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Sustainable Biomass Export Potentials in Kenya and the Southeast US

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Kenya

I. Methodology
II. Current sitution
III. Scenarios till 2030
IV. Conclusion & Discussion

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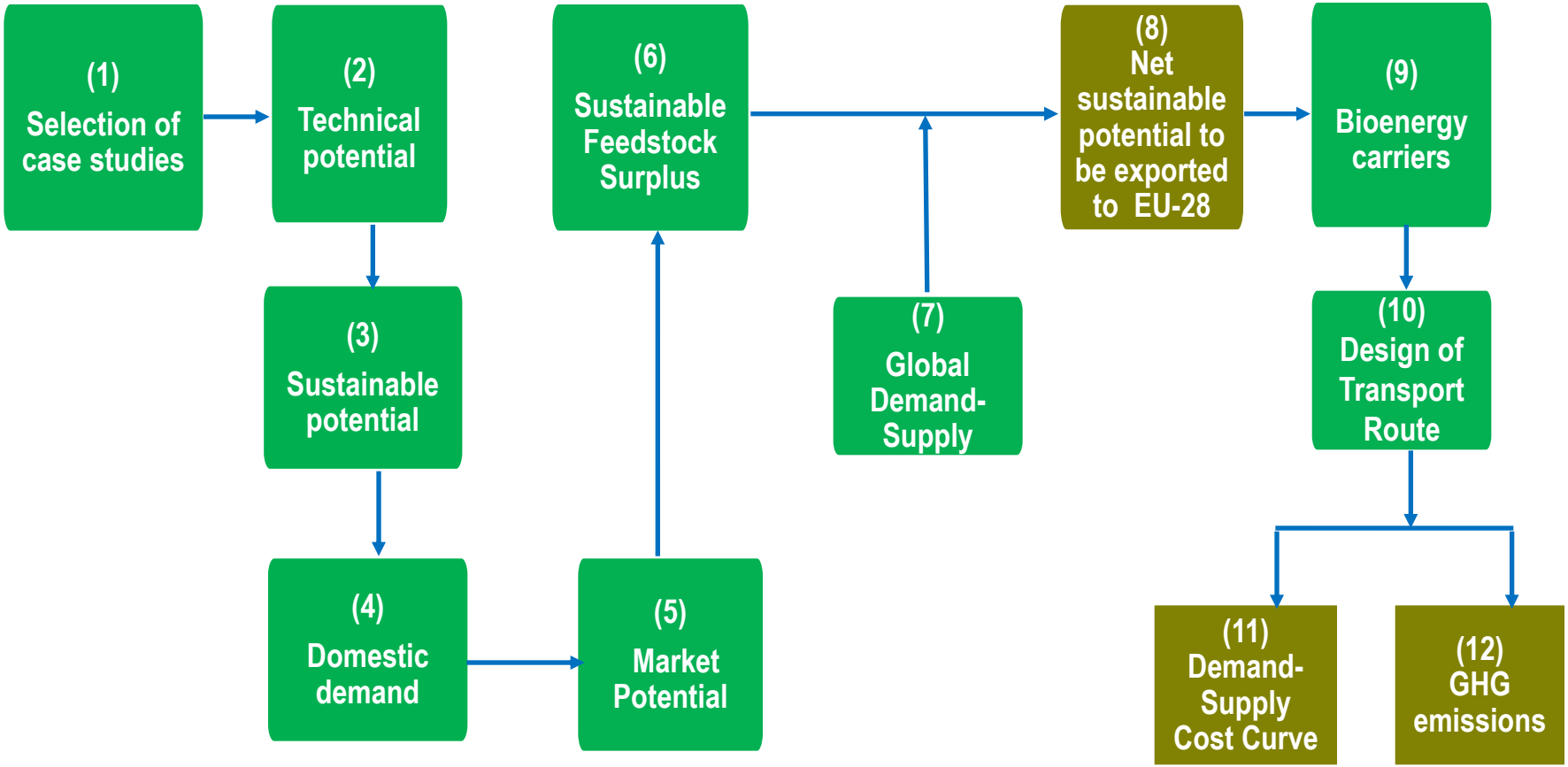
I. Methodology Outline, Kenya



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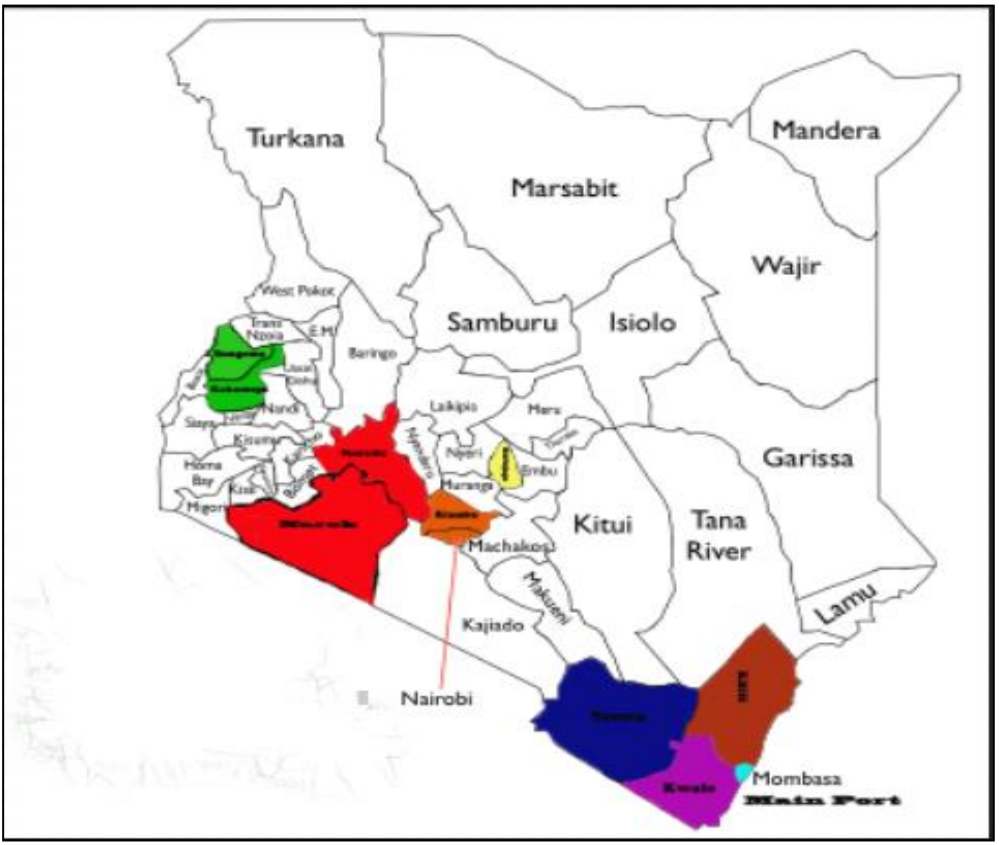
Selection of most promising regions



- green areas (Bungoma, Kakamega) represent sugarcane
- red ones (Narok, Nakuru) timber
- orange (Kiambu) coffee
- yellow (Kirinyaga) rice,
- blue (Taita Taveta) sisal
- purple (Kwale) coconut
- brown (Kilifi) both sisal and coconut

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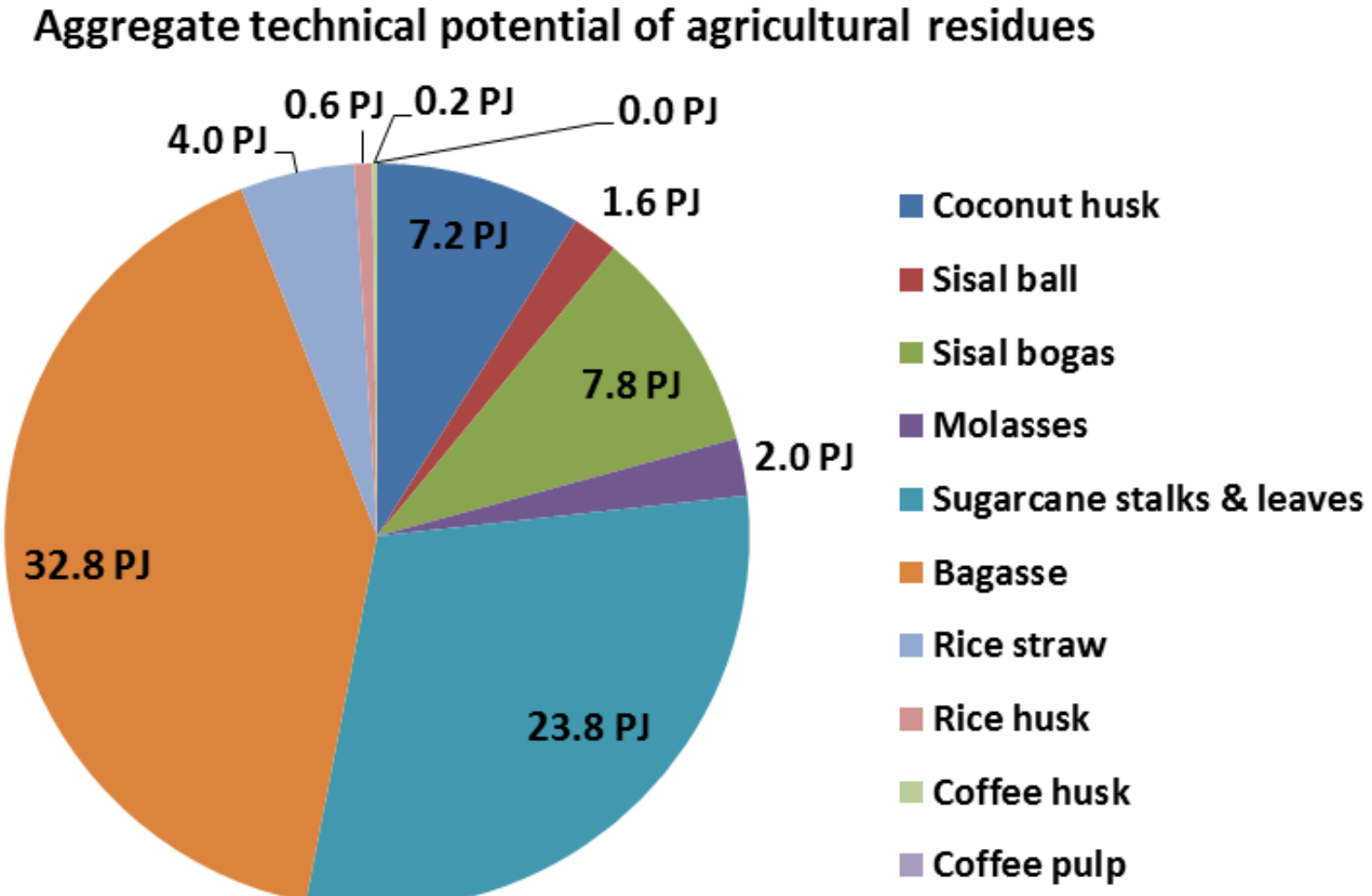
Technical potentials



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Main residues investigated

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Sugarcane stalks

Bagasse

Coconut husks

Sisal ball

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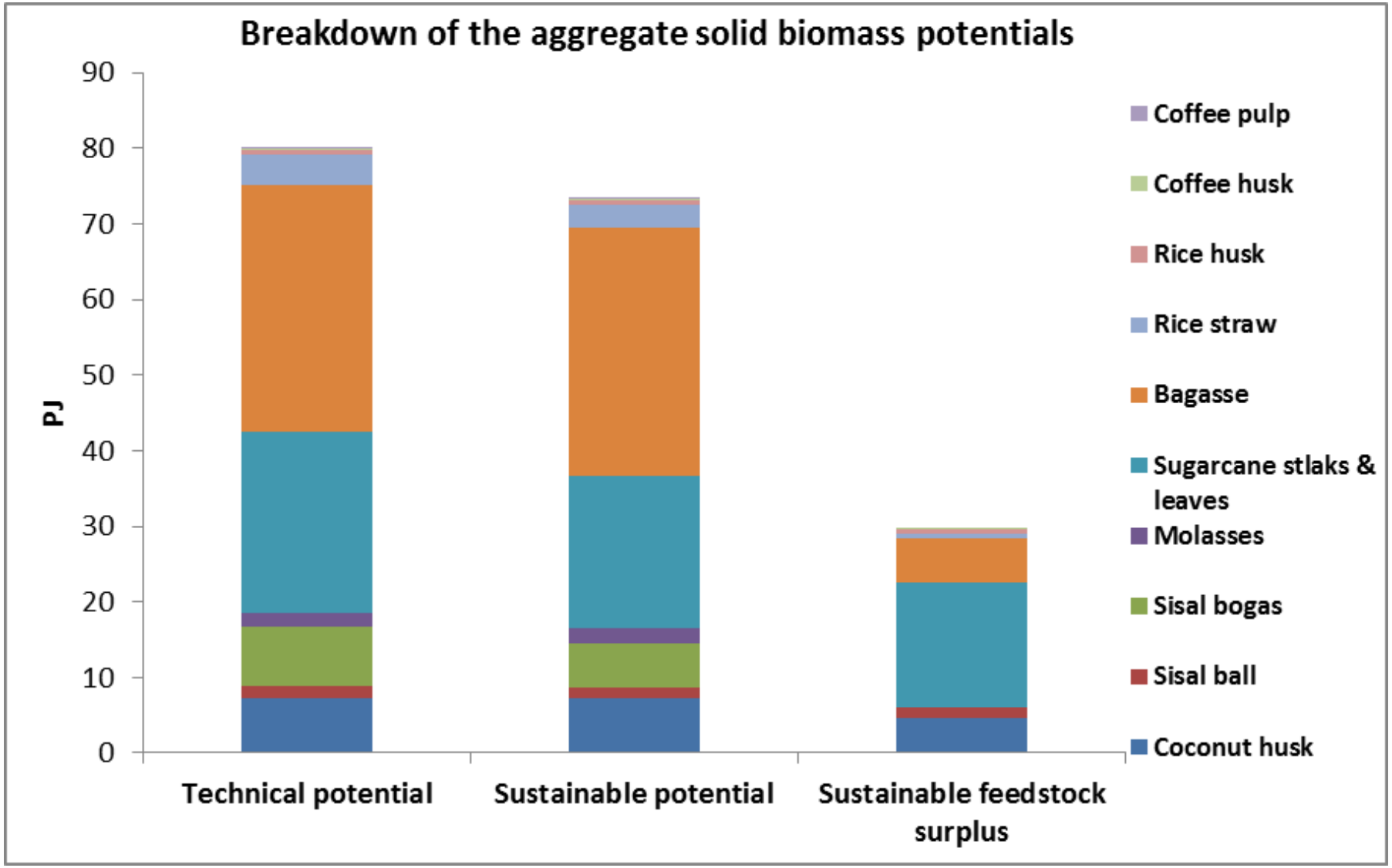
Technical, sustainable & surplus potentials



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Shortage of fuel wood & deforestation

Residues from wood processing industries:
100% of off-cuts and part of their chips are sold locally for fencing, heating and cooking.

-> No land available for dedicated energy crops

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Main scenario assumptions

	BaU	Optimistic
Technological adoption	poor (limited fertilizer and pesticides use, no irrigation-6% of total cropland is irrigated)	high (increased fertilizer and pesticide use, improved seeds, higher percentage of irrigated land);
Farming practices:	conventional tillage	no till + double cropping
Deforestation levels:	slightly decreasing	lower than BAU due to higher achieved yields
Other	-12% in 2020 & +10% in 2030[a] compared to 2015	Sugarcane yield increase 2.5% p.a. [a]

a: based on annual yield increases in surrounding countries

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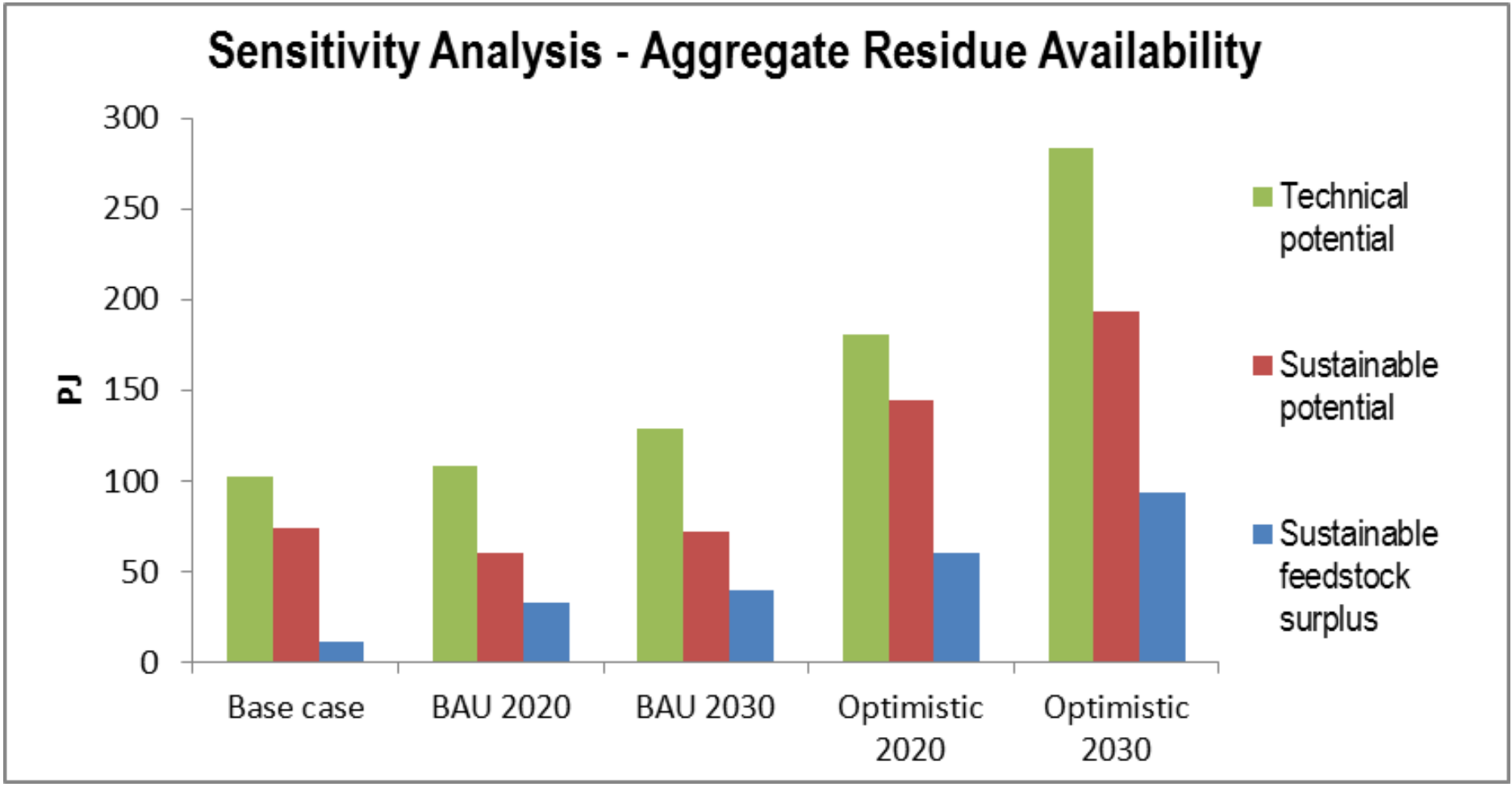
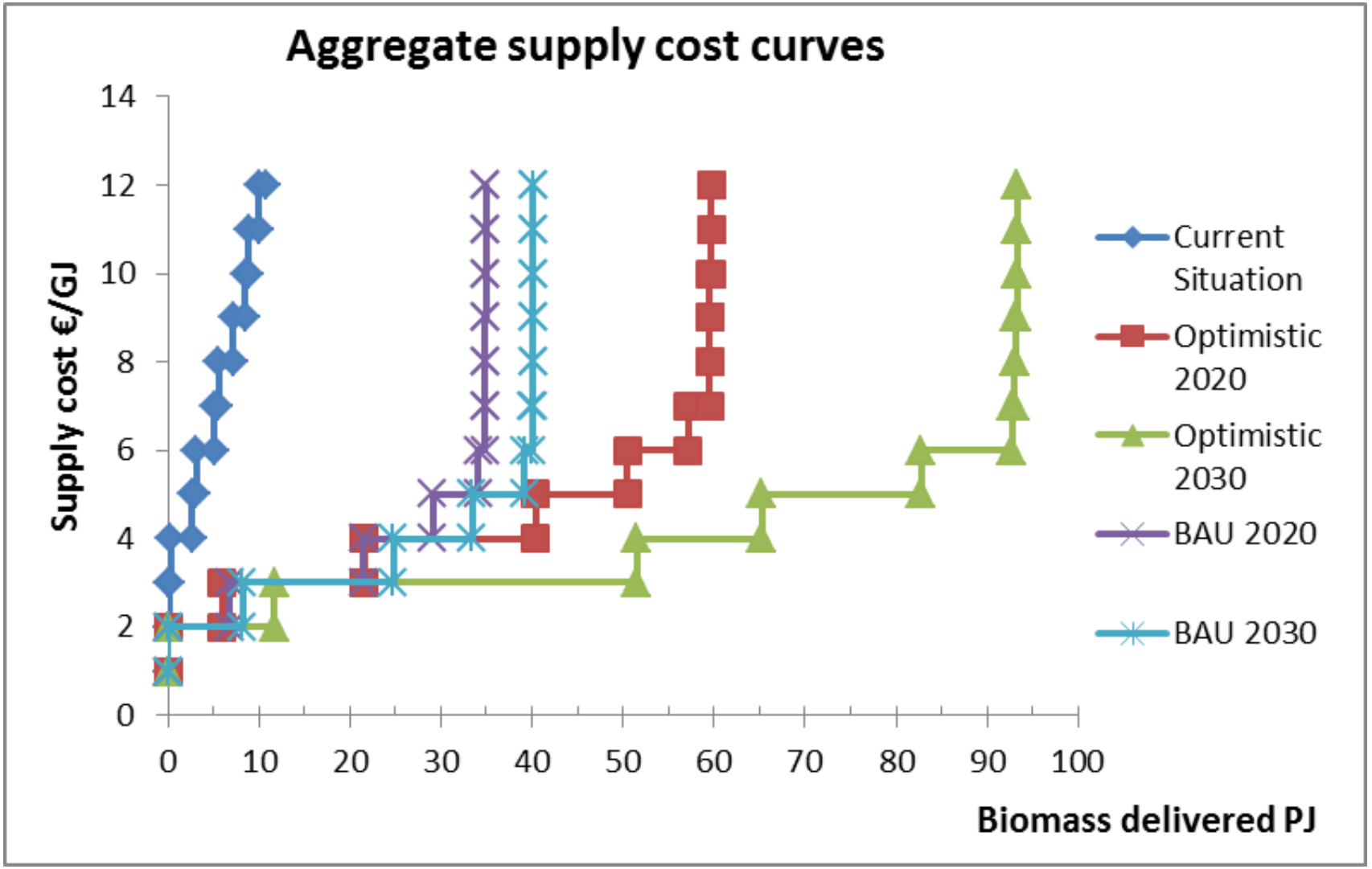
Future residue availability under different scenarios



Cost supply curves to Mombasa (main export harbour)



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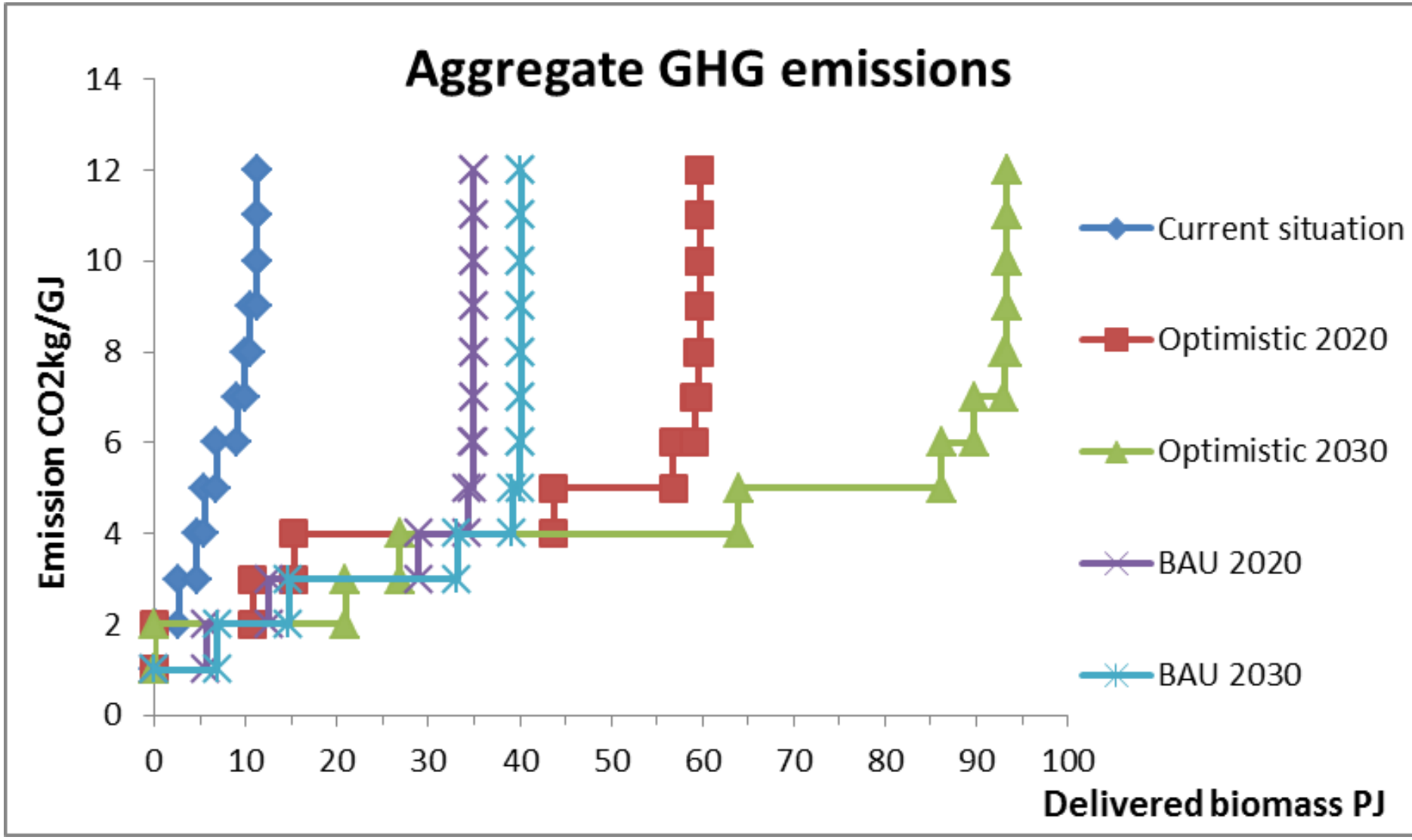
GHG footprint of supply curves (Shipping from Mombasa to Rotterdam not included)



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Discussion & Conclusions

- Total available biomass for export currently negligible (4-7 PJ)
- Fuelwood deficit & deforestation prevent use of land for energy crops
- Local residue use can be substantial – ground-truthing needed
- Future mobilisation largely depends on exogenous factors (mainly significant improvements in agriculture)
- Cost <= 3-4 Euro/GJ and GHG emissions should in principle be competitive for export / meeting GHG threshold criteria

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Thank You!

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II. Scenario approach

Scenarios	BAU			Optimistic		
Timeline	Current *	2020	2030	Current *	2020	2030

*: *Depending on data availability, current situation can be changed to previous year*

Aim	anticipate possible changes in local & global biomass market & trade at different time scales
Method	based on : - Data availability - Socio-economic development - Industrial development capacity - Policies on environment, climate and energy - Innovative pre-treatment technologies
Data requirements& data sources	- International & national databases (Faostat, National Statistics) - Field trip - Communication with local & international stakeholders
Expected outcomes	- BAU and Optimistic Scenarios for 3 timelines: Current, 2020 and 2030

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