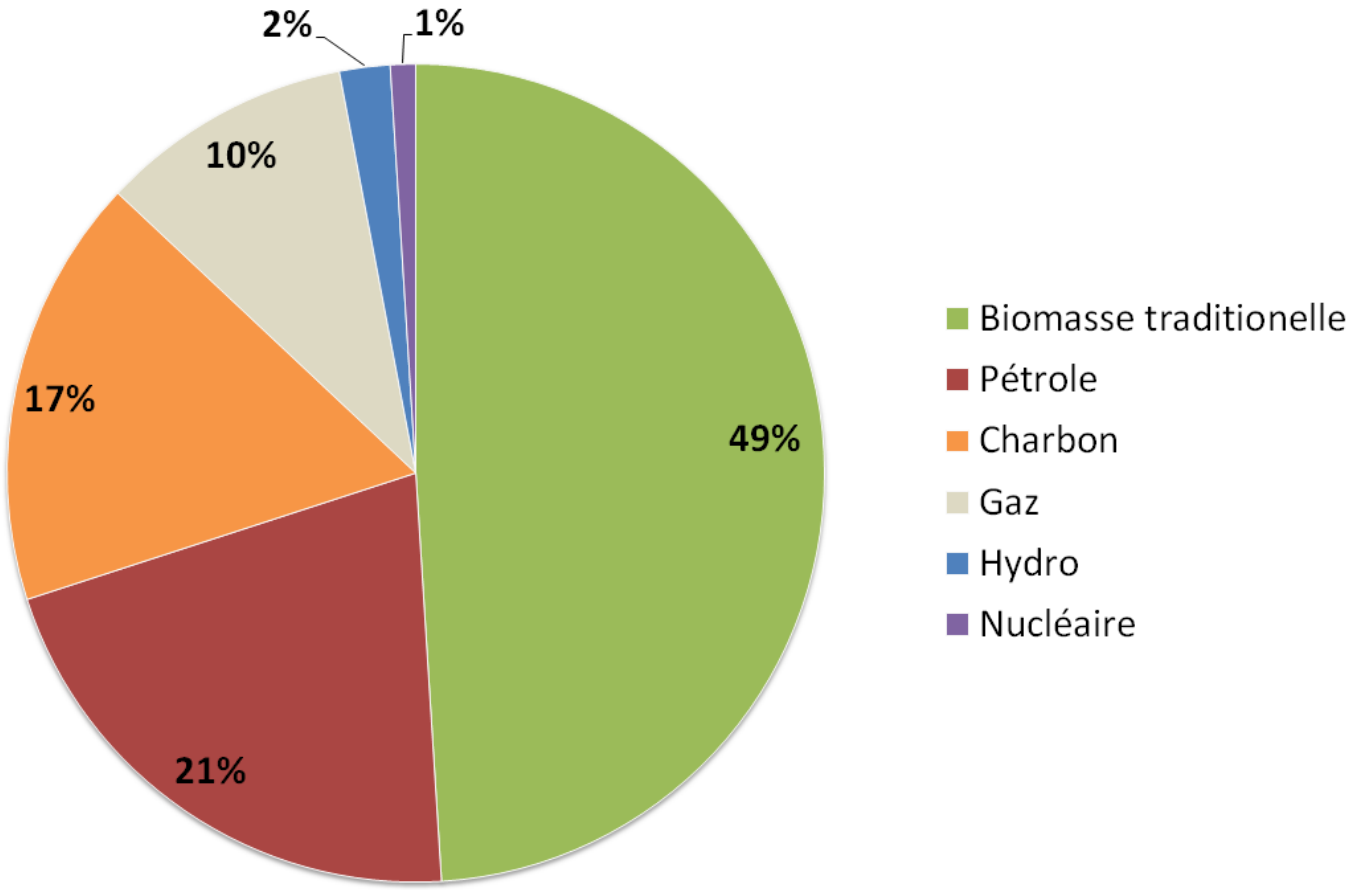
AGENCE FRANÇAISE DE DÉVELOPPEMENT

Wood energy in Africa

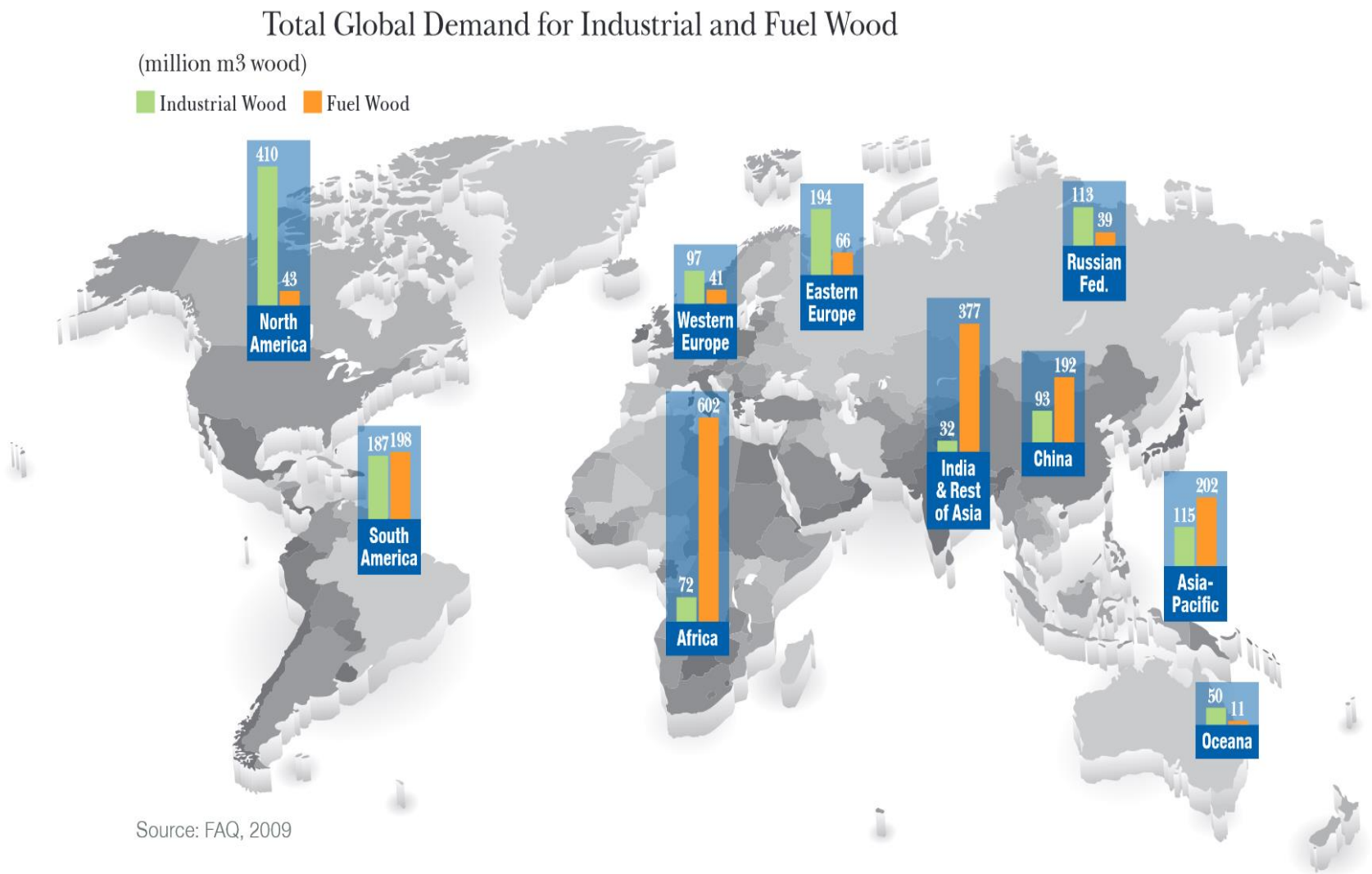
développeur d'avenirs durables

1.0 Share of primary energy supply in Africa



Source : Agence internationale de l'énergie, données 2003

1.0 Predominance of fuelwood energy in Africa



1.0 Fuelwood energy in Africa : mainly and sustainably used for cooking

Biomass as a Source of Cooking Fuel Globally

Millions of People Relying on the Traditional Use of Biomass as Their Primary Cooking Fuel

	2009			2015	2030	Share of Population on Biomass	
Region	**Rural**	**Urban**	**Total**	**Total**	**Total**	**2015**	**2030**
Africa	**481**	**176**	**657**	**745**	**922**	**65%**	**61%**
Developing Asia	1,694	243	1,937	1,944	1,769	51%	42%
Latin America	60	24	85	85	79	17%	14%
Developing Countries*	2,235	444	2,679	2,774	2,770	51%	44%
World**	2,235	444	2,679	2,774	2,770	38%	34%

*Includes Middle East countries.
**Includes OECD and transition economies.
Source: *Energy and Poverty,* Special early excerpt from World Energy Outlook 2010, International Energy Agency.

1.0 Main drivers of deforestation

Agriculture

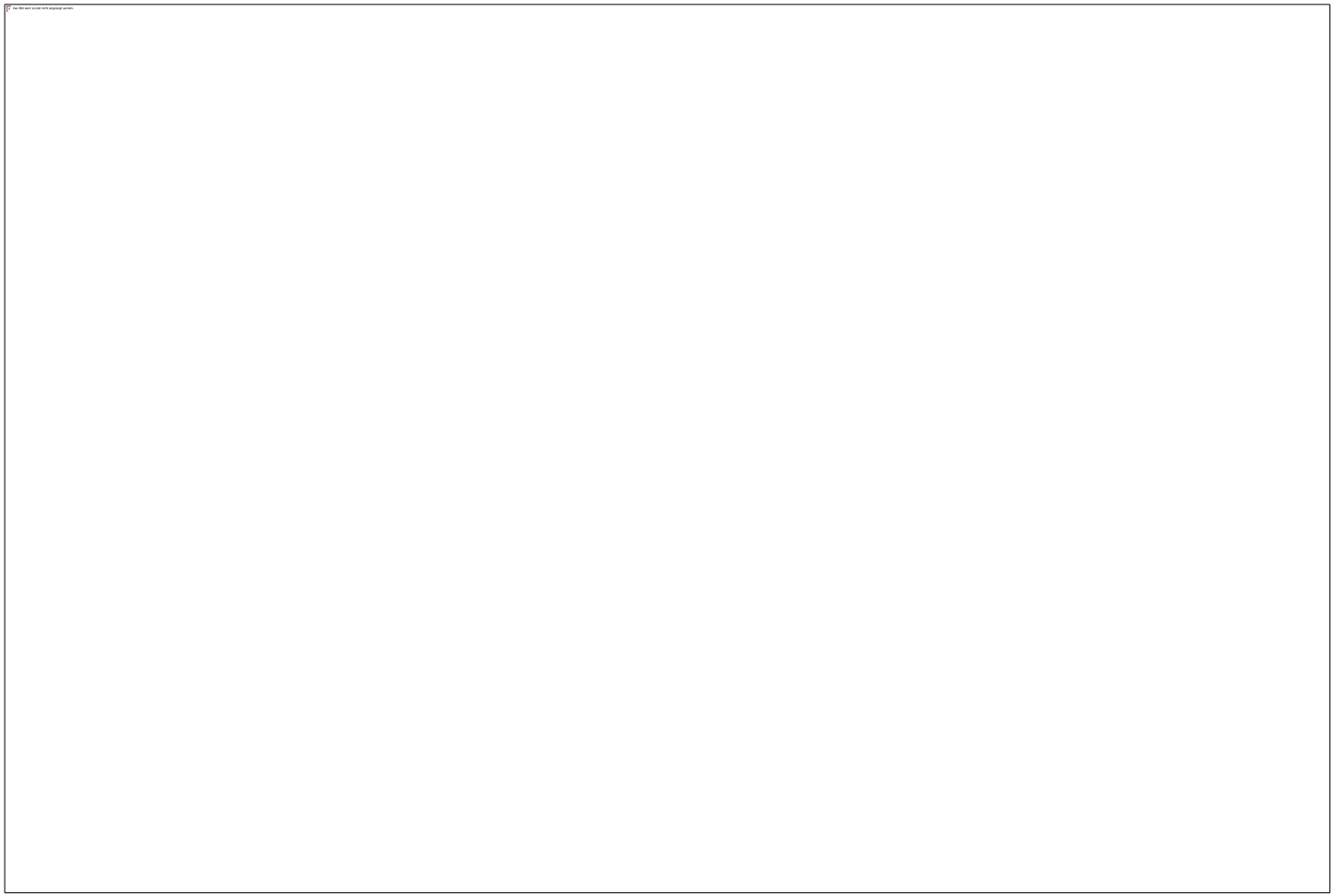
Fires

Overgrasing

Fuelwood energy

Source : Roland Louvel

1.0 Diversity of situations for fuewood



1.1 Fuelwood energy supply for african populations

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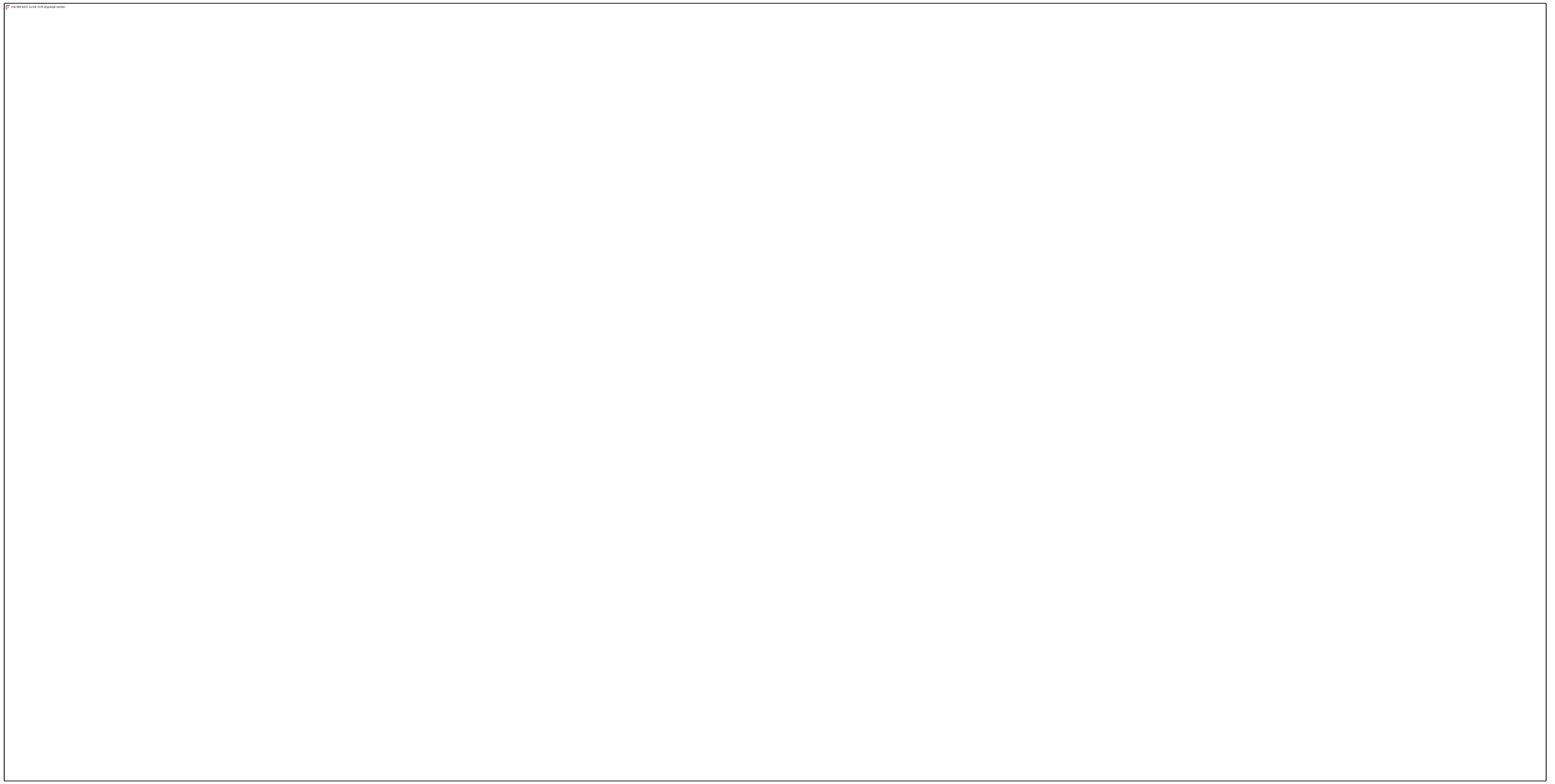
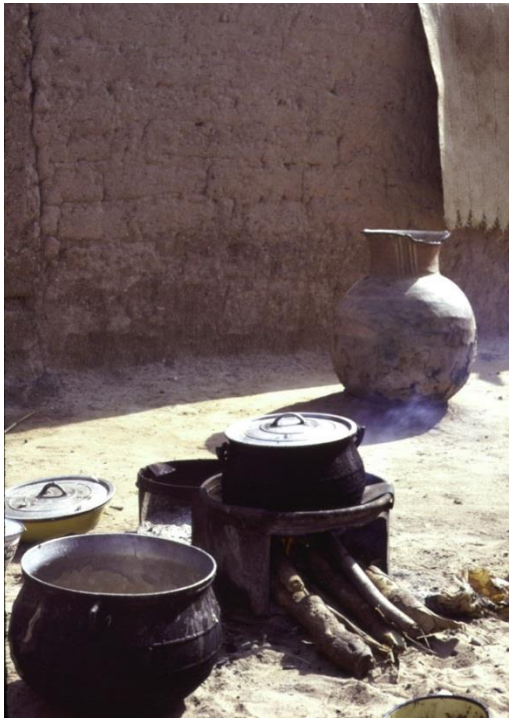
1.0 Growth of urban charcoal in Africa



Source : Note « Africa will import – not export – wood », *GEF, 2015*

1.1 Charcoal matters



- **In rural areas :**
  - Mainly wood
  - Raised, free

- **In urban areas :**
  - Mainly charcoal
  - Market

1.1 Charcoal matters

TRANSITION ÉNERGÉTIQUE : LE PASSAGE DU BOIS AU CHARBON DE BOIS
Rendements obtenus avec des techniques traditionnelles de production et d'utilisation

	Pouvoir calorifique	Rendement du foyer	Energie utile
1 Kg de BOIS	18,4 MJ / kg	**15 %**	2,8 MJ
Rendement de carbonisation : **20 %**			**x 2**
O, 200 Kg de CHARBON	29 MJ / kg	**25 %**	1,45 MJ

Hightest heat value and better yield of stoves, but use of charcoal is consuming 2 or 3 more wood than direct combustion

1.1 Regulate and modernize the traditional fuelwood consumption in domestic and artisanal chains

Increase offer

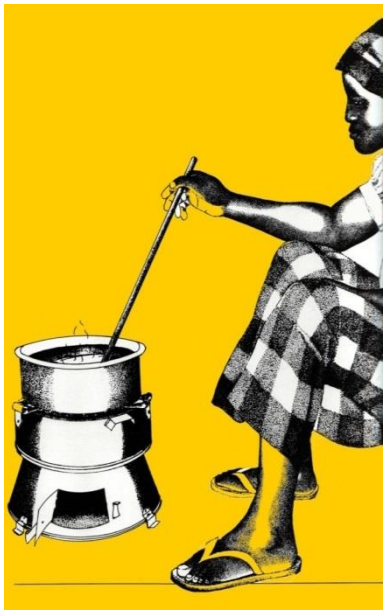
Manage and improve value chains efficiency

Manage the demand

1.1 Urban consumption for domestic and artisanal cooking

Lot of determinants :

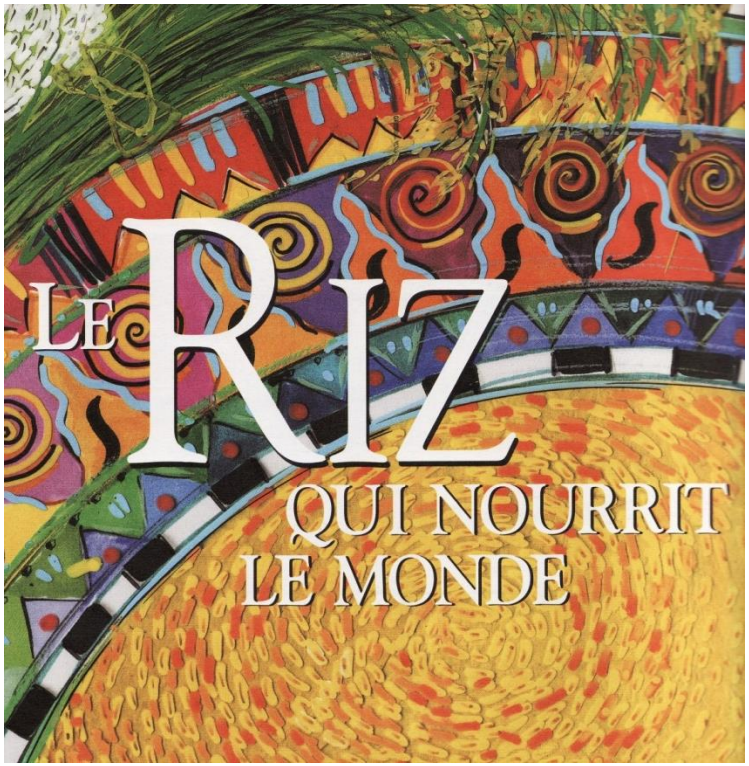
- financial
- type of devises
- Eating habits
- Stoves efficiency
- Size of the family
- Lenght of journey
- Collective restauration
- Advancement of living standards



Fuelwood comsumption for cooking

Yield	*: 1 kg/ hab/ jour*
Abundant areas	*: 1,5 à 3 kg/hab/j*
Shortage areas	*: 0,5 à 1 kg/hab/j*
Charcoal (urban)	*: 0,3 à 0,5 kg/hab/j*

1.1 Change of eating patterns



Cooking times :
- Rice : 20 min
- Beans : 3 h

Massive rice consumption saved more wood than a lot of fuelwood reduction programs !

1.1 Demand-side management of fuelwood

- Reduce fuelwood consumption by using performing stoves
- Promote alternative energies (GPL…)

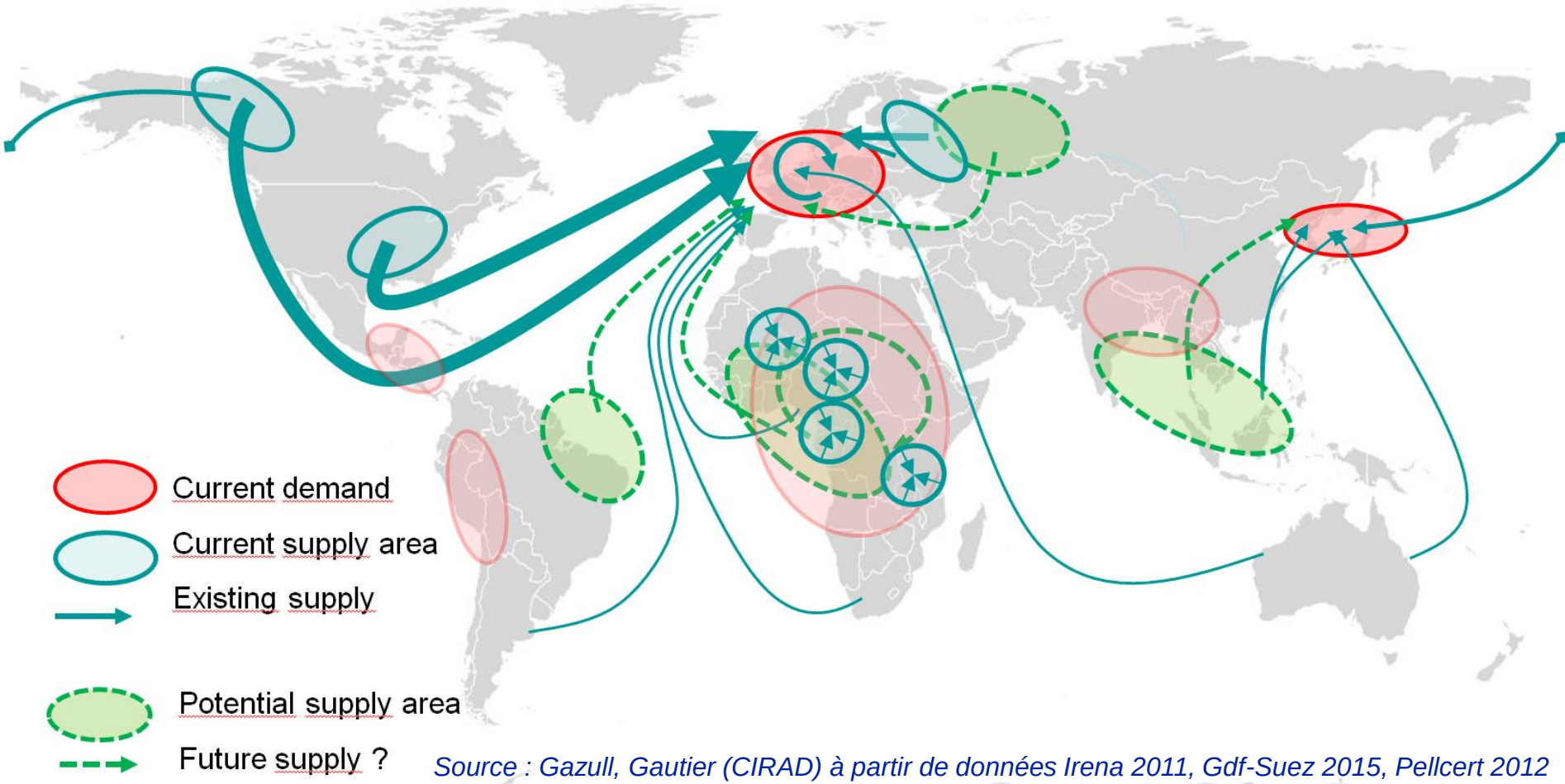
1.1 Manage fuelwood value chains to provide urban centers

- Diagnostic Supply/Demand and Fuelwood supply masterplan for urban centers
- Harvesting quotas and differential charges related to origin of wood
- Forest taxes of which a part is dedicated to local autorities
- Organisation of local management, regional landscape planning, rural markets
- Operating control and road transport around urban centers

1.1 Increase supply

- Increase fuelwood production : reforestation, plantation

1.0 International trade of fuelwood (pellets, charcoal)



Source : Gazull, Gautier (CIRAD) à partir de données Irena 2011, Gdf-Suez 2015, Pellcert 2012

1.2 Modern value chains with high added values (bio-electricity, bio-fuel, bio-heating)

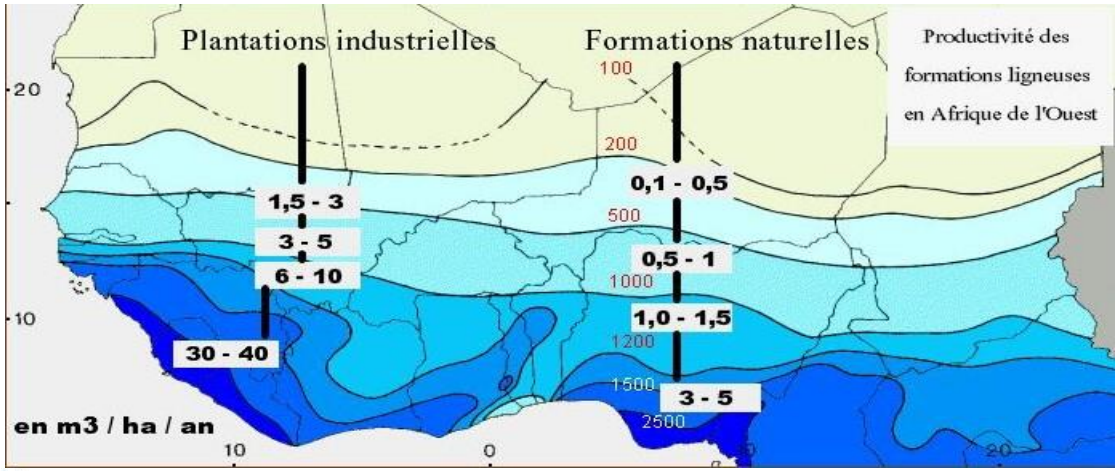
1. Wood waste energy conversion

1. Agro-industrial waste (concentrated on sites)
2. Logging and sawmills waste
3. Agricultural waste (to be raised)

Cotton stalks (5 t/ha)

2. Plantation

1. Forest plantation (bio-electricity or bio-heating)
2. Agroforestery plantation (ex : oléaginous trees)



Merci

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