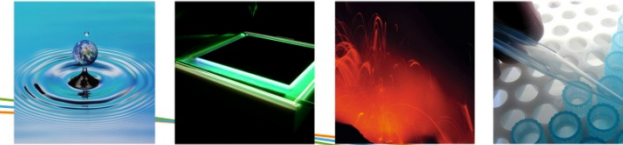




**vito**

vision on technology



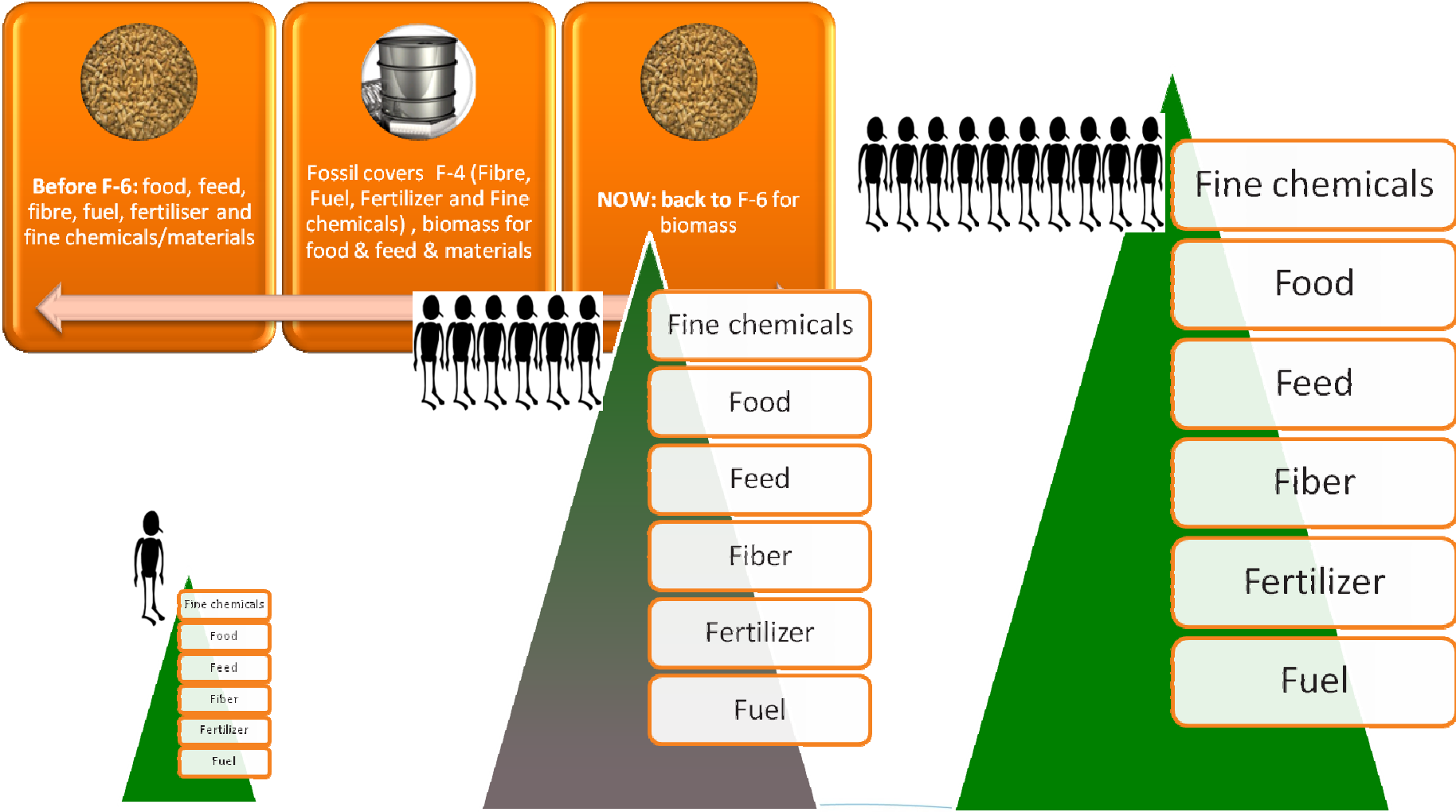
Competition of solid biomass:  
demand from different sectors,  
different applications towards energy  
and materials production

Nathalie Devriendt

Vito

29/11/2010

# History ...



# Solid Biomass stream in the picture: Wood

- » Why wood for bio-energy ?
  - » Tradition
  - » Technology is known for years: best efficiencies
  - » Close to fossil
  - » Most homogenous biomass stream
  - » Energy density high (for biomass)



# Amounts of solid biomass needed

- » Communication EU: assumption of European bioenergy demand:
  - » 230 Mtoe: X 2 for energy by 2020 versus 2007 (1.2 billion m<sup>3</sup> roundwood)

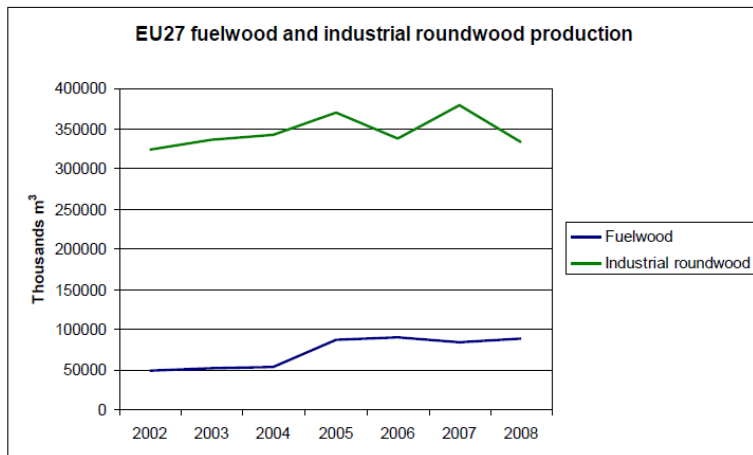


Figure 1 EU27 fuelwood and industrial roundwood production between 2002 and 2008  
Source: Eurostat, 2010.

Year	Total wood supply (million (M) m <sup>3</sup> u.b.)	Wood demand (M m <sup>3</sup> u.b.)	Difference (M m <sup>3</sup> u.b.)
2010	791	976	185
2020	825	1,274	448
2020 (75%)*	825	1,156	321

Table 1: Wood supply and demand required to fulfil European Forest Sector Outlook Study (EFSOS) product demand projections and wood energy policy objectives in 2010 and 2020. See study for information on methods and assumptions.

\*Assumes share of wood in renewable energies declines to 75% of the present biomass share, as the contributions from other biomass sources, such as agricultural crops and residues, as well as municipal wastes, grow faster than that from wood

- » European Forest Sector Outlook Study
- » NREAPs: more detail

# Demand for biomass in energy sector

- » Biomass paying capacity depends on
  - » fossil fuel prices
  - » energy and climate change policy measures applied (i.e. the amount of taxes, subsidies applied, the CO<sub>2</sub> prices)
  - » the development of other renewable energy technologies on the market.



# Implications on the market

- » Increased demand & competition for feedstocks
  - » Now: sawdust & wood residues
    - => affect a number of products: pulp and paper, panel making
- » Following markets become increasingly dependent:
  - » fossil fuel
  - » biomass for the stationary energy sector
  - » transport fuels
  - » forestry based industries
  - » ... future: fine chemical industry



# Challenges (1)

- » Forestry: mobilizing more sustainable forest resources
- Estimation: surplus of 233 m<sup>3</sup> roundwood (autumn 2008, UNECE/FAO study: “Potential Sustainable Wood Supply” )
- » more stemwood
- » more branches and tops
- » mobilising more post-consumer wood

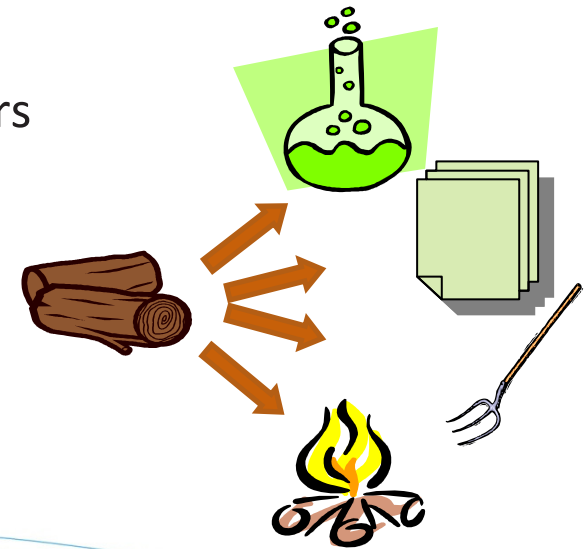
Source of wood supply	Current use (2005)		Additional bio-technical potential*		Additional socio-economic potential**	
Stemwood (Forest area available for wood supply (FAWS))	355.2	68%	232	31%	81.2	35%
Above-ground biomass (FAWS)						
- from current harvest	11.2	2%	148.8	20%	52.1	22%
- from additional harvest		0%	28.8	4%	10.1	4%
Below-ground biomass (FAWS)	2.6	1%	176.2	23%	0	0%
Other wooded land	1.1	0%	18.7	2%	6.5	3%
Trees outside forest	7.1	1%	3.6	0%	1.3	1%
Forest Expansion	0	0%	65.1	9%	22.8	10%
Wood fibre from agriculture	0	0%	25	3%	18.7	8%
Co-products and residues from wood-processing industry	113.8	22%	2	0%	2	1%
Post-consumer recovered wood	28.6	6%	52.5	7%	39	17%
<b>SUM</b>	<b>519.6</b>	<b>100%</b>	<b>752.7</b>	<b>100%</b>	<b>233.7</b>	<b>100%</b>

Table 2: Importance of wood supply sources (million (M) m<sup>3</sup> round wood equivalent) according to UNECE/FAO study on Potential Sustainable Wood Supply in Europe  
 \*Describes how much wood could be physically removed from the forest on a sustainable level in addition to the current harvest, based on the biological increment, and subtracting harvest losses, and accounting for bark, if the wood was harvested. Number is influenced by site conditions, forest management and harvesting efficiency.  
 \*\*Describes how much wood could be cut and brought to formal and informal markets in addition to what is already used and marketed. Figure is mainly driven by harvesting cost, wood prices and related profit margins.



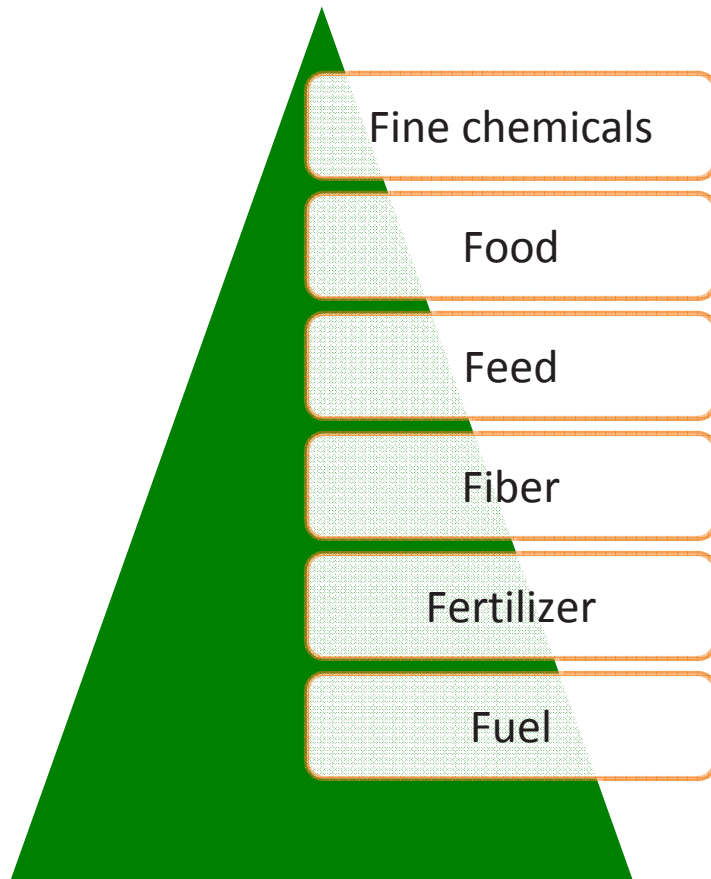
## Challenges (2)

- » Enhancing recovery and recycling of ALL biomass streams
- » Coherent approach for forest based industries integrated with RE & EE:
  - » Now: 50% of resources in sector is bio-energy
  - » Becoming net energy producers ?
- » Bio-refineries: bio-energy produced along with bio-based chemicals
  - » Advantage: optimize biomass use & outputs
  - » Challenge: cooperation between different sectors
- » Large scale biomass trade opportunities



# Challenges (3)

» Policy => promoting Bio-cascading ?



How setting the order ?

## 1. Added value ?

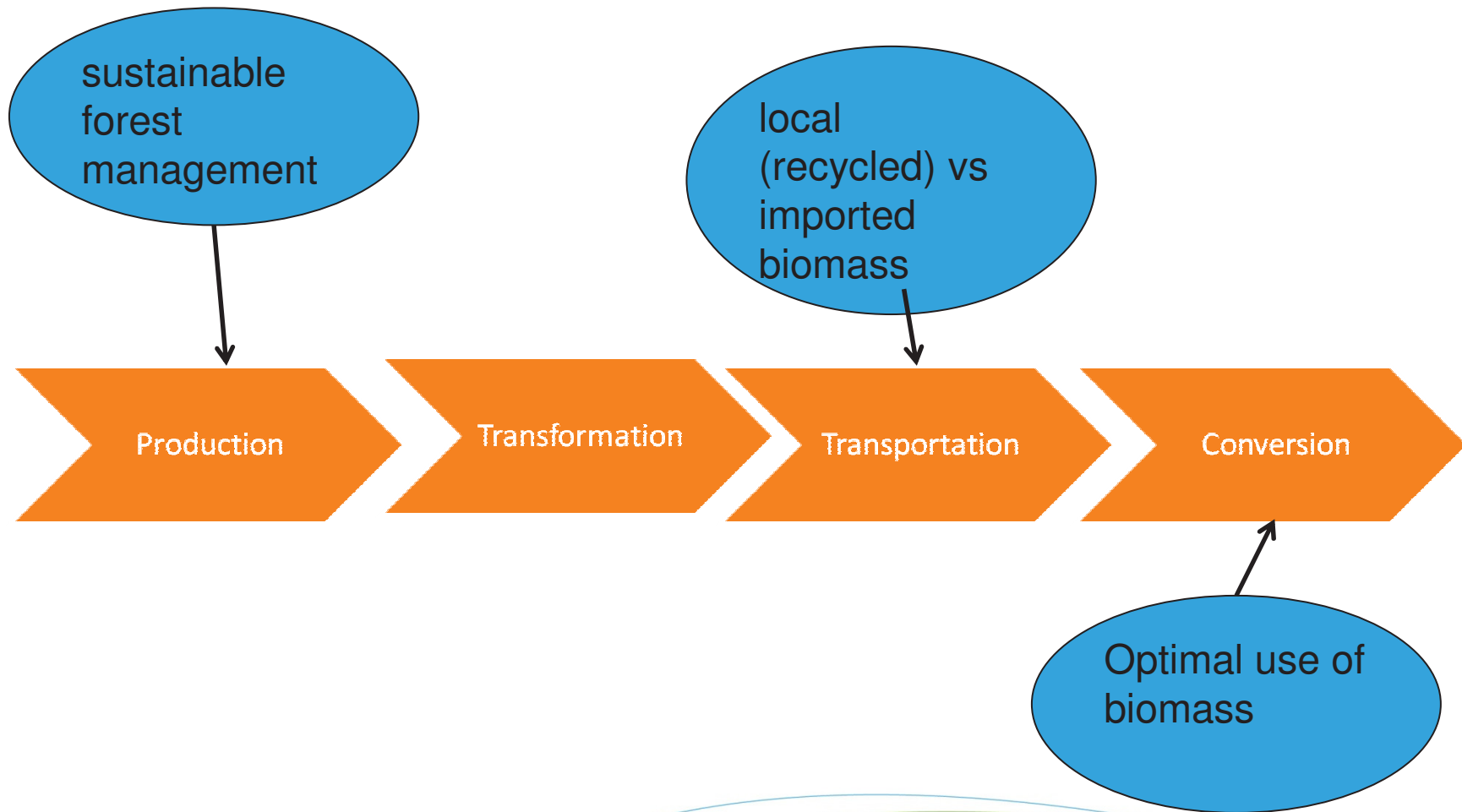
- + self controlling
- Not all factors receive value
- ⇒ Market correction through policy
- Ex. GC bio-energy Flanders
- BUT restriction on wood for materials

## 2. Impact assessment

- + Objective
- + Sustainability issues included
- + Aanvaarde methodologie (Impact Assessment Guidelines SEC(2009) 92)

## 3. Other !?!

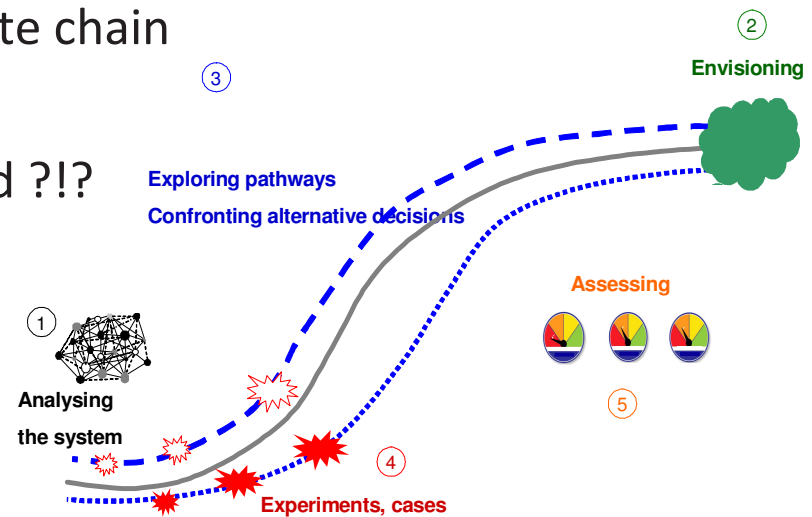
# Sustainability criteria: crucial !



# Conclusions

- » Increasing demand on solid biomass
- » Challenges for
  - » The different sectors
  - » Policy makers: a balanced optimal use
- » Sustainability issues in the complete chain

» Transition to a new era ... biobased ?!?



# Thank you for your attention !

- » Nathalie Devriendt
  - » Expert bio-energy
    - » Vito
    - » [Nathalie.Devriendt@vito.be](mailto:Nathalie.Devriendt@vito.be)
    - » +32 14 33 58 73