



Biofuels & Bioenergy: A changing climate

Second generation biofuels: challenges and perspectives in Tropical Africa

Dr. Antonio Carrillo; Martial Nkolo
Bertoua-Cameroun August 2009





Introduction

The global energy crisis demands the development of alternatives to the use of fossil sources. Tropical Africa needs the formulation of special policies and practices that:

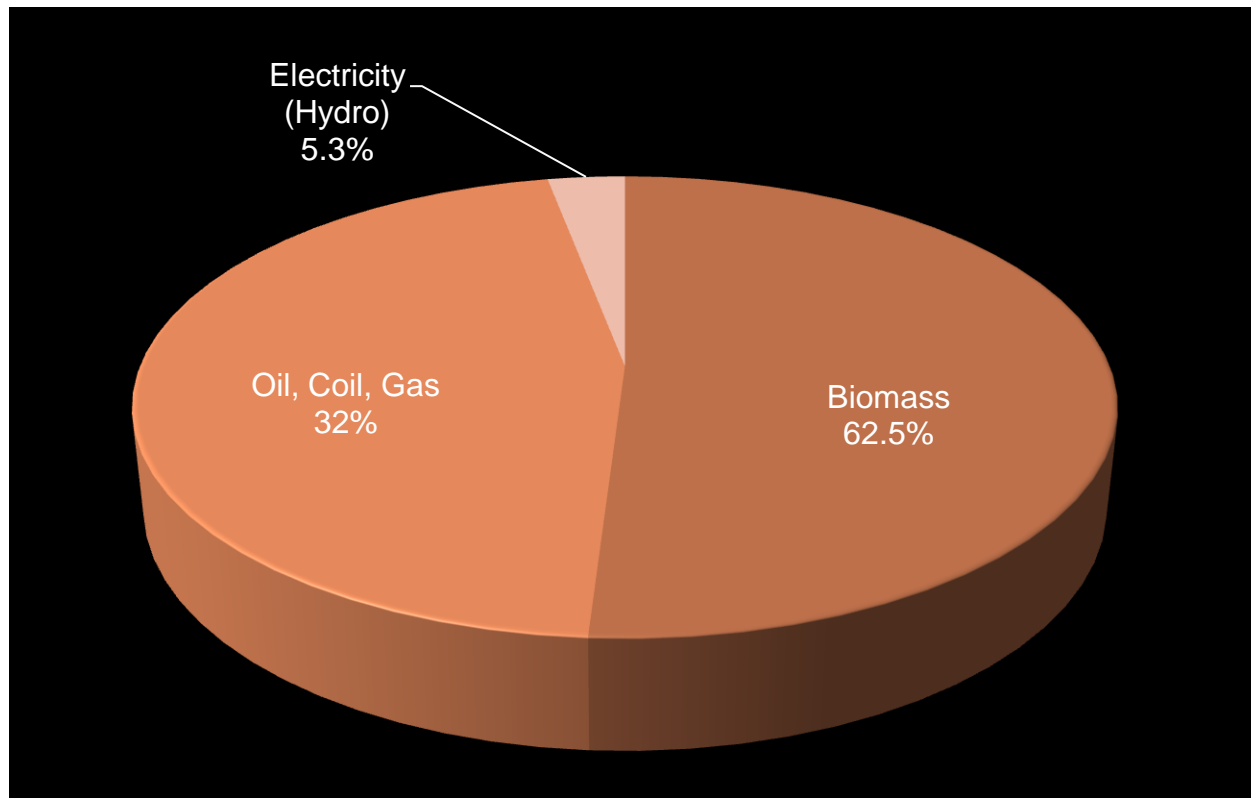
- ✓ Integrally consider all potential energy sources
- ✓ The identification of pertinent alternatives like solid biomasse and liquid biofuels
- ✓ Capacity development at all levels for the use of the renewable energy resources in a durable manner

In fact, the energy resources in most of tropical Africa are not much diversified and insufficiently valorized





Average (%) of the used energy sources from 10 representative countries of sub-Saharan Africa



Source: Rio+5 Report 1997



Biofuels

The situation concerning biofuels in tropical Africa shows that :

- some countries are in advanced stage of planning the introduction (Western African Countries),
- others are already producing biofuels (Malawi, Ethiopia, Zambia),
- and few others have already set mandatory mixing of ethanol into gasoline (South Africa).



Biomass type and conflicting issues

Oil	Sugar	Starch	Woody	Forest Residues
High risk	High risk	High risk	Medium Risk	Low or no risk
Land tenure, consumption	Land tenure, consumption	Land tenure, consumption	Land Tenure	Concessions

In the further presentation the aspects of:

- Emissions reduction
- Broader energy access to society
- Sustainable job creation

were considered and led to follow the option of recycling the huge amounts of timber biomass residues that are mostly being useless burnt or dumped into rivers. For the Congo Basin Countries and some countries of West Africa, the availability corresponds at least to 110% of their registered exports.

In the following, the case of Cameroun illustrates the situation.



Woody biomass in sub Saharan Africa

Processes and Products

Type of Fuel	Liquid Biofuels	Solid Fuels from Biomasse	Biomass Fuels
Type of Process	Chemical Conversion	Pyrolysis	Straight Combustion
Type of Product	Bioethanol	Charcoal	Fuel wood, Sawdust, Chips, Pellets, Briquettes
Level of Use	Very low	High	Very high



Biomasse

Cameroun, like many other African countries disposes of an enormous potential of available biomass of divers origins:

The forest resources: the second biggest reserve in Africa after the RDC covers around 25 million ha. Around 18 million ha of dense forest are potentially exploitable.

The timber availability of the country can be estimated at **5 million standing m3/year**. The tops, branches and other usable residues left behind in the gathering spots of the forest represent around 50% of the available standing volume



Residual biomass is mostly useless burnt or left on production sites





Different types of timber residues



**Log
parc**



Sawmill

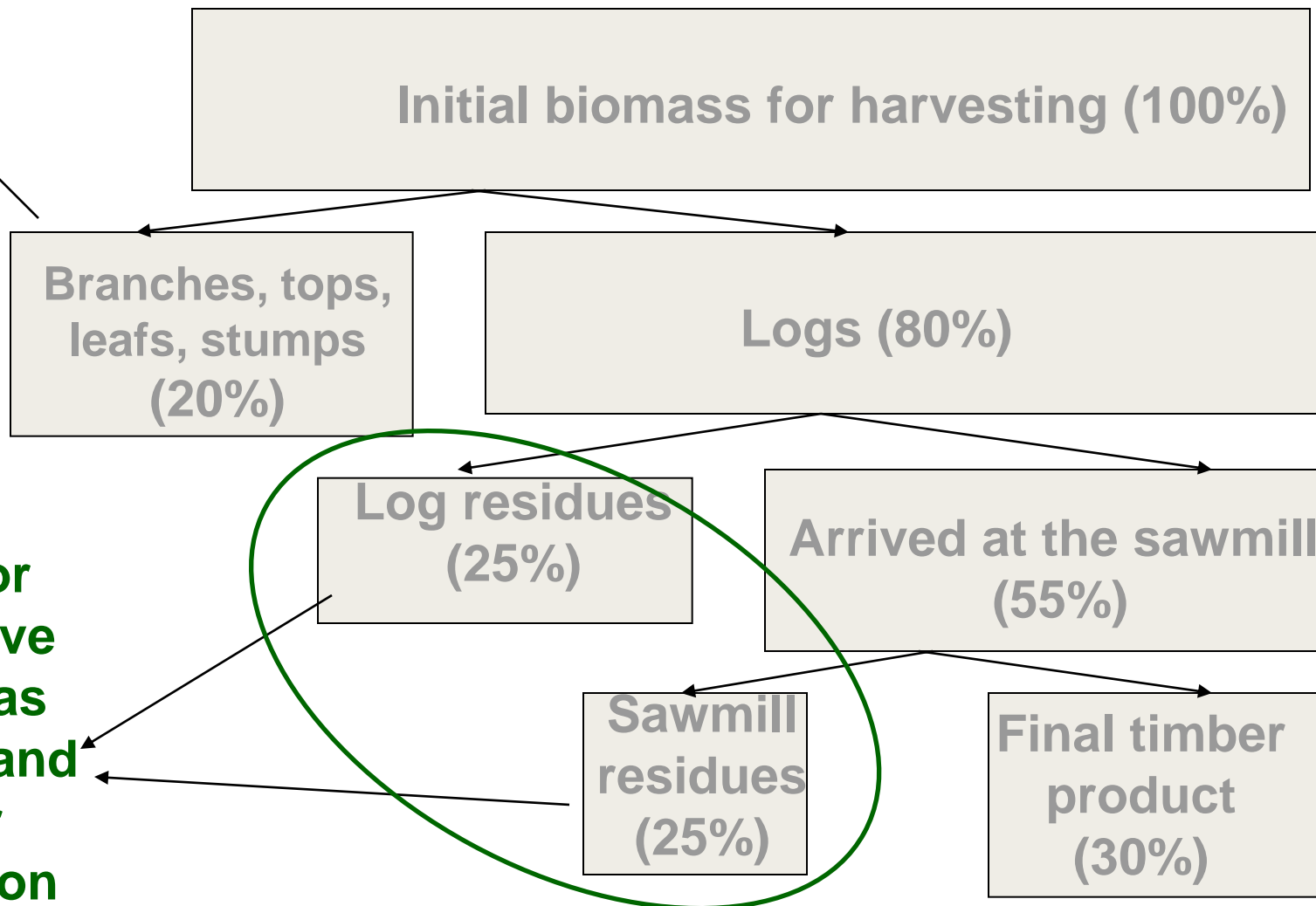




Proposed biomass utilization scheme





Left in
the
forests
as
organic
Fertilizer

Used for
alternative
energy as
biofuels and
power
generation





The potentials of residual forest biomass

Chemical conversion	Pyrolysis	Straight combustion
Bioethanol	Charcoal and derivatives, industrial and domestic	Cogeneration, steam boilers, kilns, heaters, stoves, herds
<p>??...</p> <p>...??...</p>	<p>...to come from here</p>  <p>...to here:</p> 	<p>...and from here:</p>  <p>...to here:</p> 



Biofuels an solid fuels from timber residues Potentials and Challenges

The second generation biofuels

The biofuels represent a big energy supply potential with many alternatives of use and performance increase. Nevertheless there are also problems to be solved in order to cope with their high cost of production:

- Lack of a policy for a biomass production program that takes into account the socio-ecological risks
- Lack of national financial systems to match such programs;
- The identification and availability of the ressources in a sustainable frame
- The documentation of the existing know how and the experiences so far, following the examles of other areas (SADEC, Latin America, Asia) in order to allow a solid frame for the program



Where do we go from here?

Looking back to the aspects in slide 5:

- Emissions reduction
- Broader energy access to society
- Sustainable job creation

It should be considered, that most of the pictures on Biomass useless Burning were made in “certified” concessions of the Congo Basin. Serious pollution, bioenergy potential destruction and occupation options seem to be still off the sustainable certification approach. Also many forest parcels to follow up REDD activities were established in the same enterprises. No synergies were detected between the approaches. The approaches concerned with emissions, energy and sustainability, including biofuels, should take the issue of “wood residues” systematically into account and the initiatives should synergise in a dynamic manner.



Thanks for your attention!