

AVAILABILITY OF SUSTAINABLE FEEDSTOCKS: COMPLEMENTARITY VS COMPETITION

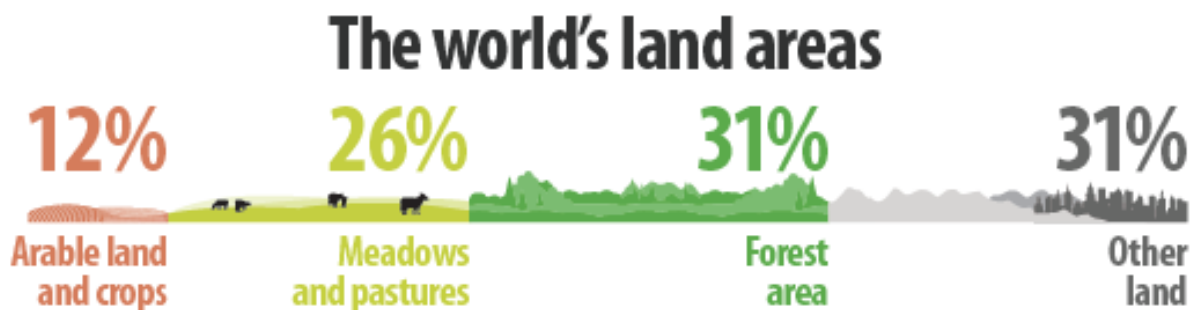
JRC & IEA Bioenergy TCP Task 39 joint workshop:
Biofuels Sustainability – Focus on Life Cycle Analysis
Philippe Marchand, 17/5/2019

SUSTAINABLE FEEDSTOCKS: FUNDAMENTALS

DISCLAIMER: we only discuss sustainable biomass-based (bio)fuels
Future energy landscape is multi-energy, complementarity becomes the new standard

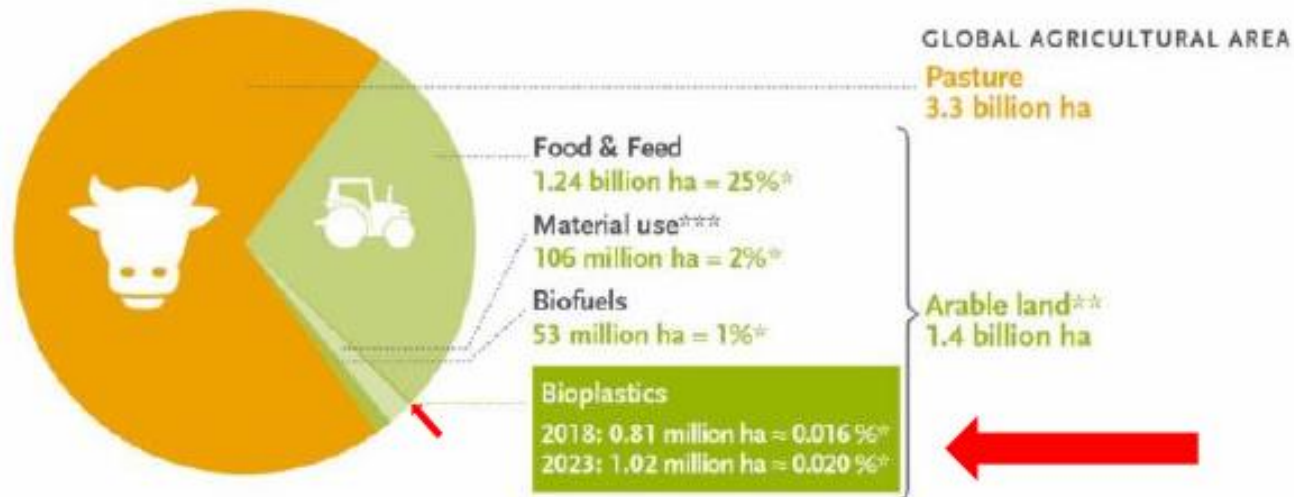
A DEFINITION OF BIOMASS: biomass is the biodegradable fraction of products, wastes & residues from Agriculture (land & sea-based), Forestry & associated industries, and the biodegradable fraction of industrial and household waste

THE « 4F » USES OF BIOMASS: Food, Feed, Fiber, Fuel
+ protection of biodiversity, land care (bio-intrant, anti-erosion), landscape diversity, water resources management, more generally eco-services
SUSTAINABILITY is about environment, social and economics



Towards 2050: Food is #1 priority, but diet change, agronomy progress, food waste reduction should allow feeding ca 10 B inhabitants and supply the other « Fs » (FAO)

BIOMASS FOR ENERGY & MATERIALS: WHY IN COMPETITION ?



Land use for biofuels and bioplastics in the world:
1 % of global agricultural area

Vs 70 % for cattle

Brazil, world leader for ethanol use as car fuel: less than 0.5 % of the national territory is for ethanol production, vs 4 % for cattle

ZAE CANA IN BRAZIL - SUMMARY TABLE

TERRITORY OR ESTIMATED AREA	MILLION (ha)	PERCENTAGE IN RELATION TO THE NATIONAL TERRITORY
National territory (IBGE) ¹	851.5	100%
Agricultural lands	553.5	65%
Land in use 2002 (Probio Estimate) ²	235.5	27.70%
Environmentally restricted areas (including the Amazon and Pantanal biomes, and Paraguay River Basin)	694.1	81.50%
Suitable areas that are currently being used for agricultural and livestock production	64.7	7.5%
Suitable areas that are currently being used for pasture (high and average suitability)	34.2	4.02%
Area currently cultivated with sugarcane 2008/2009 harvest ³	7.8	0.90%
Expansion of sugarcane production foreseen for 2017* (EPE)	6.7	0.80%

BIOMASS AT THE CENTER OF THE BIOECONOMY

Making biomass end-uses COMPLEMENTARY requires a HIERARCHIZATION of uses: extracting the best efficiency and value from the supply chains, acknowledging the existence of alternatives and the relative demand size

- **Climate change: reduce fossil energy usage & improve carbon storage management (sustainable biomass management)**
- **Social & Economics: improve energy independence**
- **Social & Economics: support Ag & Forestry sectors**

**ONE DEFINITION OF END-USE HIERARCHIZATION (France):
Food, Feed, Bio-intrants & Soil protection, Materials, Fuels, Gases, Heat, Electricity**

EXAMPLES:

- **Ag products (cereals, veg oils): when Food & Feed demand is met, on fallow land or in rotation optimization**
- **Dedicated crops (perennial plants, short rotation coppice): on marginal land, as inter- or catch-crops**
- **Crop waste, once bio-fertilization & erosion protection needs are met, also for methanization (along with cattle waste), investment capacity & revenue-driven**
- **Forestry by-products: manage yearly growth, valorize non-managed forests, stimulate main product development**

BIOMASS OPTIMAL USE: A NEED FOR CONSTANT & STABLE POLICIES

A bioeconomy strategy / policy is LOCAL

Each country is different: we must LEARN from Best Practices

First & Foremost: a LONG-TERM Strategy, country-wide, ideally regional-wide

Delivering COORDINATED, CONSISTENT, STABLE Public Policies:

- **Based on regional specifics**
- **Breaking the « silo » approach between Ministries: looking for partnerships**
- **Uniting policies regarding: circularity, environment & climate change, economy**
- **Gaining public acceptance**
- **Securizing volumes & qualities for the industrial operators**
- **Enabling synergies between end-uses**
- **Minimizing negative externalities**