

WP 1.3 Identification of market demand for non-food crops

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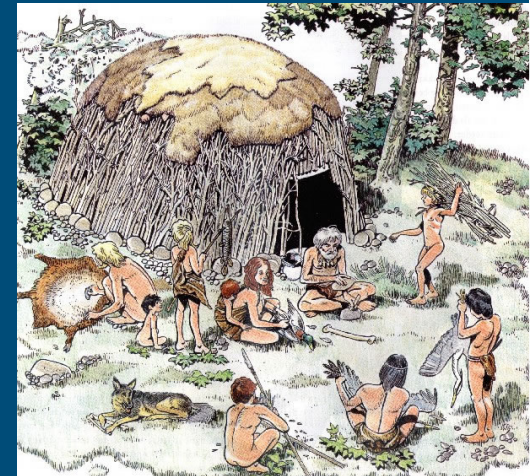
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Renewable resources in non-food applications

As old as humanity! Flax: 5000 B.C.

Sisal Hemp
Wool Strings
Putty Jute
Rubber
Leather Linen
Linoleum

Cotton
Wood
Glues
Coir (coconut)
Paper
Paints



Bioplastics



Modified wood



Bioethanol



Prijzen Gallerij en Lustdalar	
Bensin 95	9,53
Bensin 96	9,69
Bensin 98	9,83
Diesel	7,97
Ethanol E5	9,43
Ethanol E85	7,41

Compostable packaging



Natural fibre composites



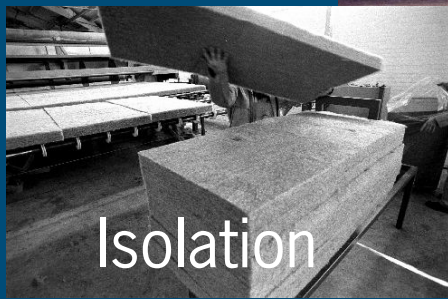
Green plasticisers



Building materials



Isolation



Paints, coatings and dyes



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Recent developments

Research questions

- What is the size of the present non-food market
- What is the size of the present food/feed market

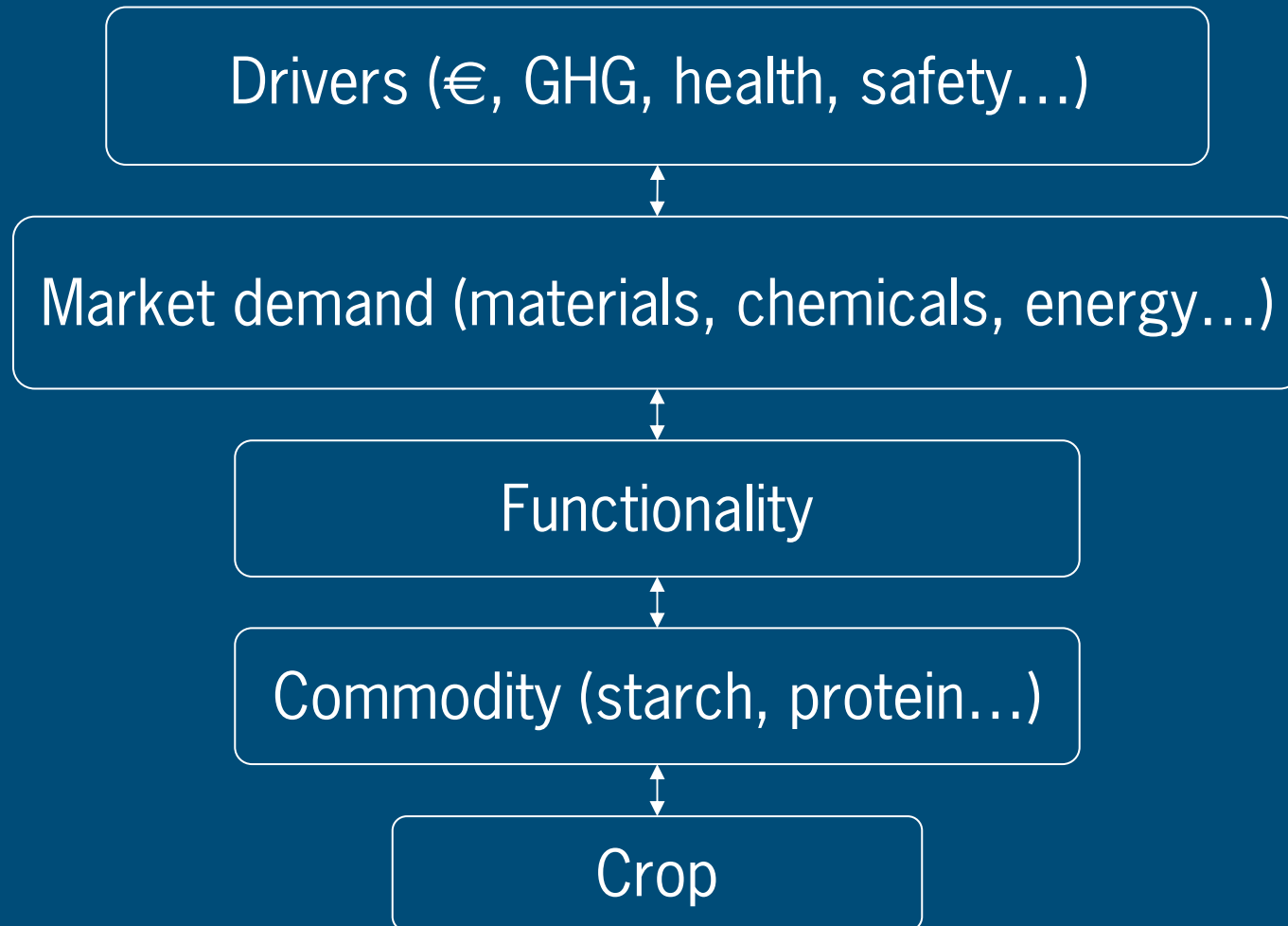
- What are the present demands for non-food/food crops



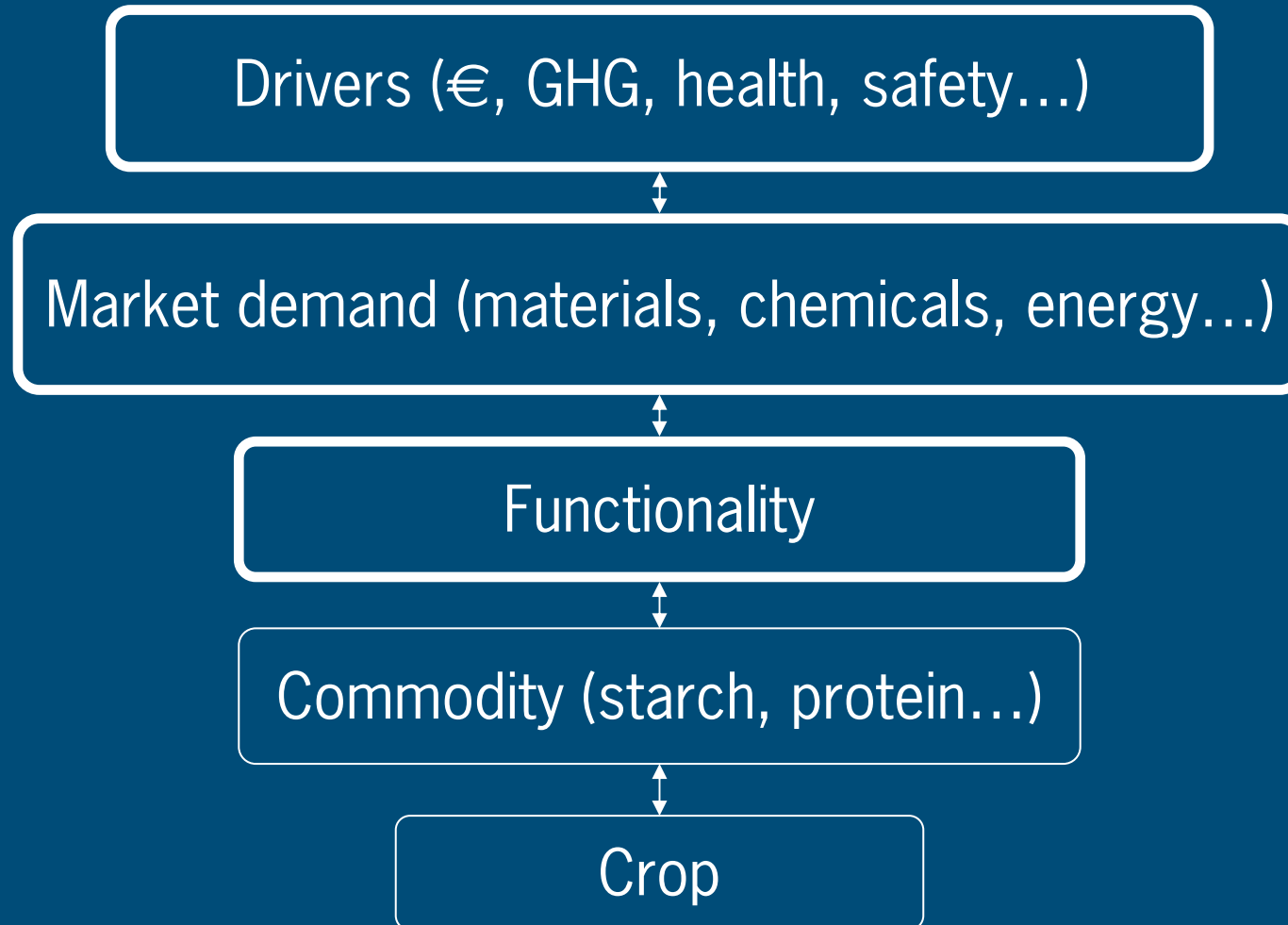
Background

- Beyond Agrification
 - Analysis of 25 years policy and R&D
 - Non-food applications
 - Netherlands extended to other EU countries
 - ENFA project and ministry of Agriculture
- Supply driven approach failed
 - Markets do not develop just because a resource/material can be used for a certain application

Our approach: “chain inversion”



Our approach: “chain inversion”



Market demand biobased products

- Present market size of biobased in non-food/non-feed products in EU-25
 - 250 Billion € (excl. confidential data)
 - **Est. 400 billion € including confidential data**
- Present market size of food + feed products in EU-25
 - **460 Billion €**
- Largest potential for growth in building blocks (240%)



Methodology

- Use the Eurostat production data of 2005 for EU-25
- EU-25 is representative for the global market potential for biobased products
- Estimate the percentage of biobased components in the manufactured goods (in €)
- Estimate the potential to increase the percentage of biobased components (in €)



Eurostat data on manufactured goods

- In 1970, the «Nomenclature générale des activités économiques dans les Communautés européennes» (NACE - General Industrial Classification of Economic Activities within the European Communities) was compiled.
- It is a classification covering the whole range of economic activity.

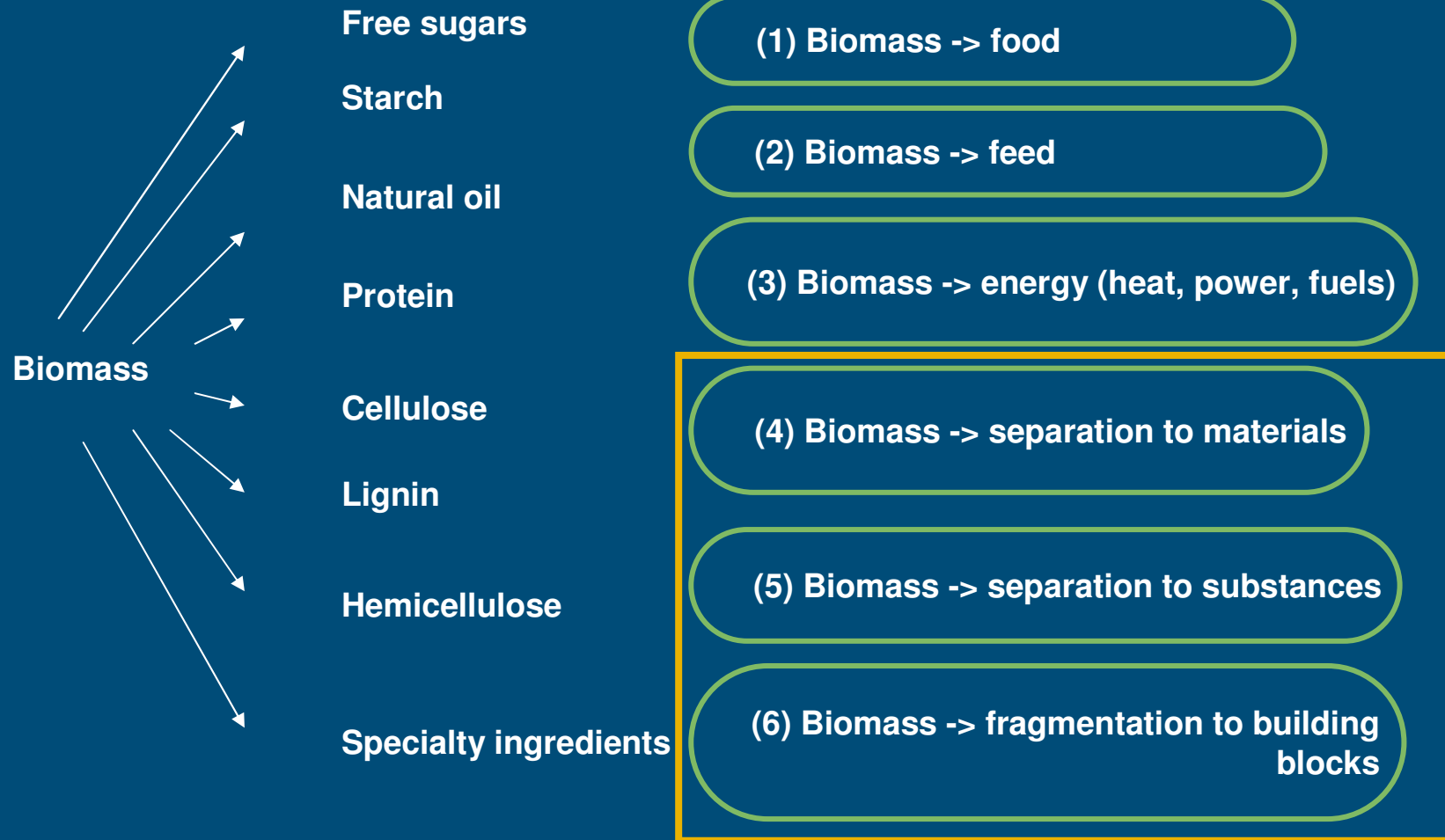


Biobased products...

- NACE contains over 4000 Products in 503 Classes, 222 Groups, 60 Divisions
 - Coarse selection: 936 potentially biobased products (Non-food and non-feed)
 - Final selection: 780 products
- Further divided into 3 groups



What can we do with biomass?



Classification non-food applications (Bos, van Rees, 2004)

Green resources supply us with:

■ Materials:

- fibres for paper, fabrics and composites
- wood for timber and energy

■ Substances:

- starch for plastics, glues and additives
- bio-oil for paints, inks and transport fuels

■ Chemical building blocks:

- lactic acid for additives and polymers
- ethanol for fuel and plastics
- furans for resins and fuels



Materials from biomass



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Substances from biomass



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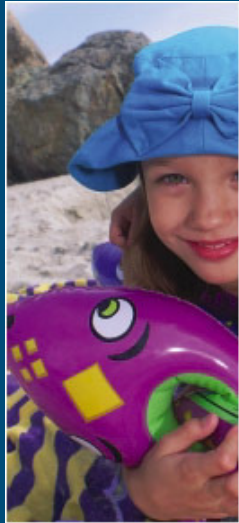
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■ Chemical building blocks:

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Chemical building blocks from biomass



The logics of this classification

- Materials from biomass:
 - Mostly old established applications and relatively simple processes
 - Can be big (f.i. Paper industry), but also a lot of SME
- Substances from biomass:
 - Often using relatively simple chemical conversions
 - Partly in present food industry (f.i. AVEBE), also SME
- Chemical building blocks from biomass:
 - Mostly combination of white biotechnology and chemistry
 - New products and processes
 - Focal point of the chemical industry
 - Biggest potential for biomass applications

Market potential based on present production data

(Eurostat 2005)

	<i>Number of product categories</i>	<i>Percentage product categories registered</i>	<i>Total registered value * (billion €)</i>	<i>Present share Biobased ** (billion €)</i>	<i>Commodities</i>	<i>Crops</i>
Materials from biomass	323	78%	250.6	187.7	?	?
Substances from biomass	101	60%	47.9	23.2	?	?
Building blocks from biomass	356	33%	155.2	34.5	?	?
Totals	780	55%	453.7	245.3	?	?

* excluding the confidential data

** of the non-food, non-feed component, based on expert judgement



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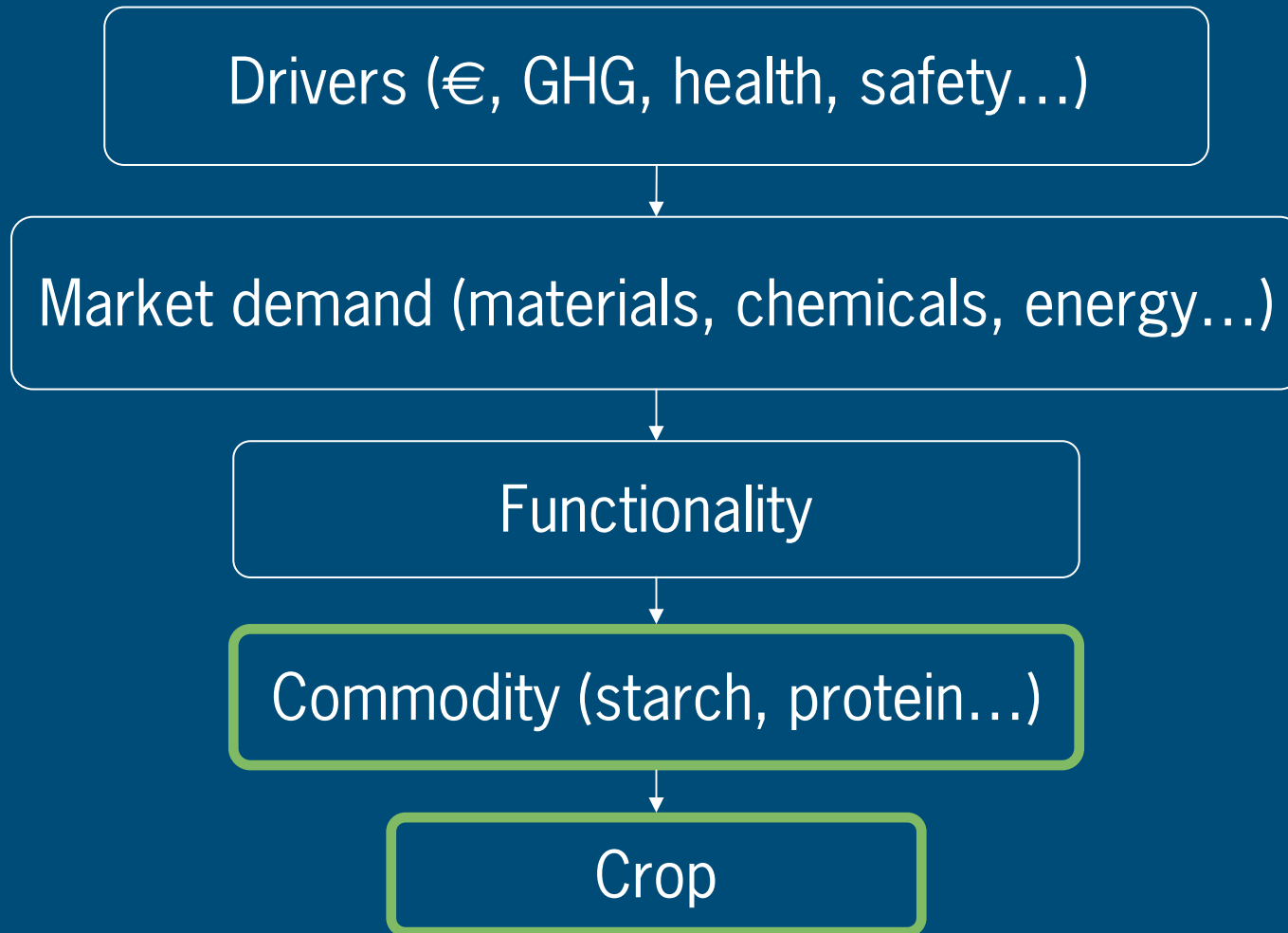
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What needs to be done?



What do we have and what needs to be collected?

- We have:
 - Present (2005) market demand, in €, in EU-25 for non-food applications

- Needs to be collected:
 - Present data on energy (and food and feed) market

- Needs to be done:
 - Translate the data towards commodities and crops



Work for the coming months

- Translate the data from the Eurostat analysis to commodities and to crops (A&F)
- Translate additional data on the biofuel market size towards commodities and crops (CRES)
- Provide additional data on the food and feed market size (in terms of commodities and crops) (NAGREF and INIA)
- First draft will be presented in Madrid



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