



Market analysis of fuelwood as household cooking energy in rural Rwanda – a qualitative assessment

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Introduction

- Woody biomass or fuelwood provides 6% of the world energy supply.
- Rwanda in 2019 – 93% of the rural population was relying on fuelwood.
- UN SE4All – ‘clean and affordable energy for all’.
- Solutions include improved cooking stoves.
- Fuelwood will continue to be a major fuel source.

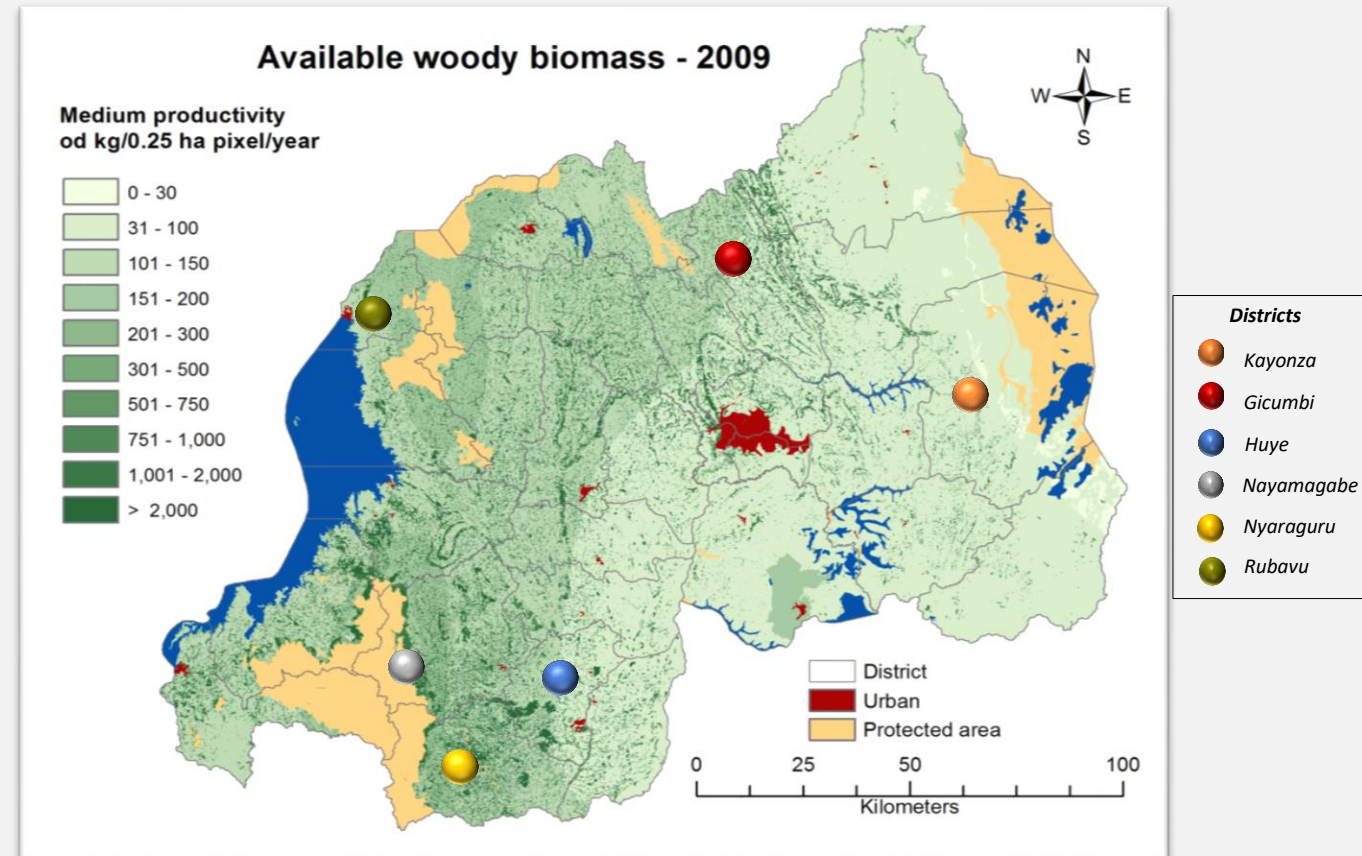


Research Questions

- *What drives rural households' decision to buy and/or collect fuelwood?*
- *What factors influence rural supply and demand of fuelwood?*
- *What, if any, are the binding constraints in the rural fuelwood market in Rwanda?*

Background

- Ownership: Public or Private
- Natural forests – protected reserves
 - Foraging and harvesting is forbidden
- Unprotected areas – fuelwood is free
- 80% of the product does not pass through the market
- Non-uniform scattering of forests

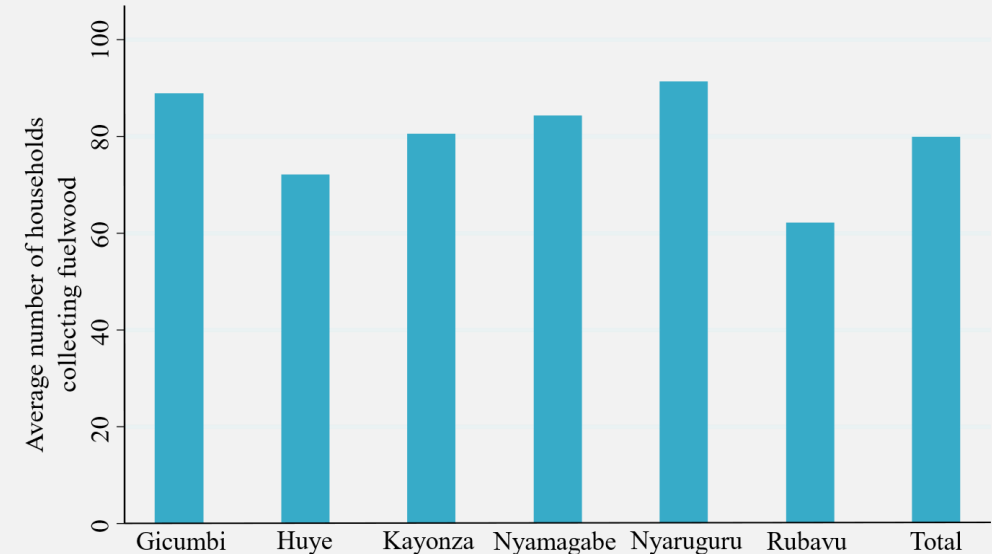
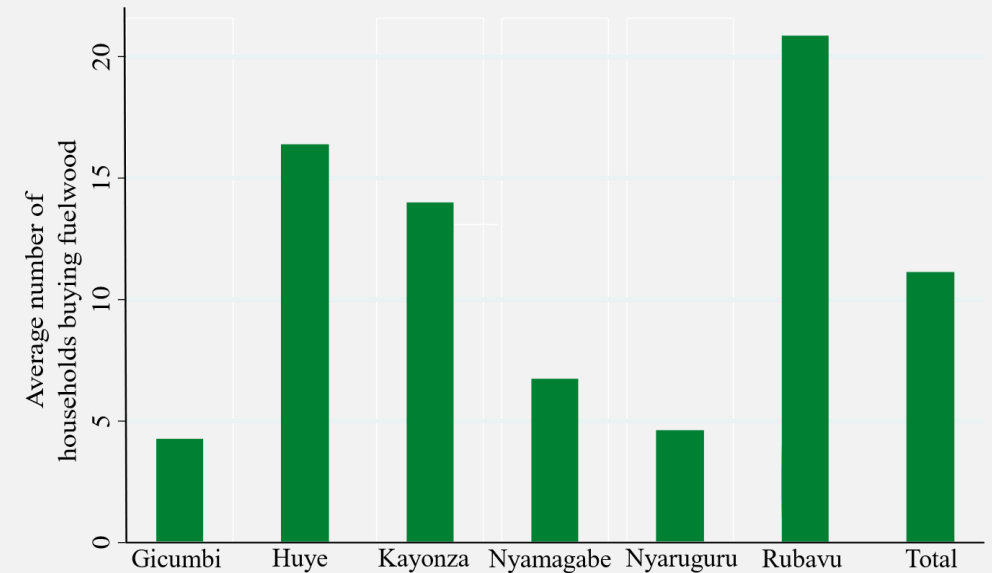


(image adapted from Drigo et al., 2013)

Sample Selection

- 2-step framework for sample selection
 - Based on baseline study
 - Snow-ball method
- Two groups of stakeholders identified:
 - Wood buyers (households)
 - Wood sellers

District	Cell	No. of households	No. of wood sellers
Kayonza	Migera	5	
	Kabura	5	
Rubavu	Kabumba	5	2
	Gihonga	5	1
	Butaka	5	1
Nyaruguru	Bunge	5	
	Coko	5	
	Uwumusebeya	3	
Nyamagabe	Jenda	5	
	Manwari	5	
	Uwindekezi	3	
Huye	Bunazi	5	
	Mutunda	4	
	Rugogwe	4	
Total		64	4

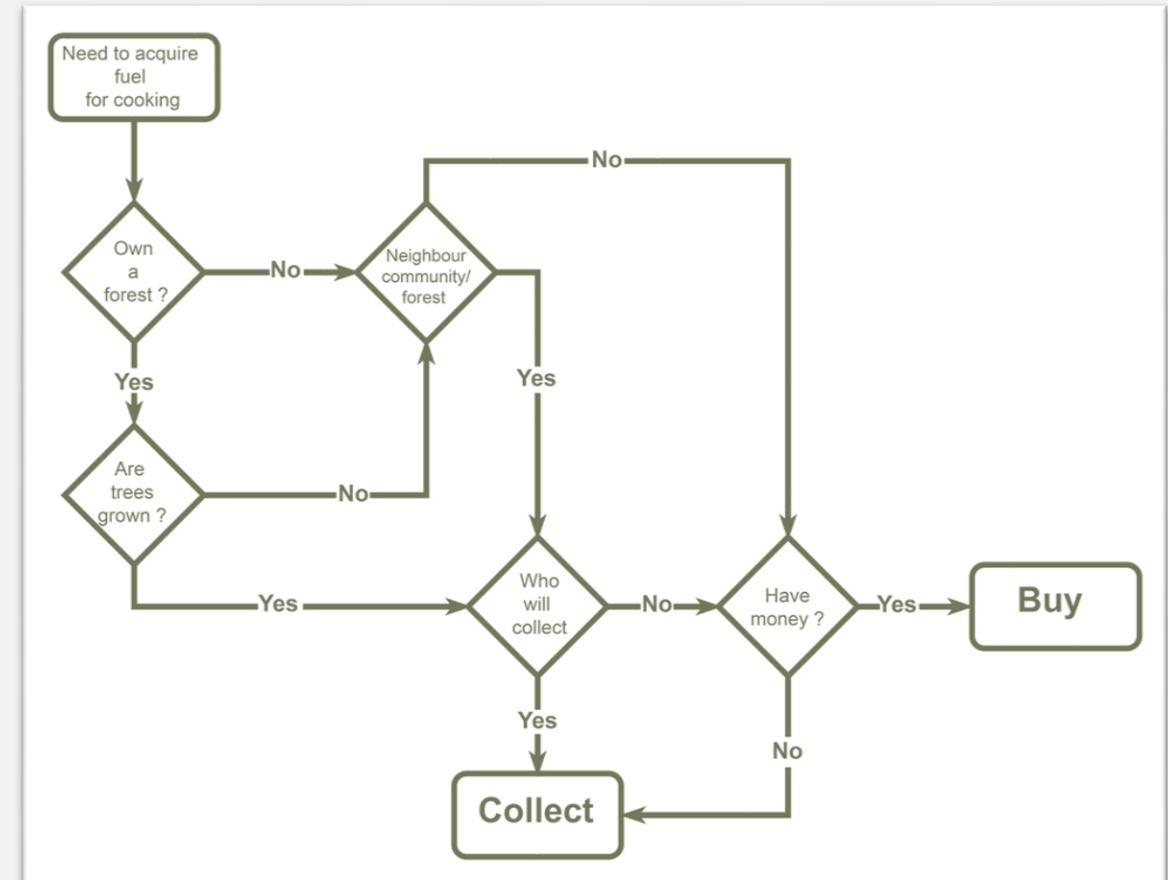
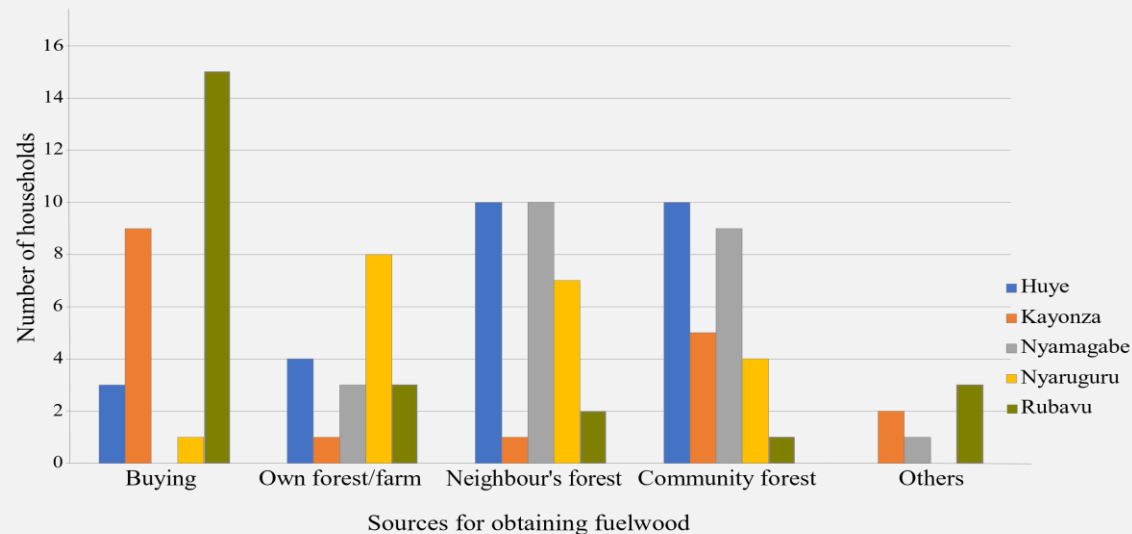


Interview Technique

- Preliminary questionnaire
- Pre-testing in Kayonza
- Semi-structured interviews, group discussions
- Separate questionnaires finalised for wood buyers and wood sellers

Fuelwood acquisition decision

- Availability – “Forests surround our land and homes”
- Time
- Manpower
- Unusual source: agricultural waste

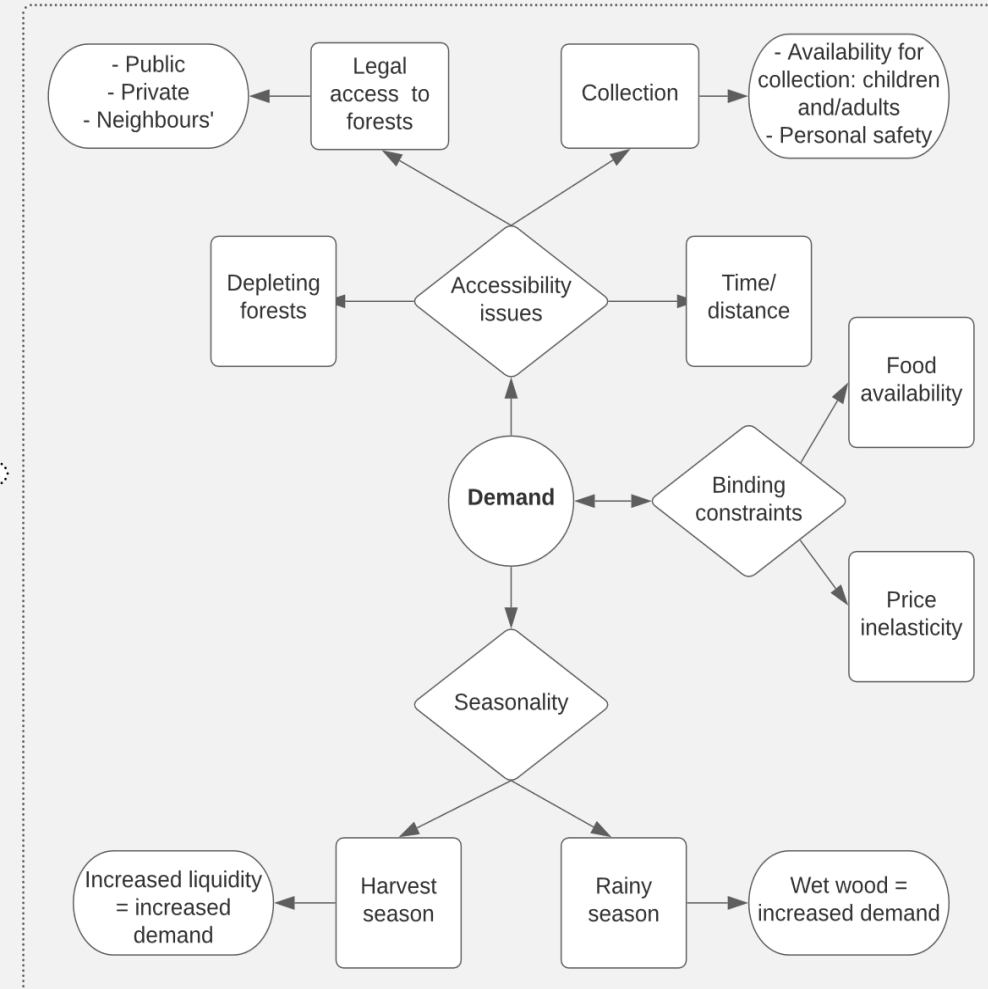
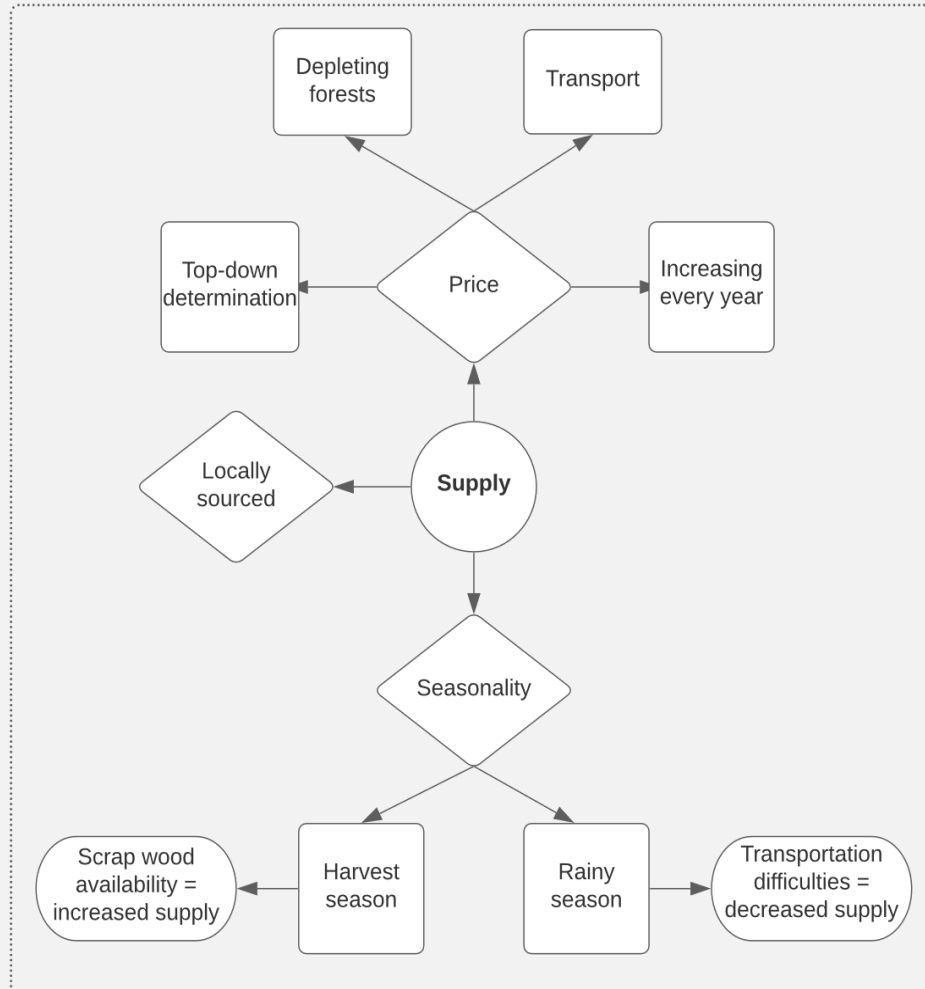


Influencing factors

Seasonality	<ul style="list-style-type: none"> • Rainy season vs Harvest season • “Sometimes in the rainy season, they can’t find fuelwood to buy. Sellers don’t get wood from suppliers, or sellers can’t come to the market” (Gihonga, Rubavu). • “In the rainy season trees are more expensive to buy...supply is less because wood isn’t ready” (Butaka, Rubavu).
Price	<ul style="list-style-type: none"> • Expensive but inelastic demand • Price determination: Bundle price and transport/distance
Supply chain	<ul style="list-style-type: none"> • Informal supply chain however households buy from local sellers. Suppliers include forest owners, house renovations, agricultural waste. • “different sellers every time” (Butaka, Rubavu). • “distance varies; sometimes suppliers are one hour away, sometimes more” (Gihonga, Rubavu).
Binding constraints	<ul style="list-style-type: none"> • Lack of alternative • “Fuelwood without food means nothing”.



Demand and supply dynamics in rural Rwanda fuelwood market



Implications and recommendations

- Complex and informal rural firewood market
- Rwandans face severe difficulties in fulfilling their energy needs
- Dependence on and depletion of forestry
- Development of fuelwood plantations
 - Improve access to fuelwood
 - Source of income generation
- Scale efforts to provide an alternative source / subsidize solutions such as the ICS.

Thank you