

Biomass Assessment for 6MW Biomass Power Project in Kumasi-Ghana

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- ✓ KEGL is a Subsidiary of the Kwamoka Group Ghana.
- ✓ KG Biomass Supply Limited, Sister company will be responsible for Biomass Research, Supply and Strategy.
- The project will help to address waste disposal problems and its associated hazards in Kumasi whilst
- Creating a sustainable alternative to power generation and supply.

The project (I)

- Capacity; 6MW biomass power plant.
- Location; Oti light industrial area, Kumasi
- Off-takers ; ECG and industrial companies in the project area.
- Milestones achieved includes;
 - ✓ Feasibility Study conducted by German project developer experience of several biomass power plants in different regions around the world.
 - ✓ Environmental and Social Impact Assessment (ESIA) report
 - ✓ Biomass Supply Assessment (supported by ECREEE/GIZ Technical Assistance Facility)
 - ✓ Several permits acquired
 - ✓ Advanced Discussions with identified off-takers.

The project (II)



- Fuel demand;
 - ✓ Approx. 50,000 – 60,000 tons of biomass per year.
 - ✓ Depends on type(s) and quality of biomass as well as selected power plant technology.
- Main feedstock will be wood processing residues
 - ✓ Selection of site in proximity to Sokoban Wood Village, a large cluster of wood-processing workshops.

Smouldering wood processing residues at unofficial dump site



Wood processing residues piling up at a workshop



Purpose of Biomass Supply Assessment

- Identify the most suitable sources of biomass for the project.
- Establish reliable data concerning available quantities, variability of biomass supply, biomass quality and the cost of collecting, processing and transporting different types of biomass to the site.
 - ✓ Decision on selection of most attractive biomass types and sources for optimum plant output.
 - ✓ Input data for power plant design and business plan (OPEX)
 - ✓ Throw light on potential fuel supply risk and mitigation measures
- Recommend logistical solutions for collecting, processing and transporting biomass from the sources to the power plant site.

Scope of the Biomass Supply Assessment

The study considered the following potential sources of biomass for the project;

- Wood processing residues
- Agro-processing residues (rice husk)
- Forest residues
- Wood plantation residues
- Cocoa pod husk
- Bamboo *
- Pruning of trees growing along roads and in parks *

* No assessment of available quantities

Methodology

- Identify locations of individual biomass sources
- For each type of biomass;
 - ✓ assess the needed manpower and machinery related costs for;
 - Biomass collection
 - Processing (at source and/or at power plant site)
 - Storage
 - Transportation
- Conduct interviews with potential suppliers
- Collection and measurement trials
- Laboratory tests to assess the chemical properties of the various types of biomass (water content etc.)
- Other sources (CPH & Reserves)

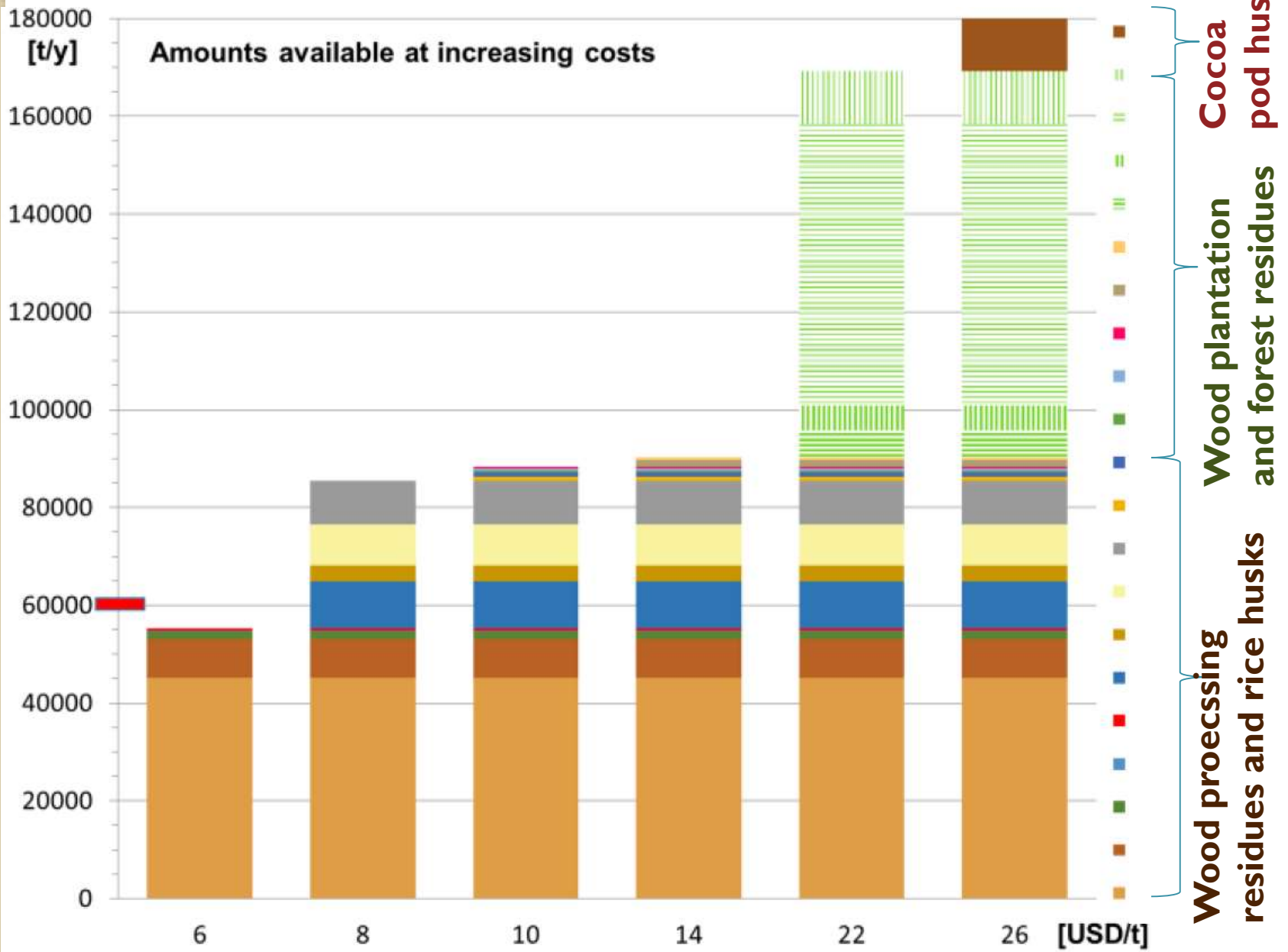


Collection and measurement trial at Sokoban Wood Village



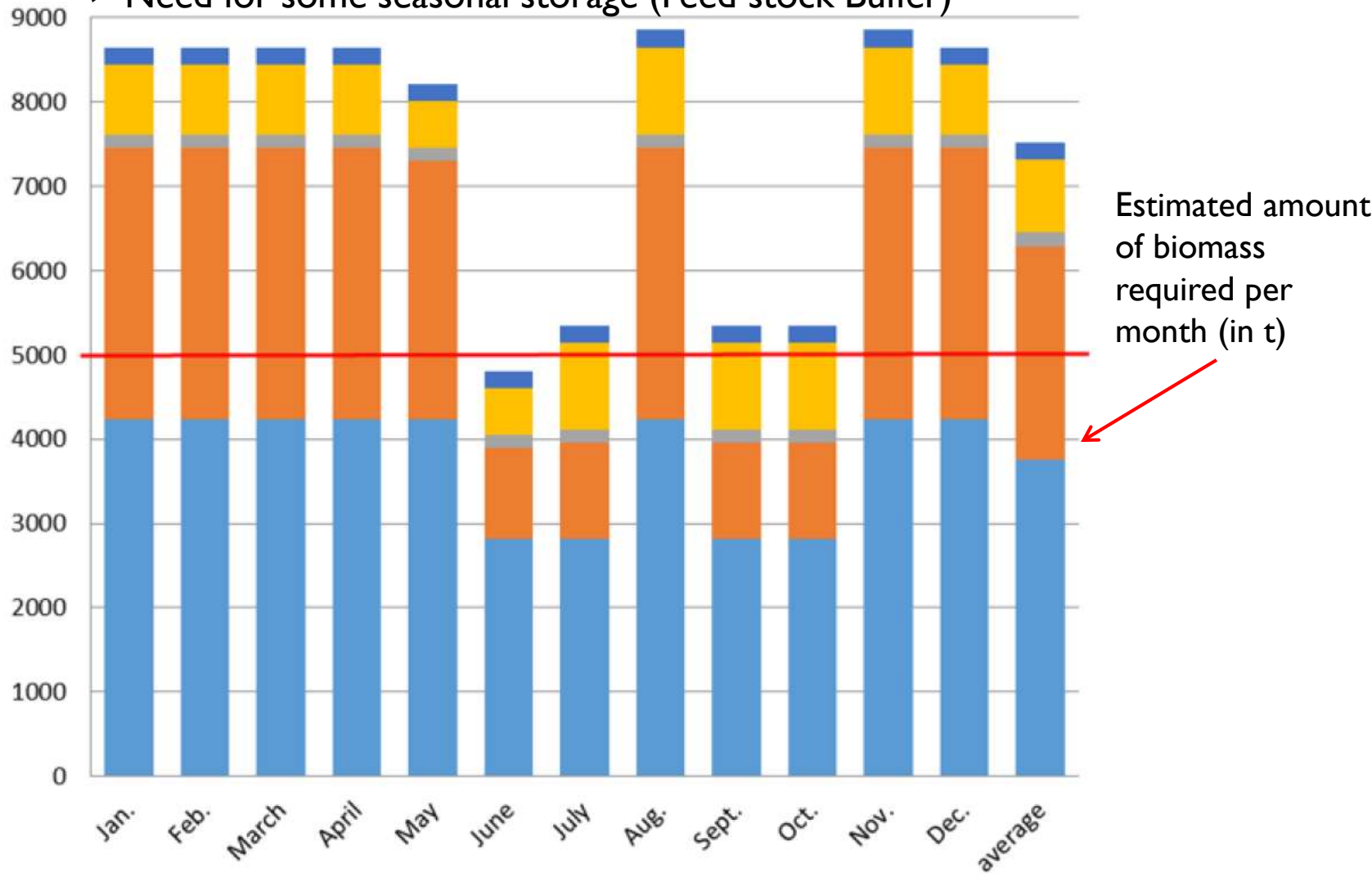
Findings (I)

- Availability far exceeds the demand of the power plant at current capacity, **but costs vary significantly.**
- The most preferred sources of biomass are;
 - the wood processing clusters (carpenters, pole manufacturers, sawmills) and
 - one rice processing cluster located within a radius of 21 km from the project site;
- Main type of fuel will be wood-processing residues (sawdust and other types of fine material, possibly briquetted)
- Significant amounts of biomass available in a concentrated area resulting in low costs.
- Cost of accessing wood plantation residues, forest residues and cocoa pod husk is significantly higher.
 - Mobilizing these types of biomass is more complex and would require creating new value chains



- Seasonal fluctuation of availability of key types of biomass is moderate;

✓ Need for some seasonal storage (Feed stock Buffer)



Findings (II)

- Depending on the type of biomass, there are currently little or no alternative uses.
- To avoid competition with alternative uses, wood offcuts (some of which are currently being used as cooking fuel and for charcoal production) may not be used as fuel for the power plant.

Lessons learned

- The biomass assessment provided valuable insights into the availability and economics of different types of biomass as well as potential logistical solutions
- It is difficult to estimate
 - the cost of collecting and processing types of biomass that are currently not being collected (e.g. forest and wood plantation residues, cocoa pod husks)
 - the transportation costs of commodities that are currently not being transported
- Even a detailed, professional biomass assessment cannot answer all biomass-related questions and provide certainty about final costs



Thank you for your attention!

More information:

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