

Building Based on BioBased

BBoBB - Webinar II

Miscanthus

Interreg
North Sea



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Welcome

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Miscanthus



PARTNERSHIP

IMT North Europe
CEREMA

Province of Fryslân (LP)
House of Design
Biosintrum
Circulair Friesland

Design Region Kortrijk
Ghent University

3N

Region Heidekreis
Jade University of
Applied Sciences

CELF
Business Lolland Falster

Agrovi
Guldborgsund Municipality

1) What is your profession?



 **Mentimeter**



2) Are you already working with biobased materials?



 **Mentimeter**



3) What are you hoping to learn from this meeting?

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 **Mentimeter**



- **Use of biobased materials in construction** is a unique opportunity with a lot of potential
- Contribute to major global and NSR challenges:
 - climate change,
 - reduce CO₂ emissions,
 - new business models for farmers,
 - soil health,
 - biodiversity,
 - revaluation of the region
- **Currently:** many small-scale projects throughout the NSR

Aim: focus on strengthening value chains and scaling up



- **Overarching obstacles** currently experienced in the NSR:
 - Lack of well-organised value chains
 - Fragmented and partly missing knowledge and data
 - Facilitating government policies, laws and regulations
 - Awareness among different parties in the chain
 - Financial feasibility of biobased construction materials

Objective: tackle these challenges
by developing a transnational approach
for the valorisation of biobased value chains

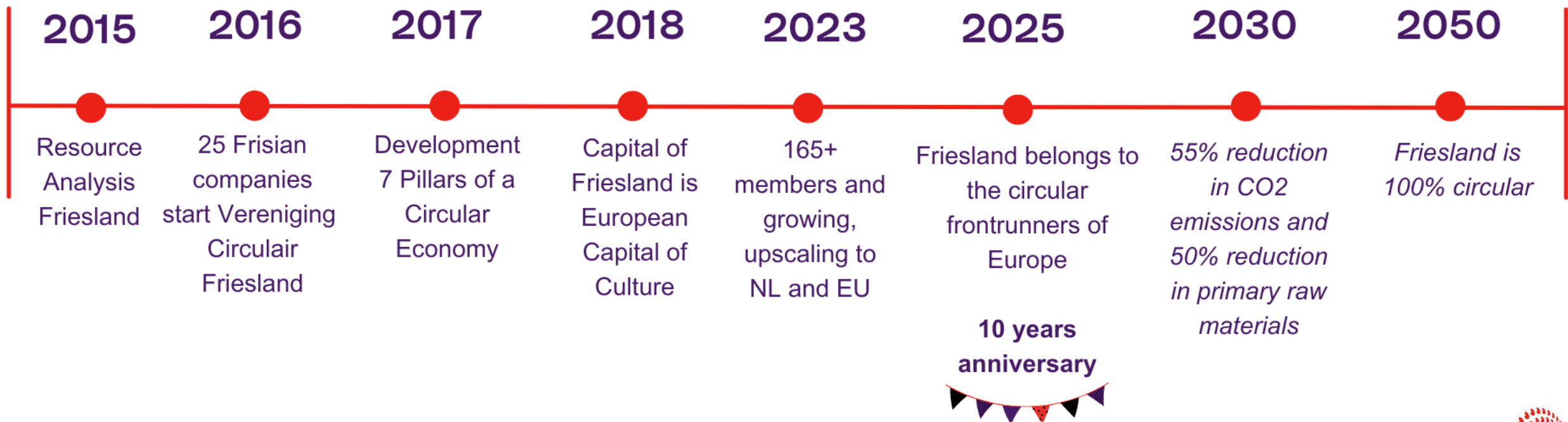


- The transnational cooperation and exchange of knowledge thus offers **a scale leap for creating both economic and environmental impact** with the application of biobased materials
- Achieved through **various activities** with a focus on governance and policy; demonstration of costs and benefits; design and awareness

Demonstrated in 5 pilot projects,
in which the developed methods and business models
of biobased value chains are applied to different crops



Circulair Friesland Association





Over 180 members

Frisian businesses

All Frisian governmental bodies

All levels of education

Strong working relationships with other

regional and national networks

HOUSE OF DES/GN

Established in 1996.

A societal design lab initiates projects, making sustainability tangible and visible, through participatory action research.

We work in North Netherlands and Europe.

planet
~~HUMAN~~ CENTERED DESIGN
for human use



Role of design

from productto system

WHAT IS THE IMPACT
OF OUR PRODUCT

to nature?
to society?
to local economy?



Local Value Chain model

Model to re design a system from linear to circular

Connect different stakeholders;

Boost the local economy;

Contribute to more biodiversity in your region and
a zero waste society;

Minimalise CO₂ emissions

Create purposeful employment for all degrees;

Develop something visible and tangible,
and especially,

something to make people proud!



1 Materials and resources

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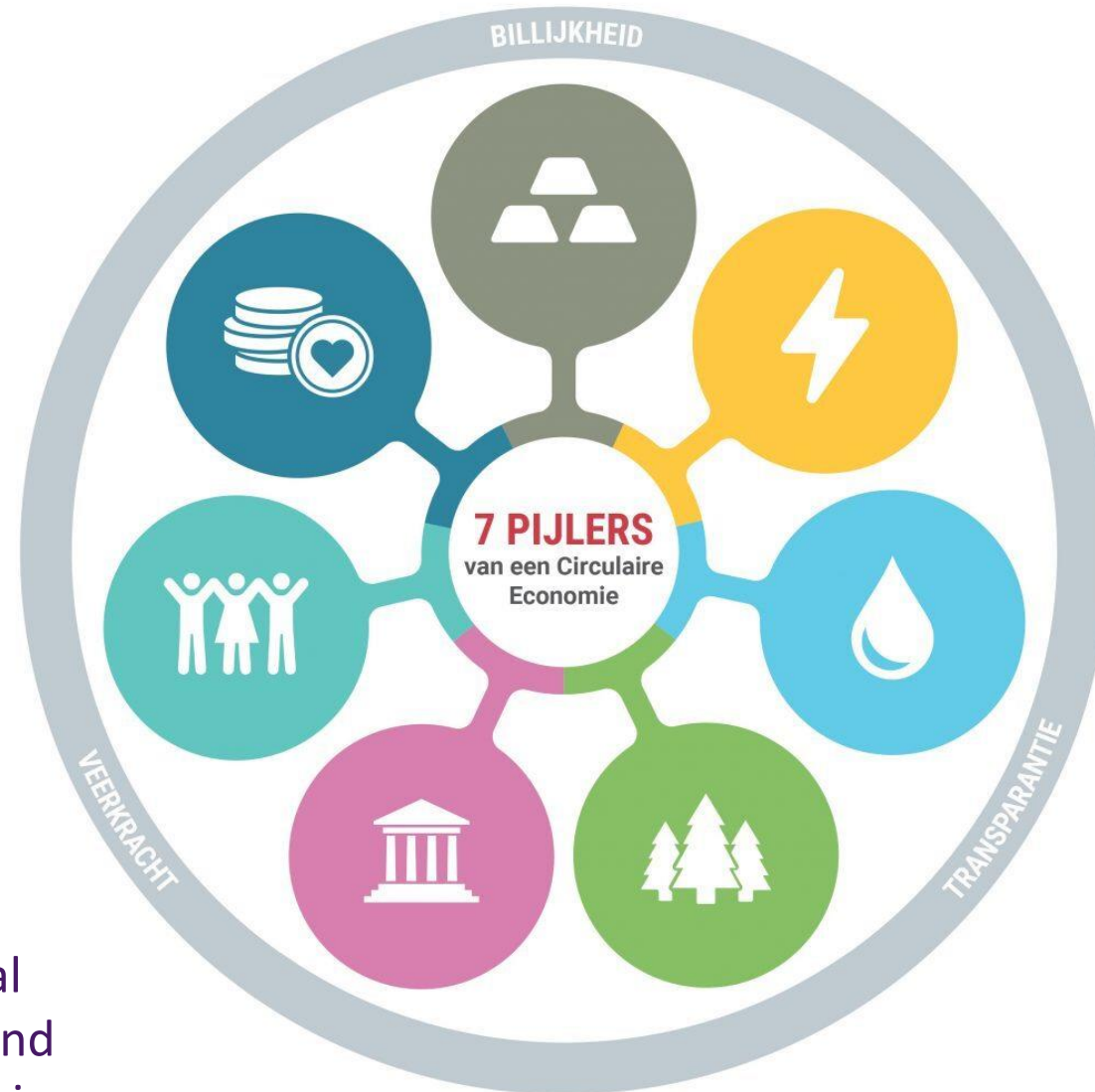
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7 Maximal added
value

6 Health and
wellbeing

5 Cultural
diversity and
social inclusion



2 Sustainable
energy

3 Positive impact
on water

4 Biodiversity



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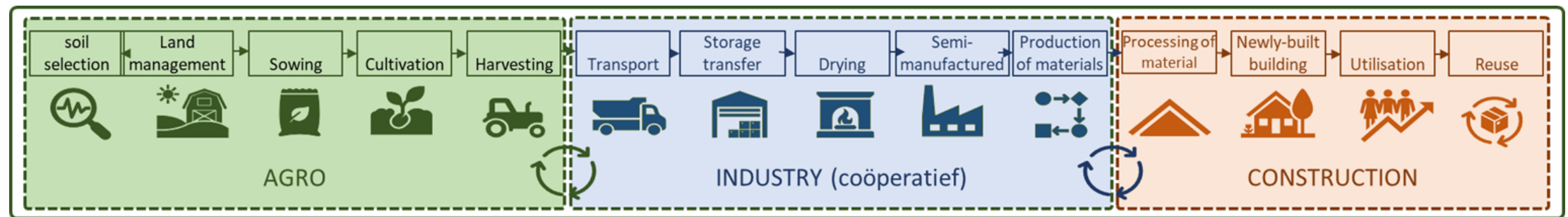
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Construction: From pollution to solution

Construction is pollution

- 50% of the use of resources
- 40% of total energy use
- 40% of waste from construction sector
- 39% of CO₂ emissions
- 30% of water use

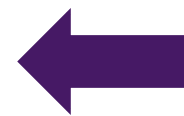
Building biobased and urban mining value chains



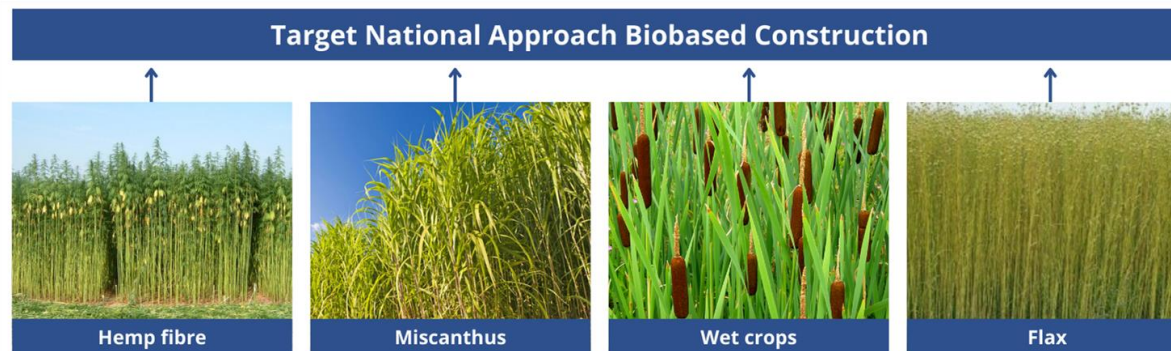
Supply
Crops/urban minig



Processing



Demand
Biobased/re-used





Chain development miscanthus

Factsheet miscanthus

Miscanthus is a perennial C₄ plant that can grow up to four metres tall.

- Easy to grow
- Requires little fertilisation
- Requires little maintenance
- No crop protection required
- Grows well in most types of soil
- Improves soil life
- Captures a lot of CO₂

FUTURE MARKETS



Carbongrass.nl

CURRENT MARKETS

Miscanthus application

Miscanthus Giganteus:

- Chips bio-concrete, building boards and building blocks
- Fibres bioplastics, cladding, insulation blankets
- Stems insulation mats and straw bales
- Lignin binders and resins, high-quality building materials, (bio) composites, use in polymers, concrete and asphalt
- Cellulose paper, cardboard, composites, asphalt mixtures, packaging materials, and also in health and pharmaceuticals.



Miscanthus Sinensis:

- Stems roofing, replacing tatch (imported from China)



Miscanthus raw material yield

Plant the rhizomes in April/May		Harvest from February to April
Year 1	No harvesting	Yield approximately 5-10% of maximum
Year 2	Leaf waste own compost And harvest stems	Yield approximately 30-50% of maximum
Year 3	Leaf waste own compost And harvest stems	Yield approximately 60-80% of maximum
Year 4-20/25	Leaf waste own compost And harvest stems	Yield approximately 70-100% of maximum

Maximum yield of Miscanthus sinensis: 10 ton/ha

Maximum yield of Miscanthus giganteus: 20 ton/ha

Approximately 2 tonnes of dry matter is needed to insulate an average home.

1 hectare of miscanthus can insulate 10 homes.



Cradlecrops.com

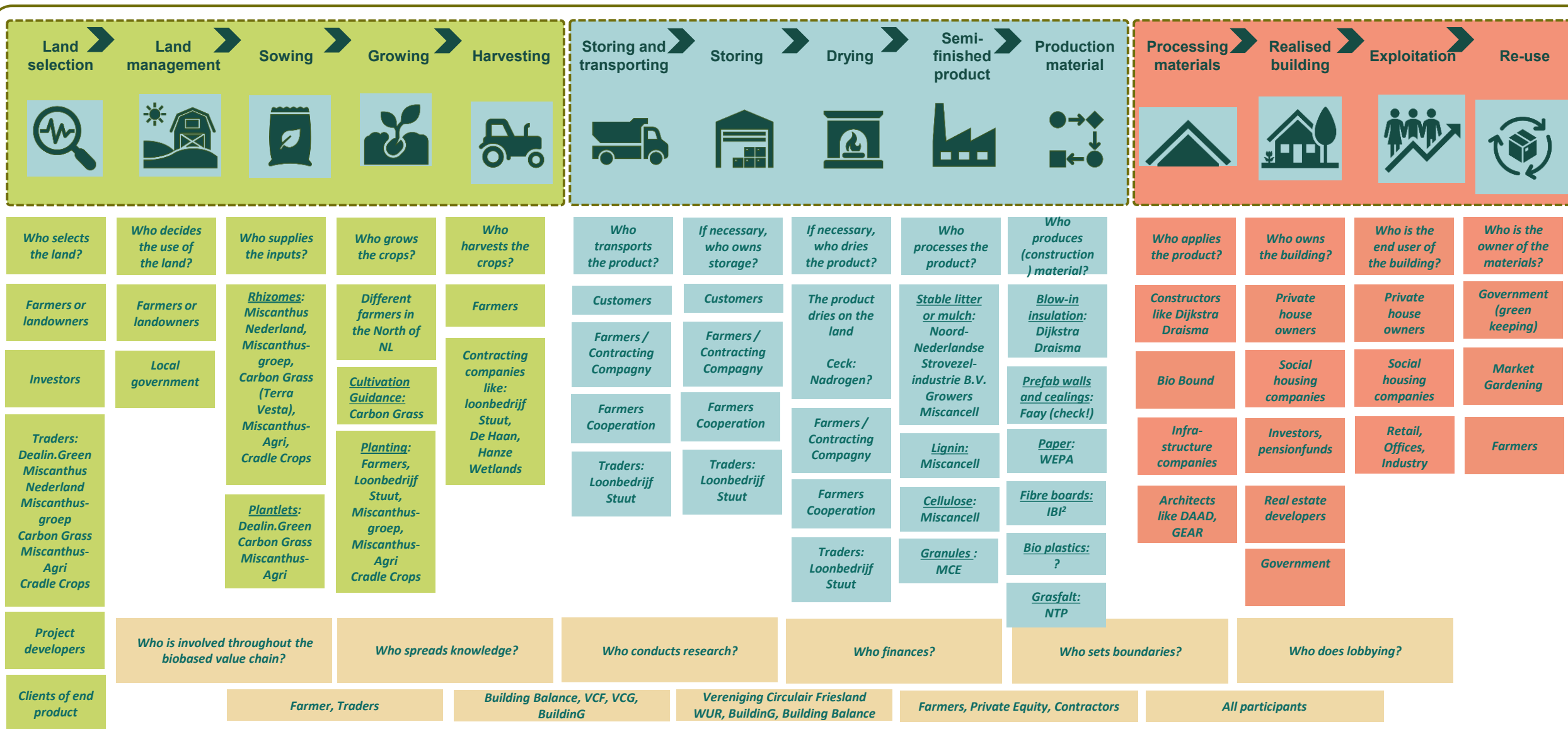
Agro



Industry



Construction



Any questions so far?



 **Mentimeter**



What's in it for the stakeholders in the value chain



Key takeaways

- Different products require different solutions
- For concrete products, transport weighs heavily on environmental performance, requiring regional production plants
- Risk on biobased valuechains need to be shared among parties involved, which requires TRUST
-
-
-
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Thank you

