Consumption (Coal, oil, petroleum, and natural gas products.) (% of total)	17.38 (2014)

Background

- In sub-Saharan Africa, 72 % of urban and 98% of rural households use fuelwood for energy.
- In Kenya use of charcoal in urban areas has risen by 64 % in two decades.
- charcoal industry provides employment to 500,000 people and generates over US$427 million but kept out of the formal economies of this country (Njenga, 2018)
- A ban in 2018 for charcoal production

Project activities

Advisory board:
Ministry of Environment
Ministry of Energy
Directorate for Climate Change



Pathways

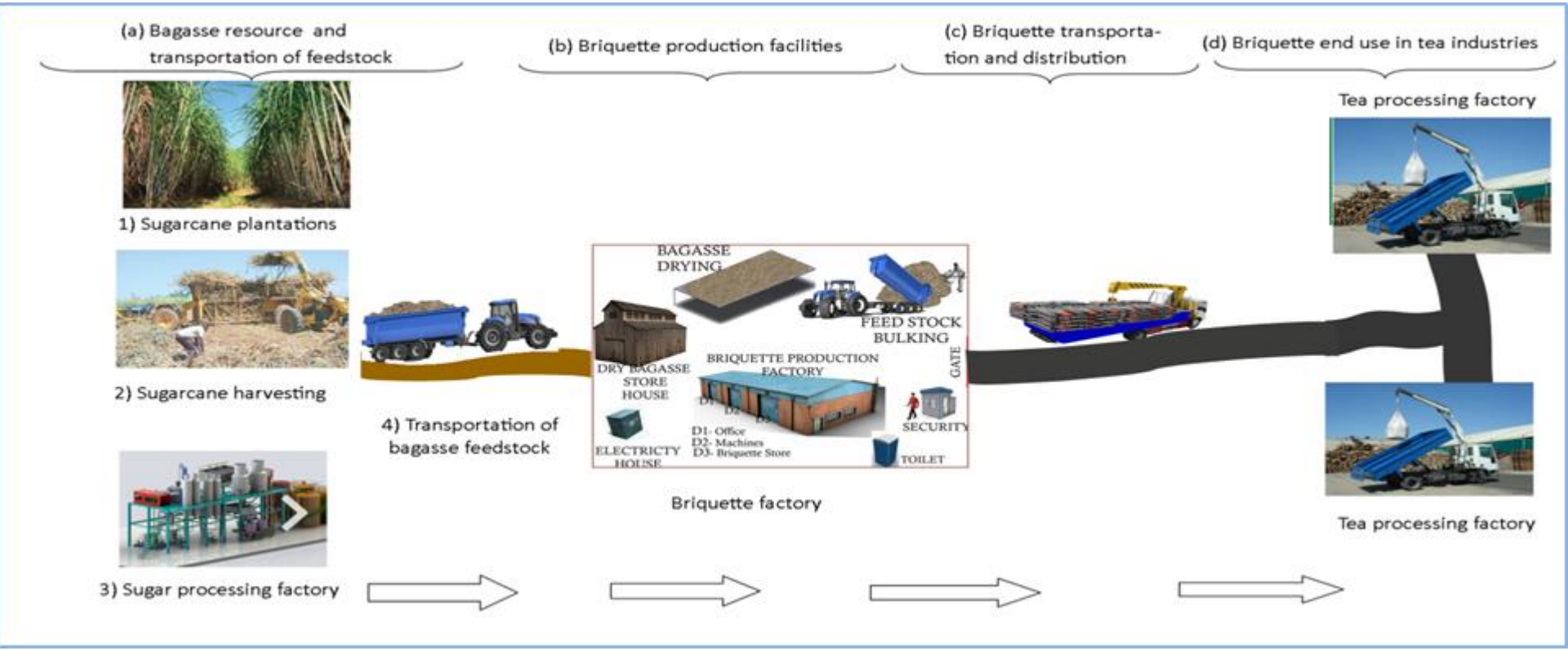
Pathway 1

Sugar cane bagasse briquettes used in the tea industry

Pathway 2

Charcoal from woodland and farmland used in households

Pathway 1


(a) Bagasse resource and transportation of feedstock
(b) Briquette production facilities
(c) Briquette transporta-tion and distribution
(d) Briquette end use in tea industries
1) Sugarcane plantations
2) Sugarcane harvesting
3) Sugar processing factory
4) Transportation of bagasse feedstock
BAGASSE DRYING
FEED STOCK BULKING
DRY BAGASSE STORE HOUSE
BRIQUETTE PRODUCTION FACTORY
GATE
SECURITY
ELECTRICTY HOUSE
D1- Office
D2- Machines
D3- Briquette Store
TOILET
Briquette factory
Tea processing factory
Tea processing factory

Main issues Pathway 1

- - Sugar cane bagasse alternative use
- - Benefits from GHG reduction but energy intense in tea factories
- - Transport (distance) still a challenge for GHG emissions
- - Restriction to sugar belt but possibilities to expand for other briquettes

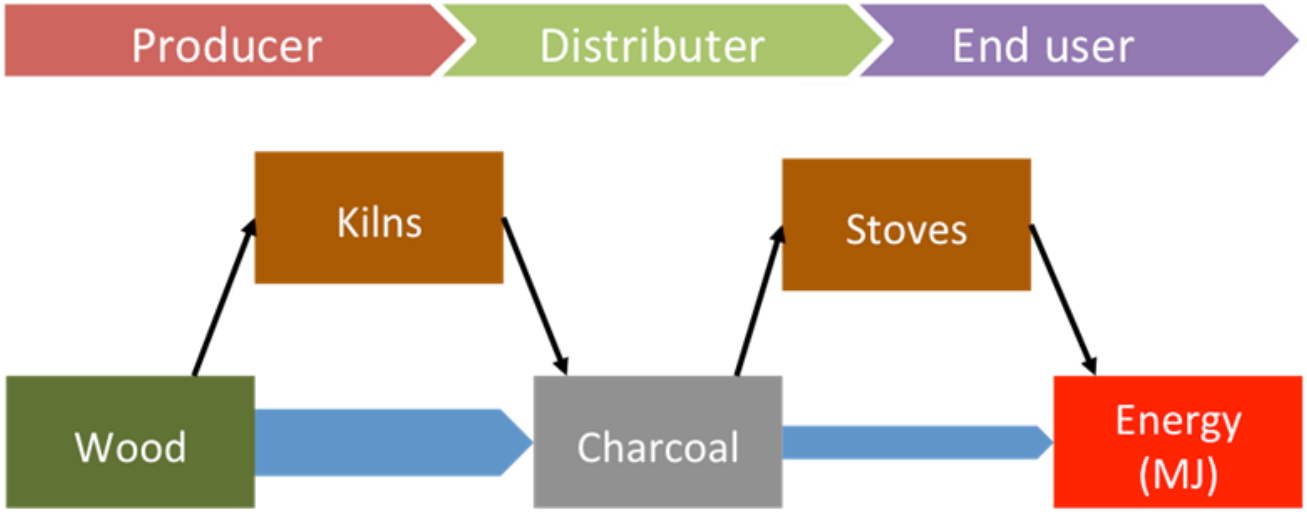
- New sector producing briquettes
- Job creation but unskilled
- Wages below minimum
- More women participation in drying

- Tea sector interested in using other type of biomass
- Technical improvement of boilers needed
- Briquettes other uses such as vegetable oil companies, food, tanneries

Sugar cane bagasse briquettes

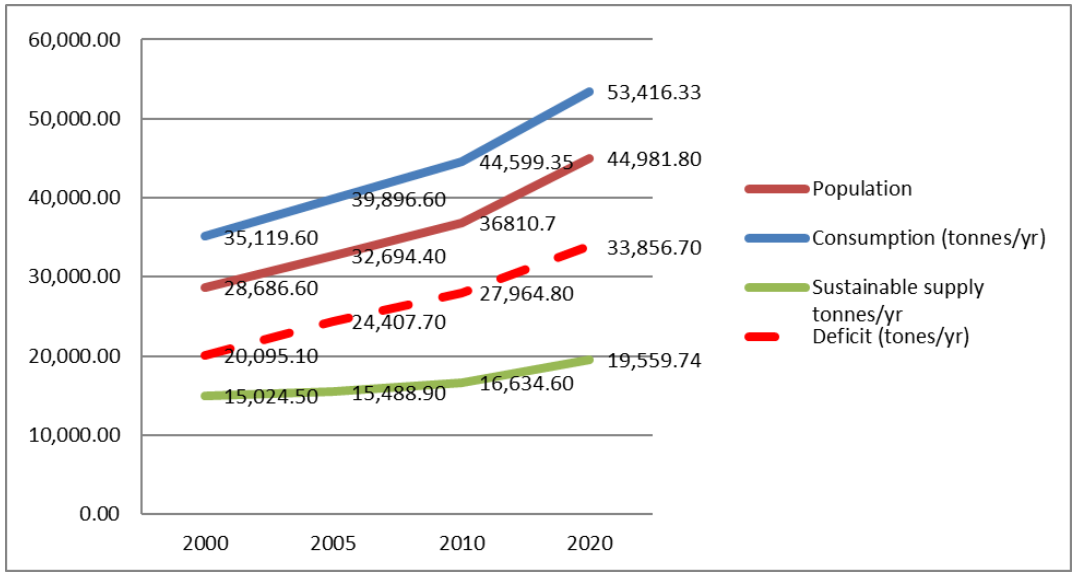
Tea factories

Pathway 2



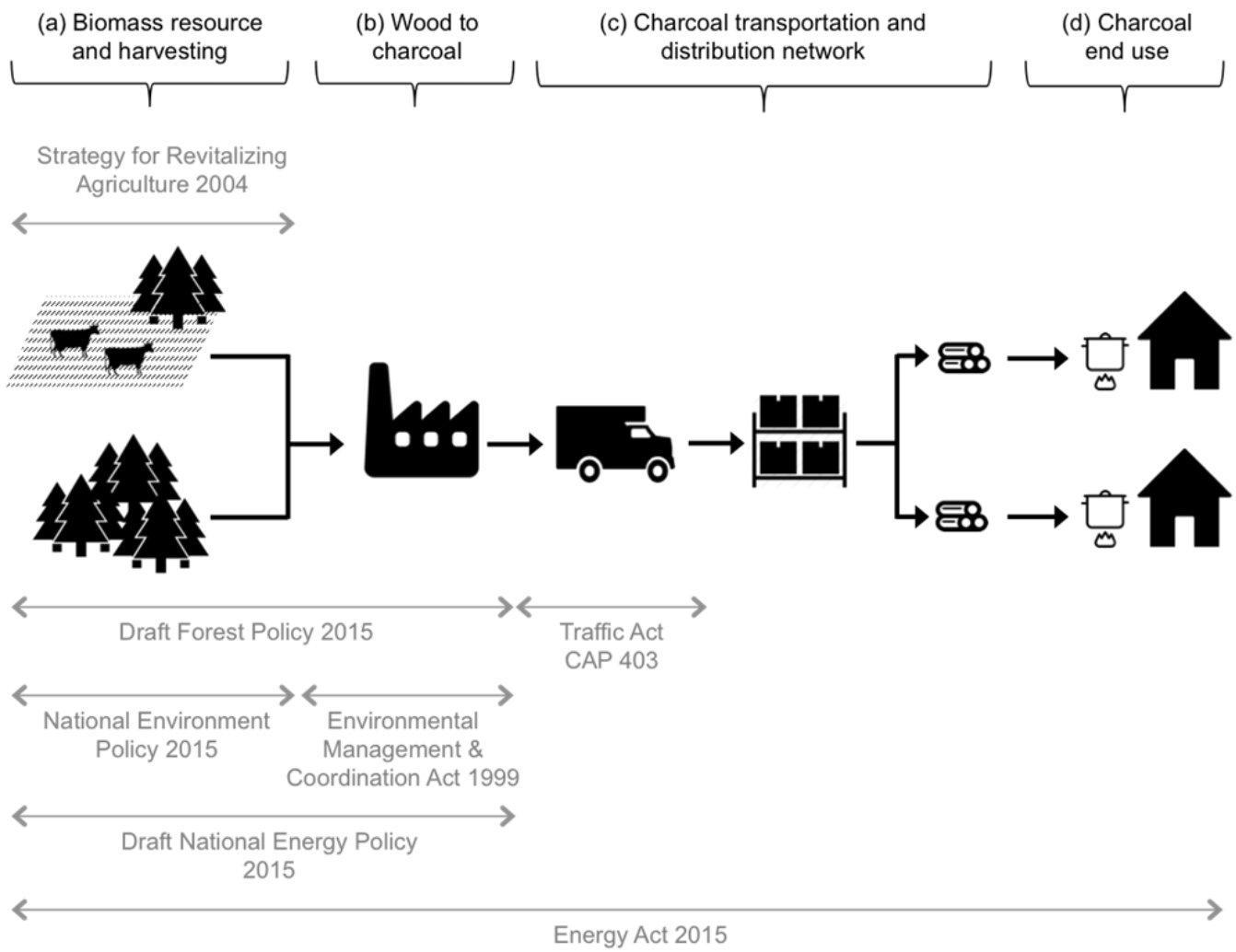
KIPPRA (2010)

Projected annual biomass energy consumption/supply (in thousands) in Kenya



(Transrisk, 2018)

Pathway 2 charcoal



Transrisk, 2018

Main issues Pathway 2

- - Definitions of woodland and farmland
- - Woodland over-used of Acacia and other spp
- - Narok and Kitui main areas of production to Nairobi
- - Non-GHG emissions could be reduced in transport, determined species and improved kilns

- Use of modern cooking stoves and traditional vs improved charcoal production
- Health implications
- Policies in place but not coordinated
- Job creation and livelihoods (.5 M jobs)
- Prices of charcoal affect food basket

- Ban of charcoal in 2018 but charcoal is still produced in wood/farmland and imported from Uganda
- Improved kilns needed for more sustainable production and use of different species

Health and social benefits

- Improved cookstoves integrated with on-farm sourcing of firewood, households can save 33.2 % of fuel from 2704kg to 1806 kg per year and 76% of time spent sourcing the fuel.

Table 1. Household air pollution attributable deaths in Kenya in 2016 (WHO, 2019a).

Cause	*Both sexes*	*Male*	*Female*
Total	15140	7523	7617
Lower respiratory infections	10083 (66.6%)	5125	4957
Trachea, bronchus, lung cancers	229 (1.5%)	126	103
Ischaemic heart disease	1954 (12.9%)	997	957
Stroke	1810 (12%)	790	1020
Chronic obstructive pulmonary disease	1064 (7%)	484	580

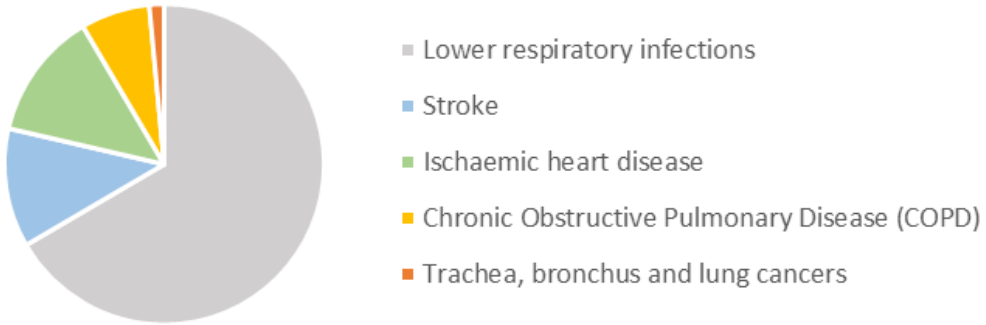


Figure 6. Proportion of HAP attributable deaths attributed to the different acute and chronic respiratory diseases in Kenya in 2016. Adapted from (WHO, 2019a).

Inputs of GBEP to Kenya bioenergy

- Consolidation of data from different organisations ready to be monitored and updated
- Possibilities to improve to modern biomass use
- Capacity building on GHG emissions calculation
- Links to bioeconomy and circular economy
- Stakeholders engagement
- Policy innovation e.g. cogeneration (amend policy)
- New private sector and emerging sectors (briquettes)

Cont.

- New governance systems with landscape governance
- Enforce education campaigns to promote modern bioenergy where costs are feasible (e.g. urban areas)

Thank you!

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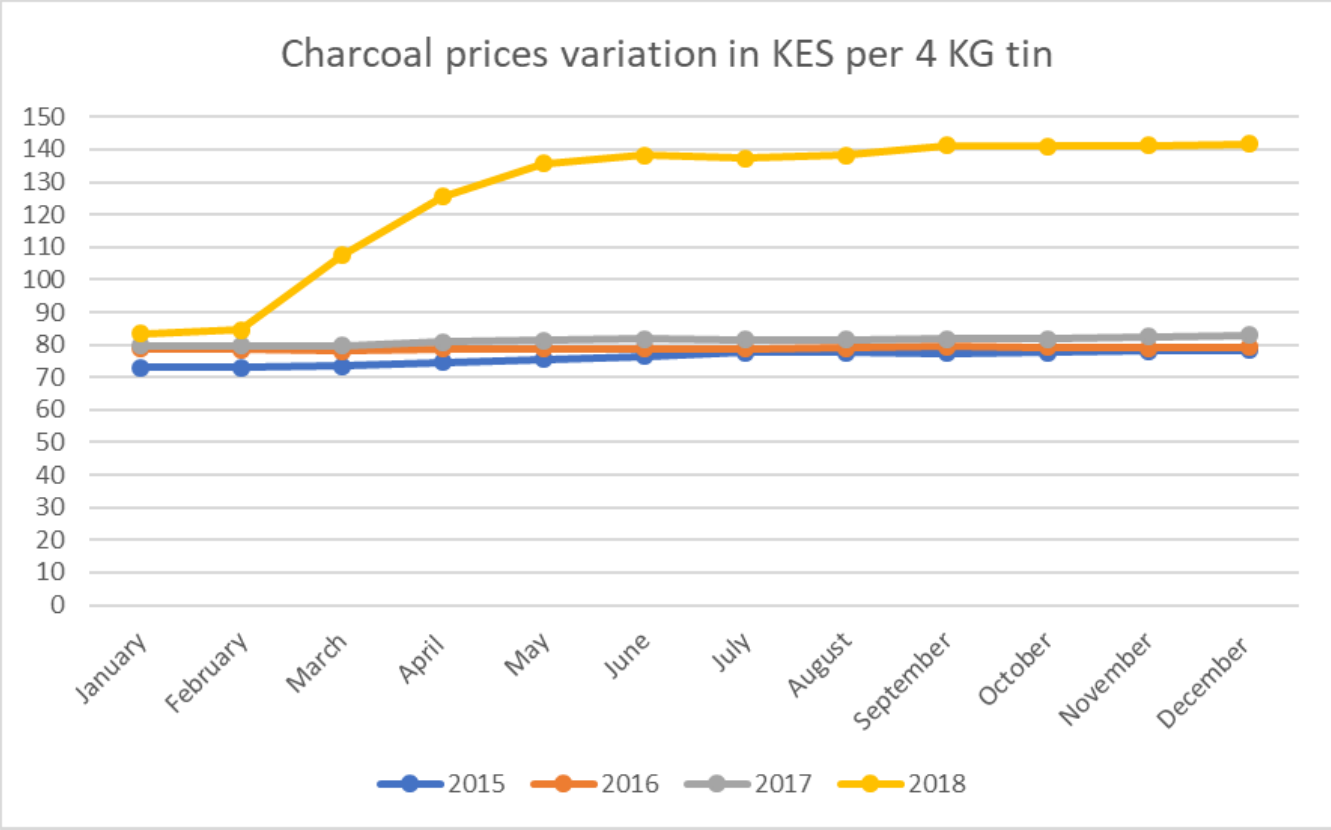
Prices of charcoal (data from KBST, 2019)