European Commission

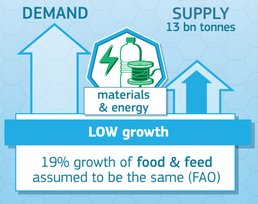
# SCENARIOS FOR A SUSTAINABLE BIOECONOMY


**Biomass** = renewable biological resources

## How do we develop our **research & innovation agenda**: by **2050**

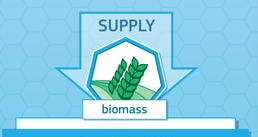
## BIO-SCARCITY

**Biomass:** LOW supply HIGH demand




**LOW growth**

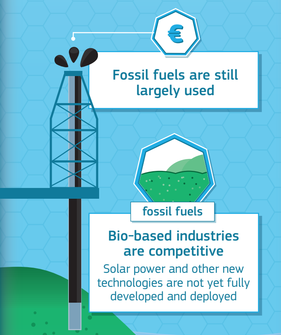
19% growth of **food & feed** assumed to be the same (FAO)




**Supply is LOW**

LOW R&I investment

- Public opposition to novel uses
- Impact of climate change and environmental degradation

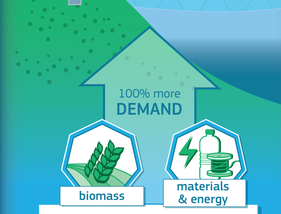


**Fossil fuels are still largely used**




**Bio-based industries are competitive**

Solar power and other new technologies are not yet fully developed and deployed



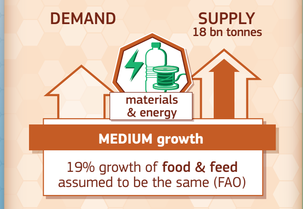

More land being used to produce biomass and **HIGH prices for agricultural commodities**

- MORE land grabbing
- HIGH prices for agri-products
- Geopolitical tensions increase even more.

BIOFUELS UNSUSTAINABLE
REGULATED BIOMASS MARKET
PRESSURE ON FOOD PRICES

## BIO-MODESTY

**Biomass:** MEDIUM supply LOW demand



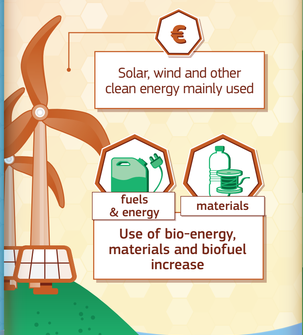

**MEDIUM growth**

19% growth of **food & feed** assumed to be the same (FAO)


**Supply is MODERATE**

R&I investments required

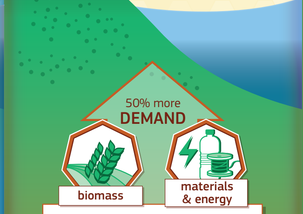
Relatively LOW pressure to use bio-based innovations



Solar, wind and other clean energy mainly used




Use of bio-energy, materials and biofuel increase



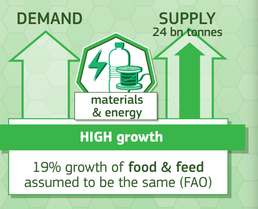

Total demand increases by 50%

- MODERATE demand for biomass, bio-energy and fuels
- MODERATE R&I investment in the bioeconomy.

MATERIALS & ENERGY COULD BE SUSTAINABLE

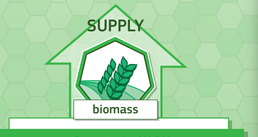
## BIO-BOOM

**Biomass:** HIGH supply HIGH demand




**HIGH growth**

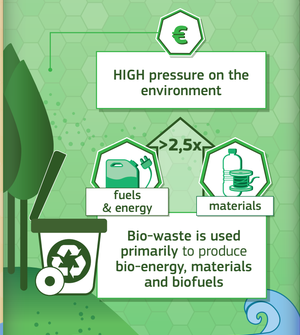
19% growth of **food & feed** assumed to be the same (FAO)




**Supply is HIGH**

HIGH R&I investment

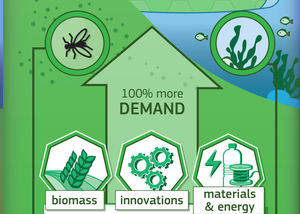
Public acceptance of novel foods



**HIGH pressure on the environment**




**Bio-waste is used primarily** to produce **bio-energy, materials and biofuels**




**Breakthrough innovations occur**, for instance, by tapping into new sources of biomass such as insects and marine

This is a future with **MORE cross-continent collaboration**, resulting in a relatively **stable investment environment**.

MATERIALS, ENERGY, FOOD & FEED PRODUCTION ARE SUSTAINABLE

**Need to act NOW for 2050**

*SCAR Foresight* report: **http://europa.eu/!py88jj**
Bioeconomy video: **http://europa.eu/!fV87MW**

The scenarios are based on biomass estimates for 2011. Biomass is measured as dry matter.