



# Resources for our future

*Rob Weterings*

*Oslo May 10, 2016*

- › Introduction
- › Why focus on resources?
- › From waste management to circular economy
- › Transition towards a bio-economy
- › Valorization means business
- › The need for co-operation and co-creation

# Holland: man-made land

SER

A long tradition  
of consultation  
and cooperation





# Social and Economic Council



- Established in 1950 by law
- Employers' organisations, Union representatives and independent experts appointed by the Crown
- Mission to help create social consensus on national and international socio-economic issues
- Broad concept of prosperity: wealth, social progress and environment



# What does the SER do?



- **Advice to government and parliament**
- **Agenda setting**
- **Self regulation:**
  - *Consumers rights*
  - *Code of conduct in mergers*
  - *International corporate social responsibility CSR*
- **Agreements:** multi stakeholder coalitions
  - *National Energy Agreement for sustainable growth*
  - *International Corporate Social Responsibility*
  - *Circular economy*

# Conditions for succes

## ***Platform:***

- 'neutral' meeting place
- bring together the relevant stakeholders
- respect for different positions / interests

## ***Co-creation:***

- in-depth analysis
- a long term perspective
- develop common solutions

## ***Implementation:***

- personal relations for mutual trust and commitment
- professional implementation support
- independent (scientific) monitoring



## Why focus on resources?

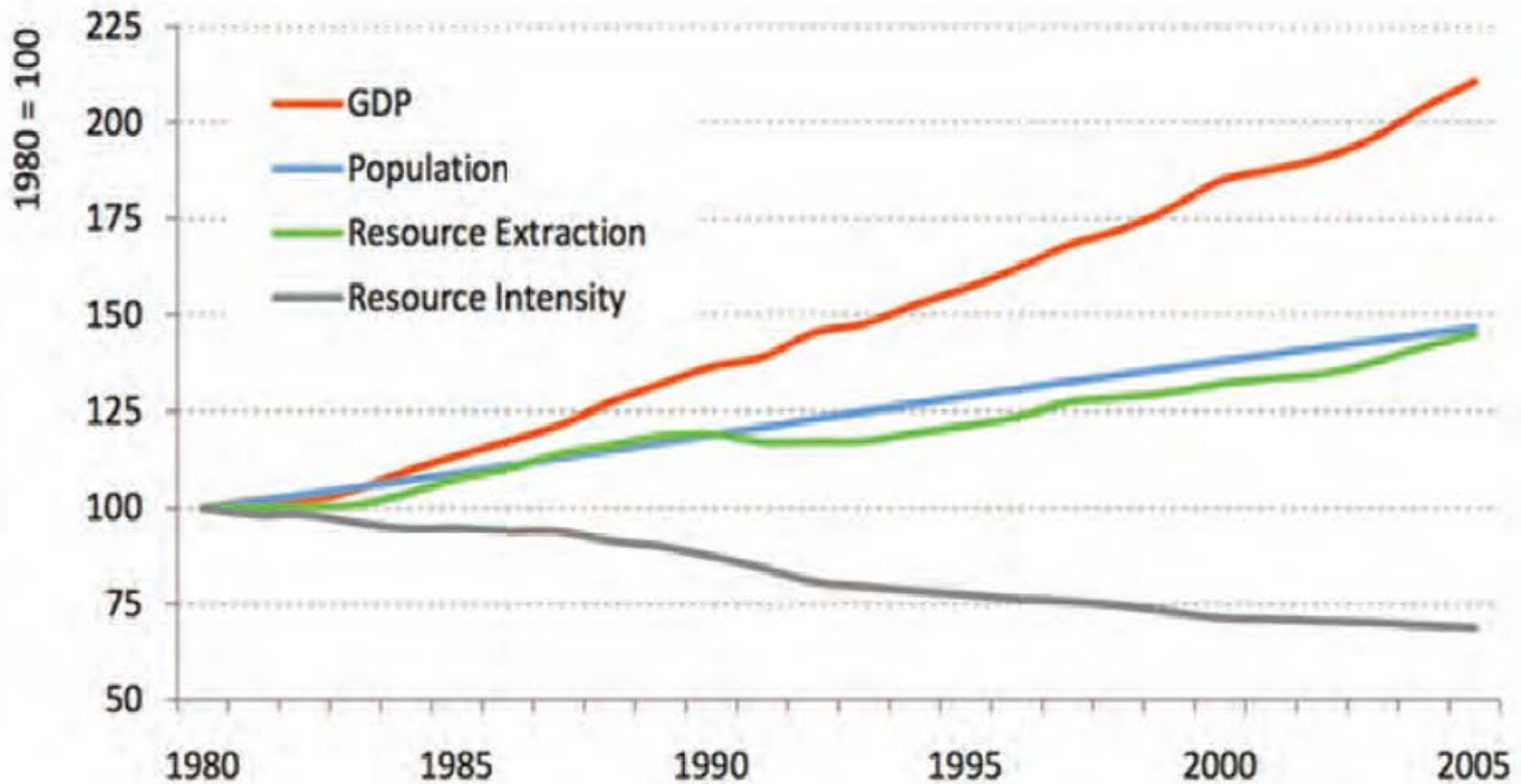
Population \* Affluence \* Efficiency = Impact

number of  
people

level of  
consumption

resource  
intensity

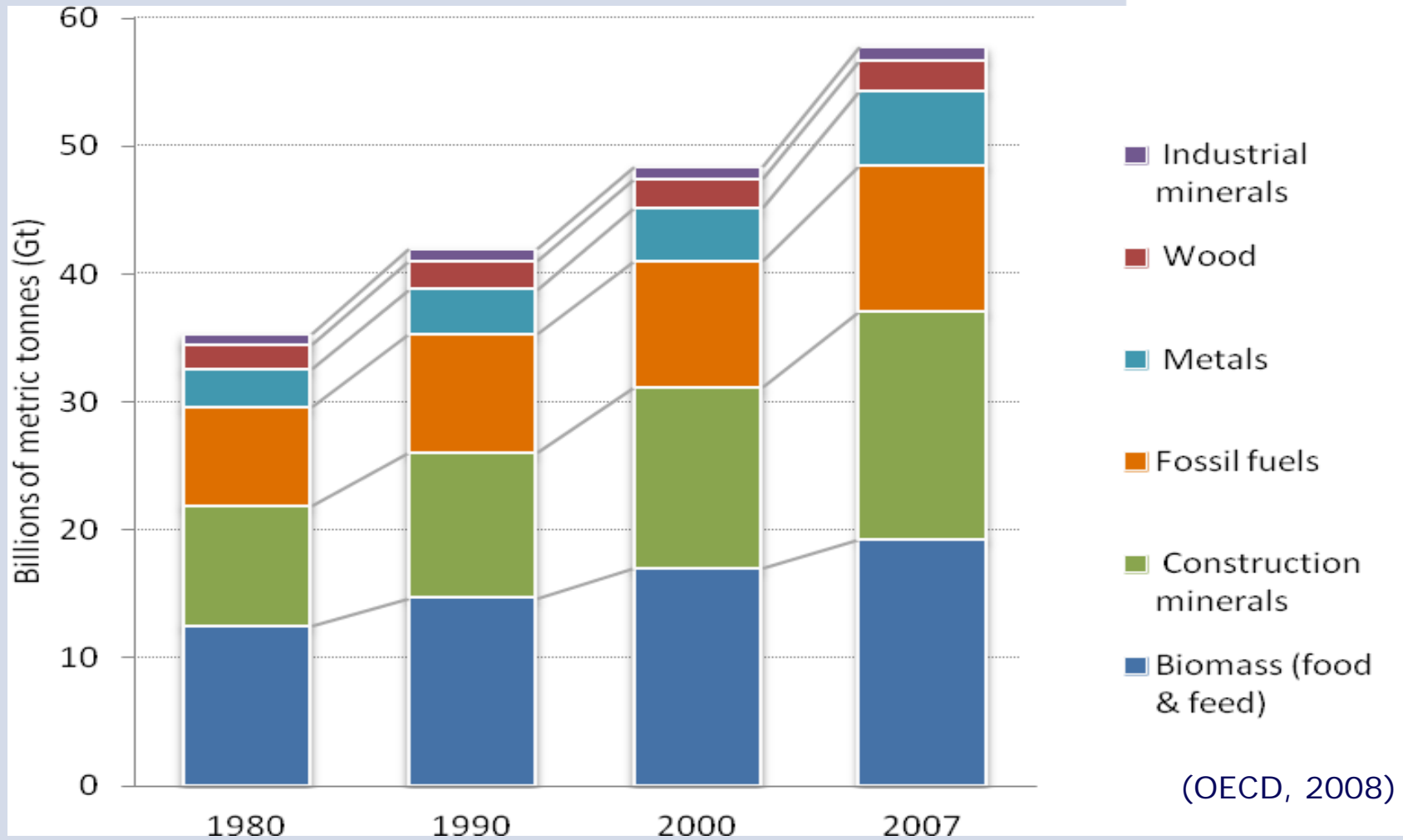
# Global resource use: history



(FoE, 2010)



# Global resource use: history

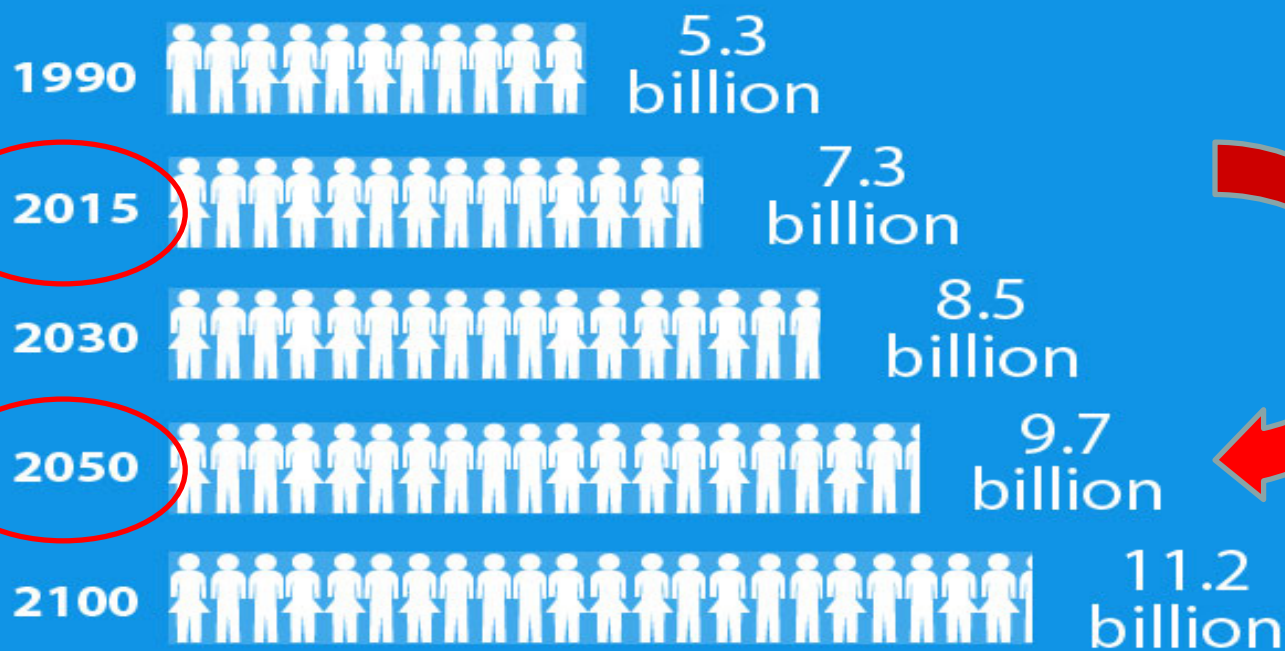


# Population projection

SER

## World Population

*Projected world population until 2100*



Source: United Nations Department of Economic and Social Affairs, Population Division, *World Population Prospects: The 2015 Revision*  
Produced by: United Nations Department of Public Information

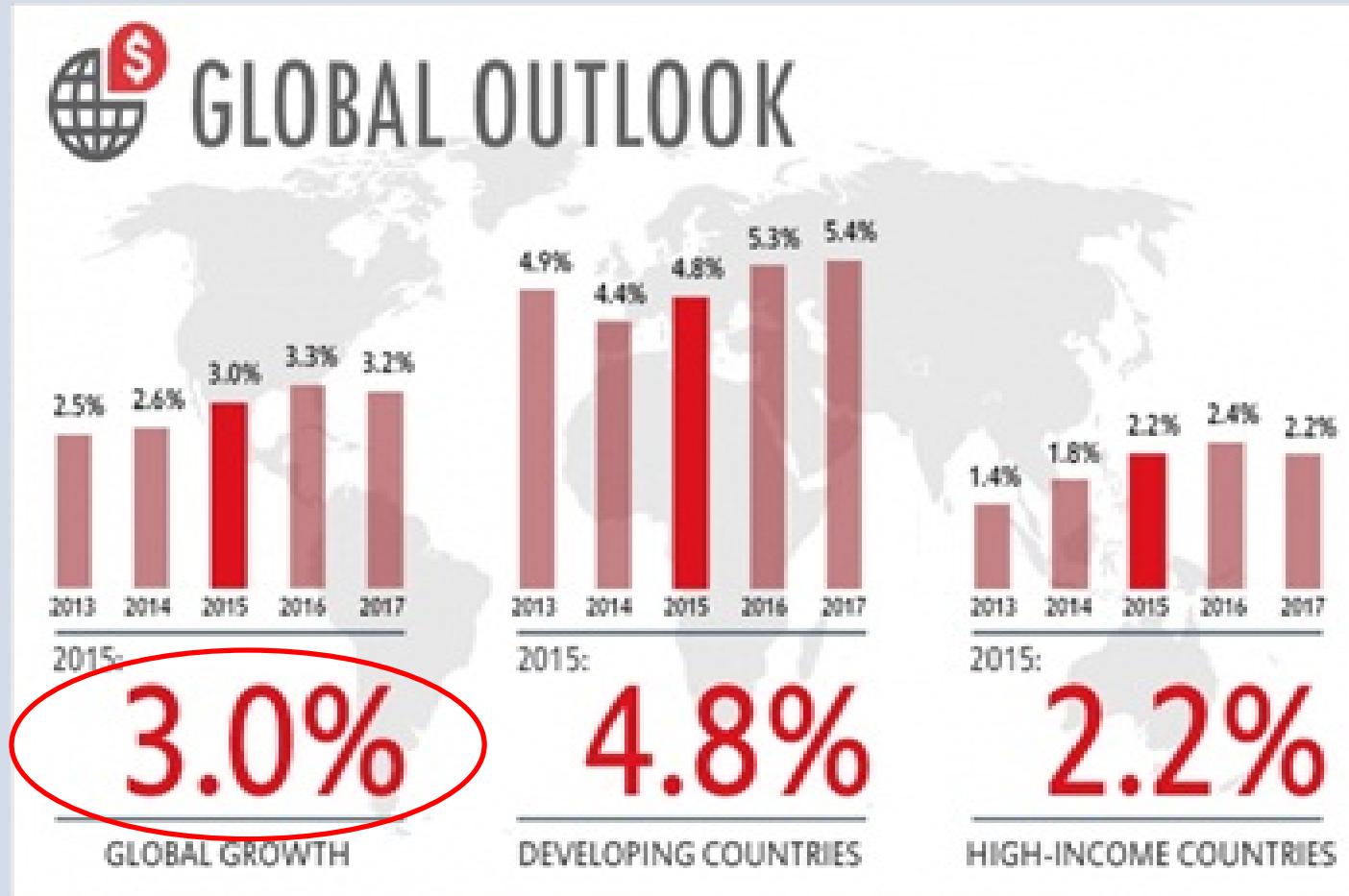


2015  
TIME FOR  
GLOBAL ACTION  
© UNITED NATIONS 2015-1

Up to 2050:  
+ 33%

# Economic outlook

SEER



Up to 2050:  
+ 180%

# Is one planet Earth enough?

SER

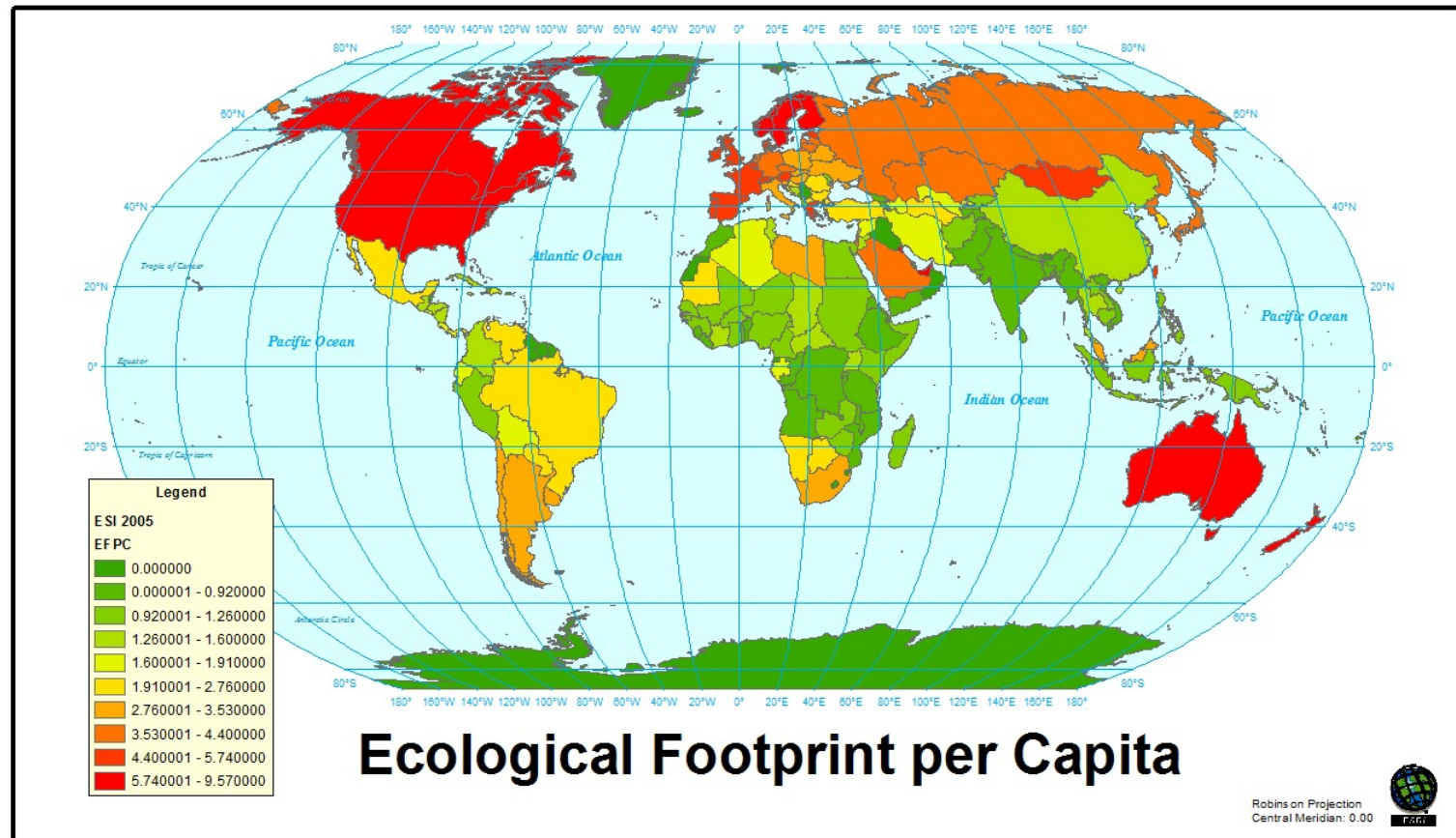
+ 33%

+ 180%

Population \* Affluence \* Efficiency = Impact

2015:	1	*	1	*	1	=	1
2050:	1,33	*	2,8	*	1	=	3,6
2050:	1,33	*	2,8	*	0,27	=	1

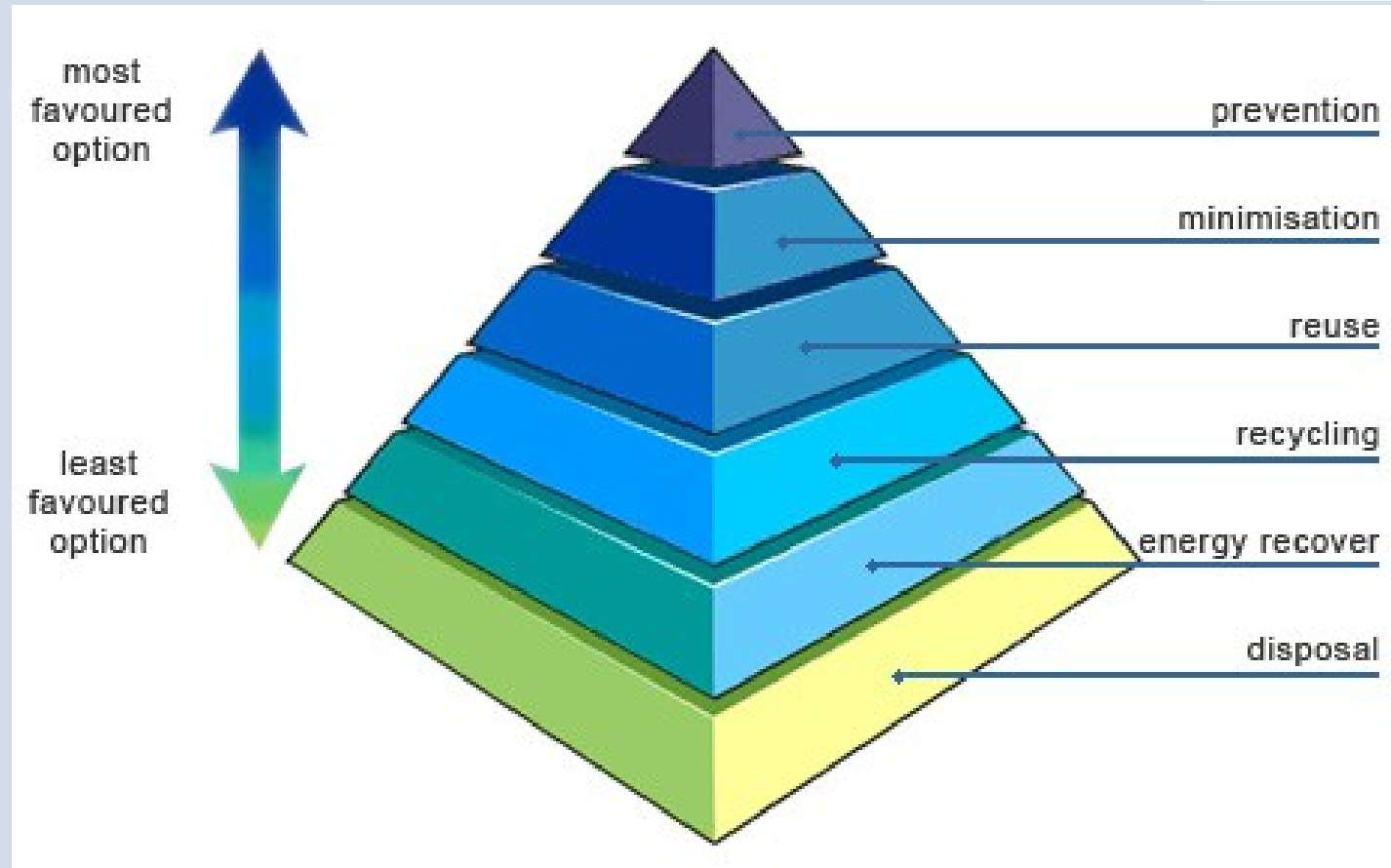
# Present inequity



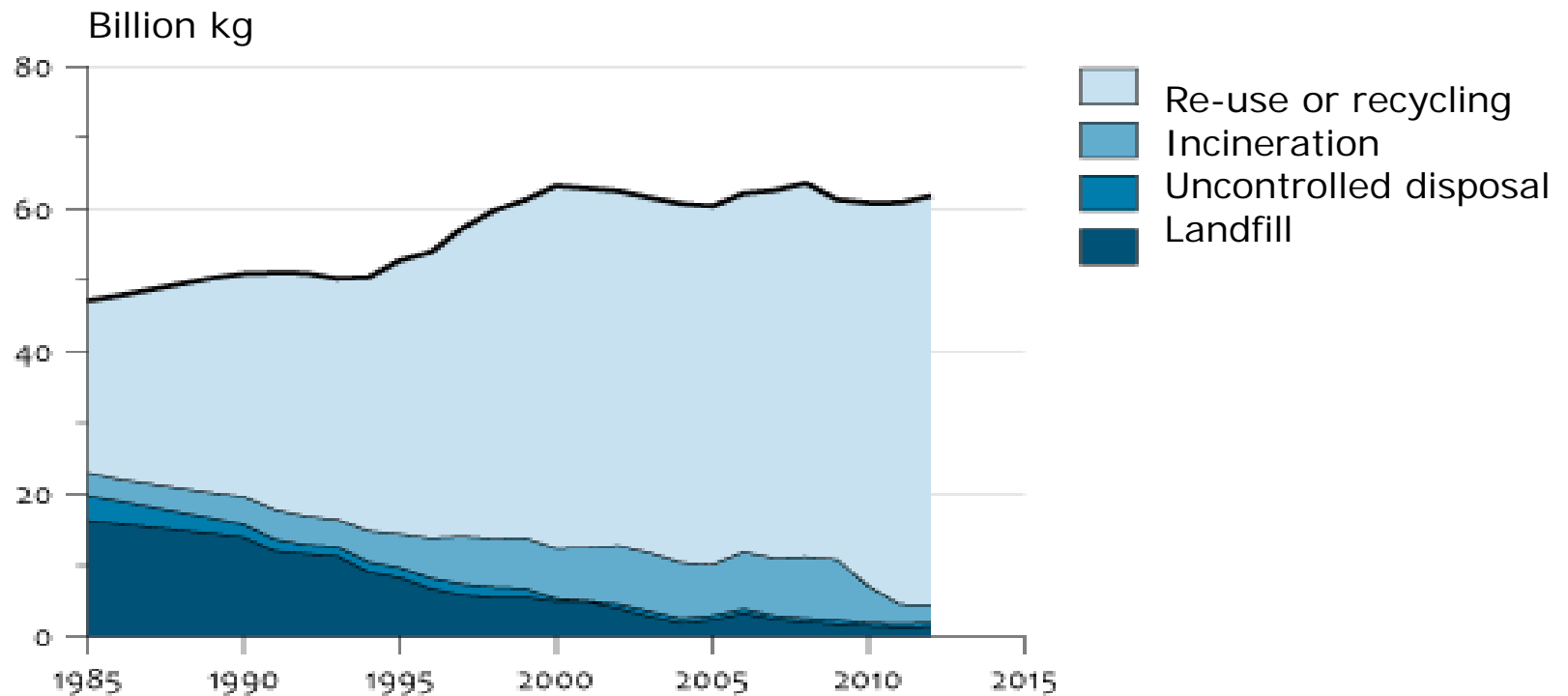


# Nothing to waste: time nor resources

**SER**



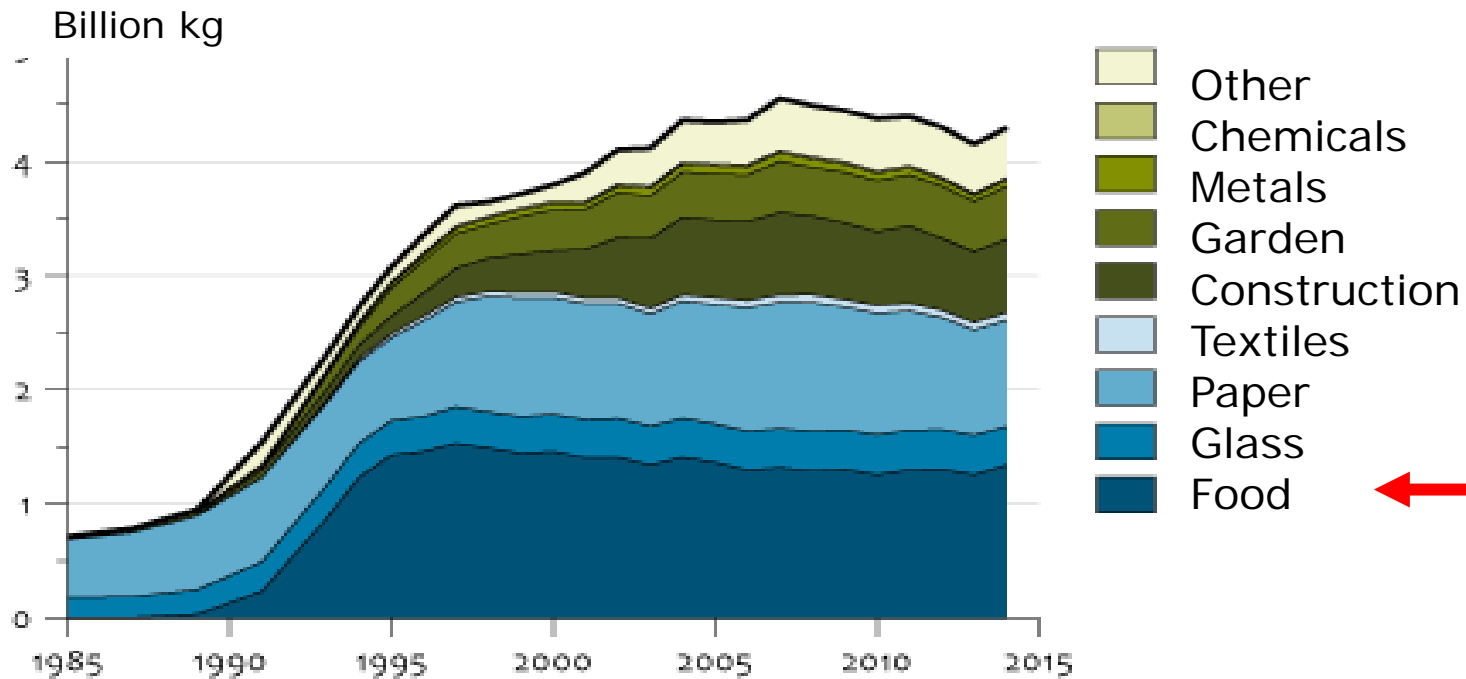
# Waste management in Holland



Bron: Rijkswaterstaat, CBS.

CBS/juh5  
[www.cbs.nl/nl020411](http://www.cbs.nl/nl020411)

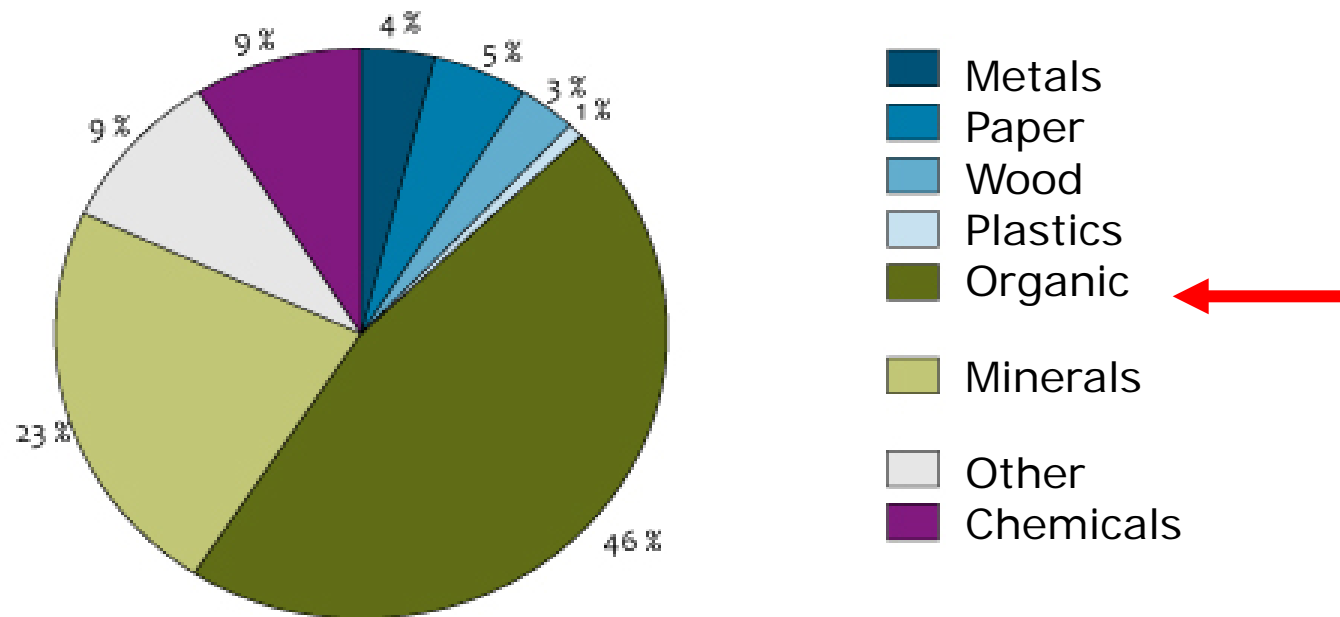
# Separation of municipal waste



Bron: CBS.



# Separation of industrial waste

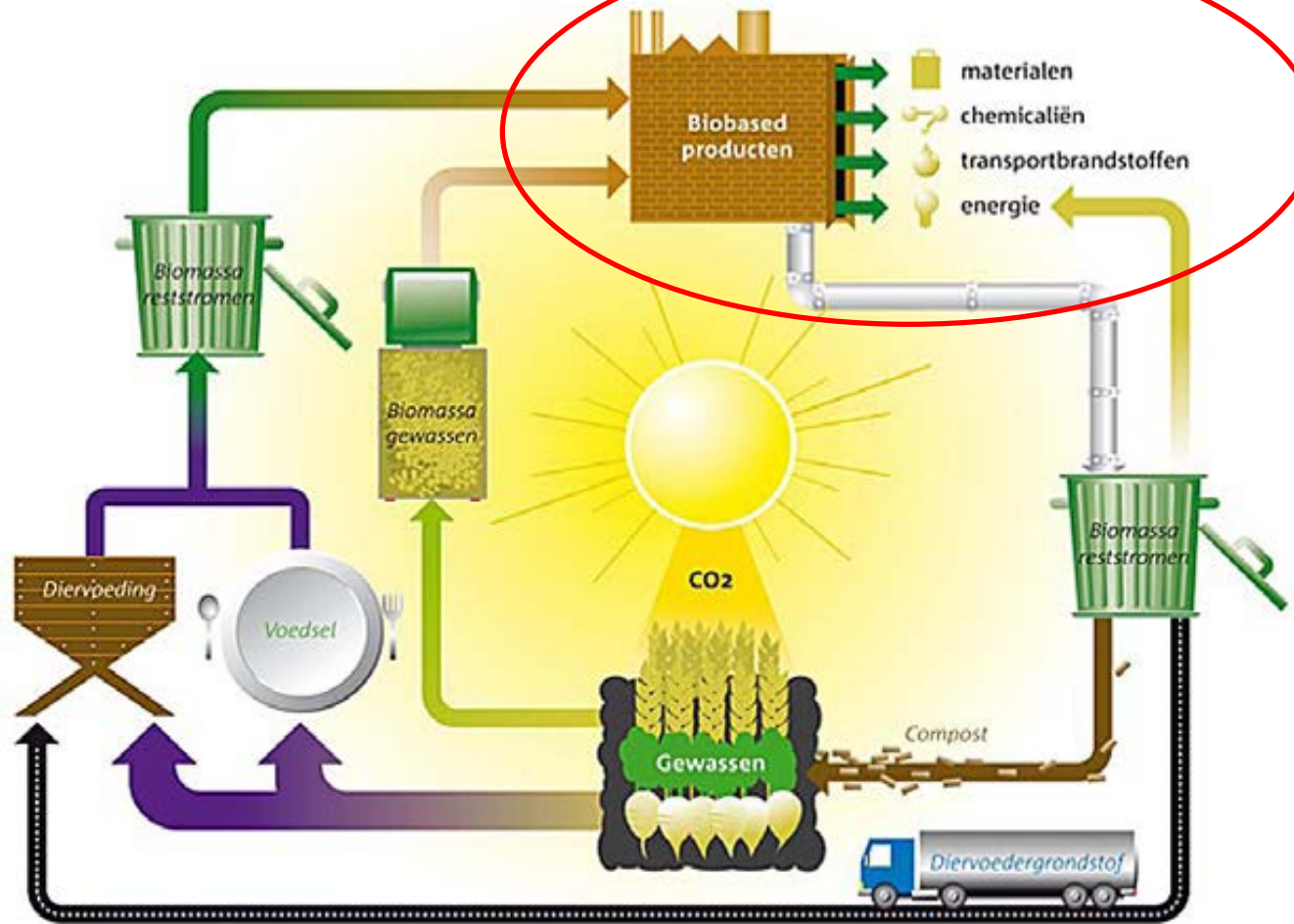


Bron: CBS.

CBS/jum3  
[www.clo.nl/nl/011811](http://www.clo.nl/nl/011811)

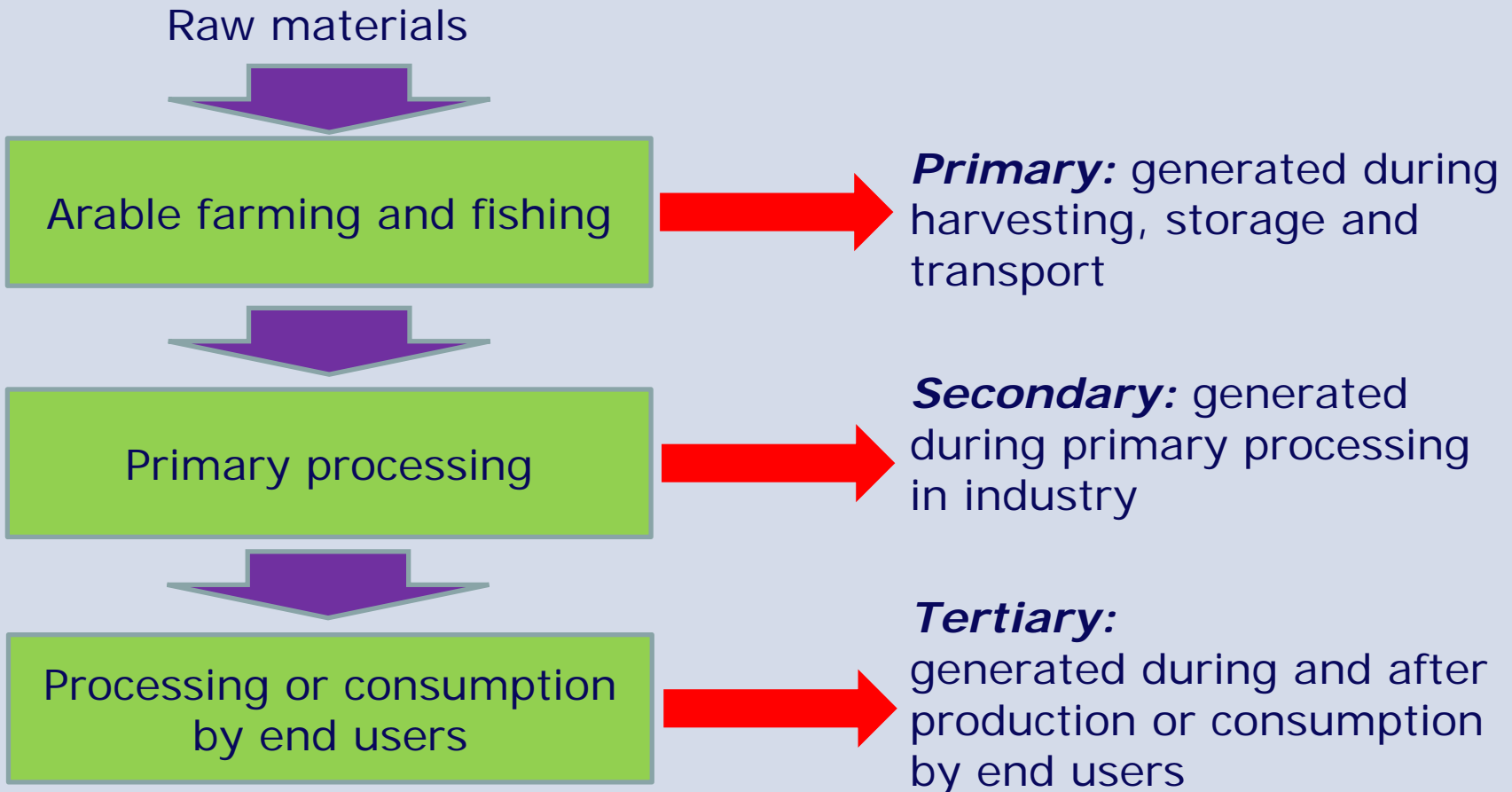
# Transition towards a bio-economy

SEER



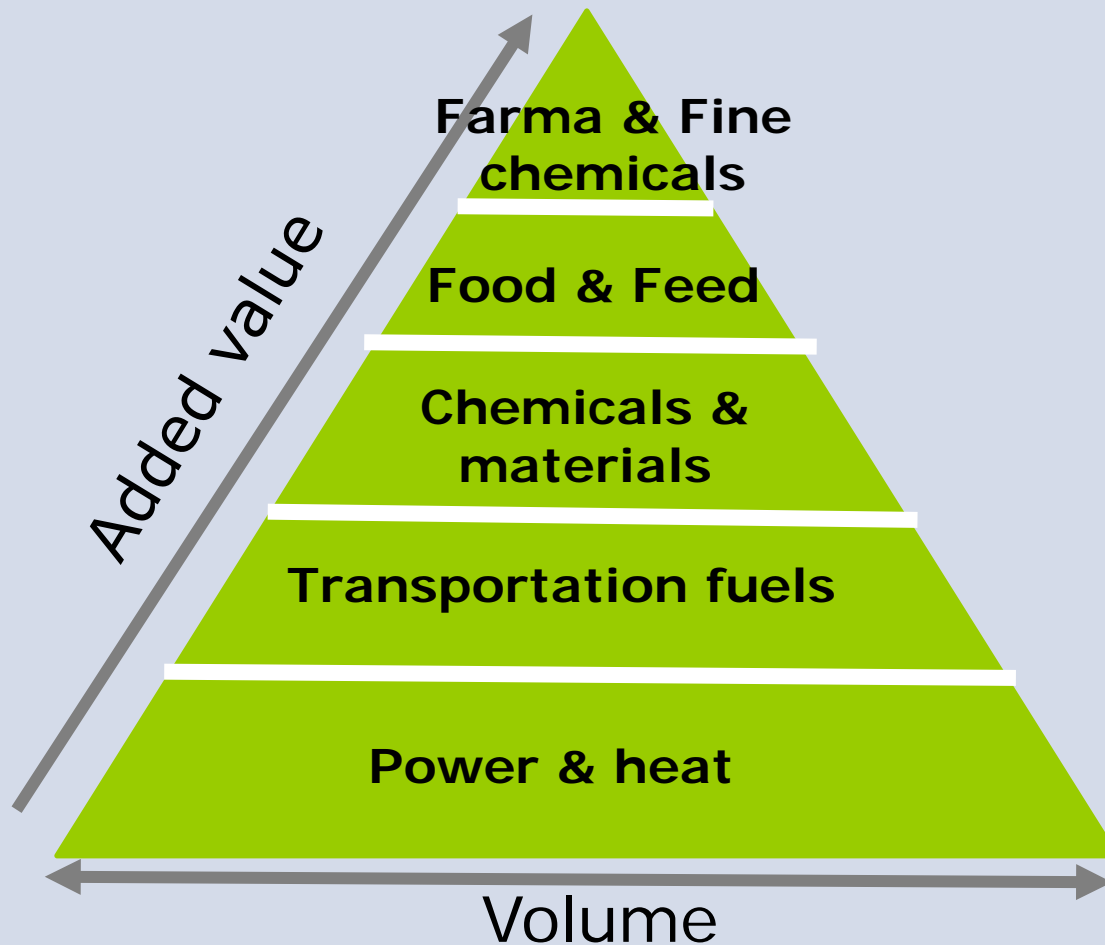


# Origin of organic waste



# Valorization of organic waste

**SER**



# From coffee to burgers

SEER



**Gro Holland:**  
Mushrooms on  
coffee grounds



# From plant fibres to facade cladding

**SEER**



## **CeraneX:**

facade cladding  
from plant residues  
such as:

- \* aubergine fibres
- \* grass from verges,
- \* reeds and
- \* pruning waste.



# The plant bottle

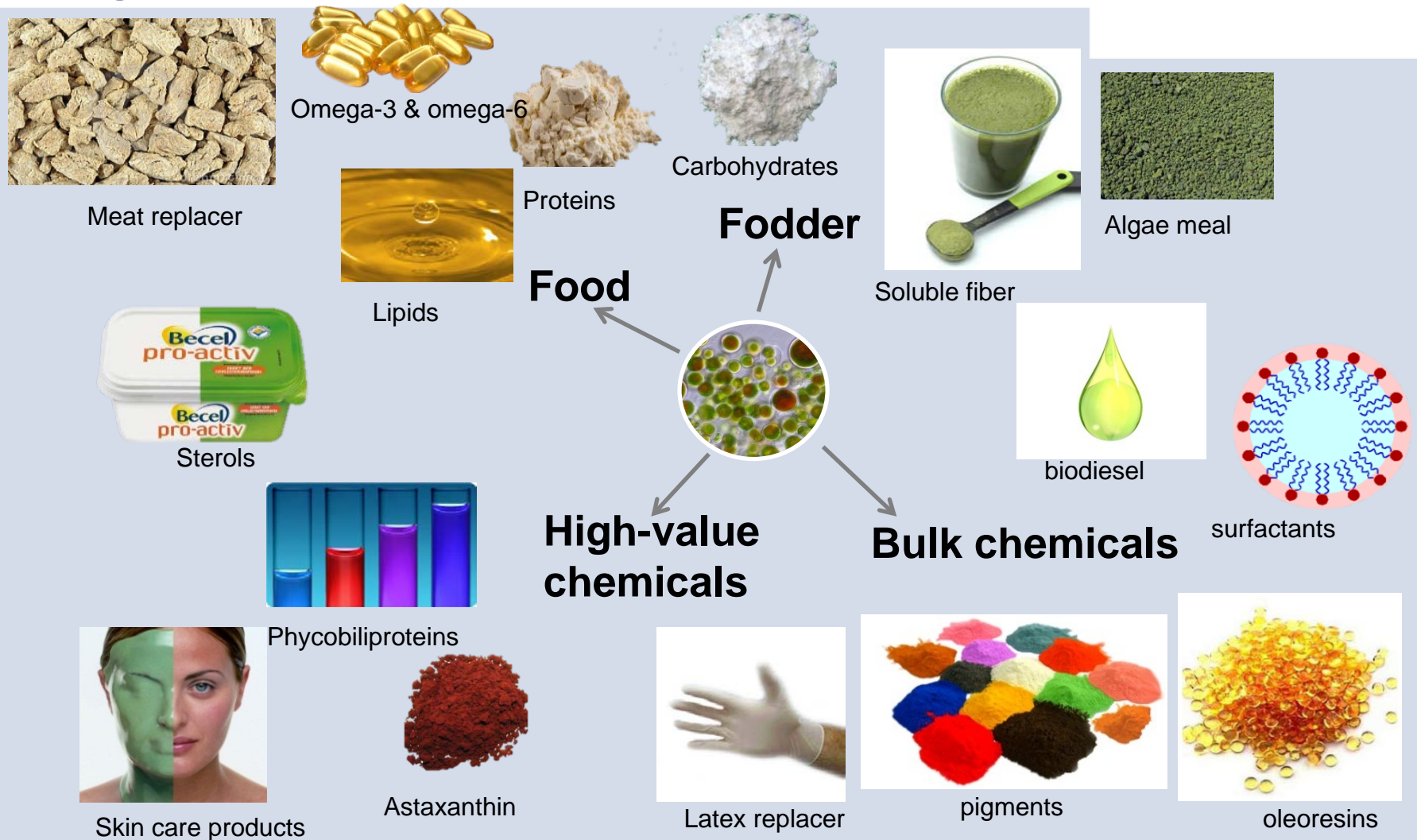


## **Avantium:**

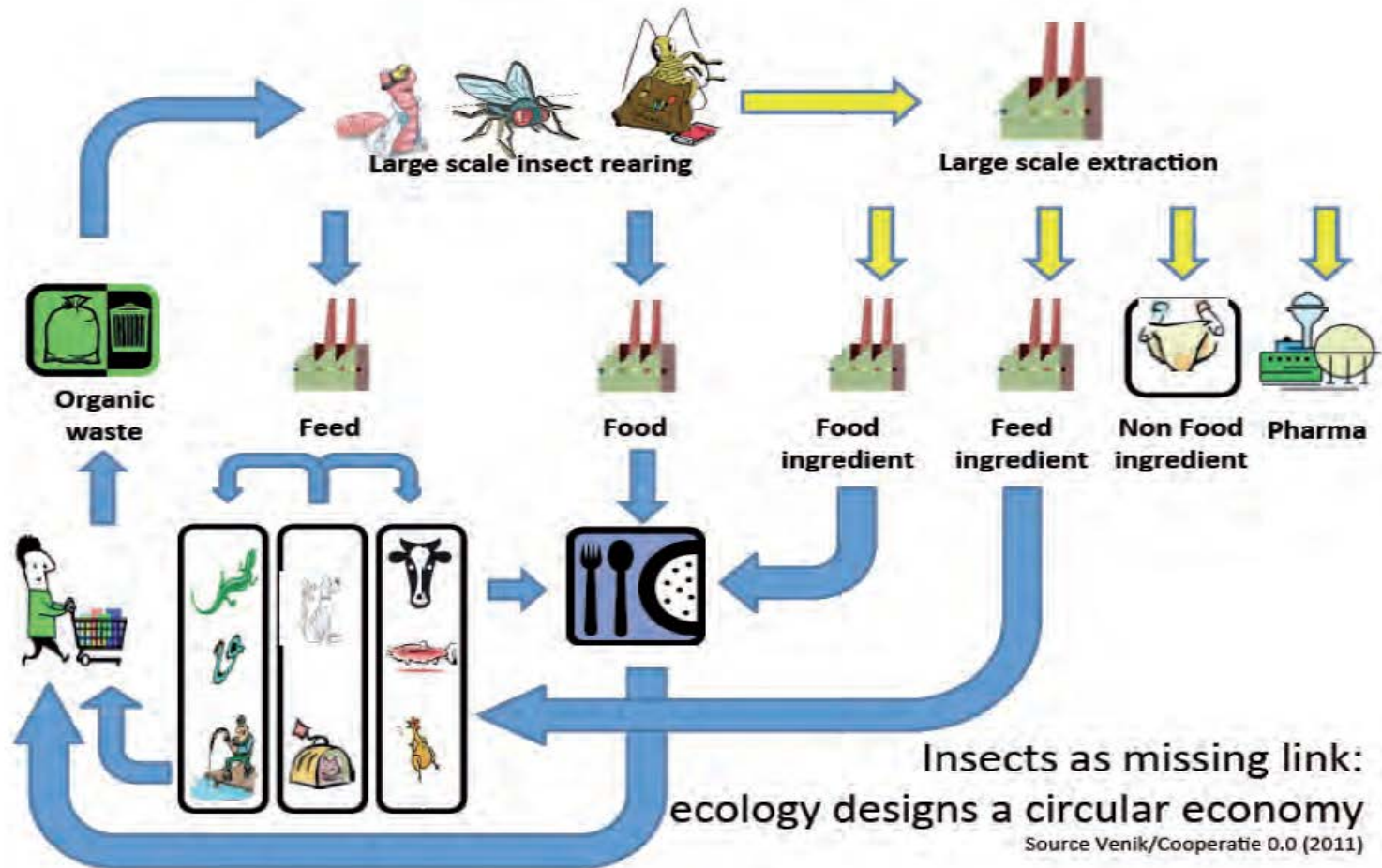
biobased production of  
furandicarboxylic acid (FDCA)  
and polyethylenefuranoate (PEF)  
for packaging films and  
plastic bottles



# Algae as feedstock

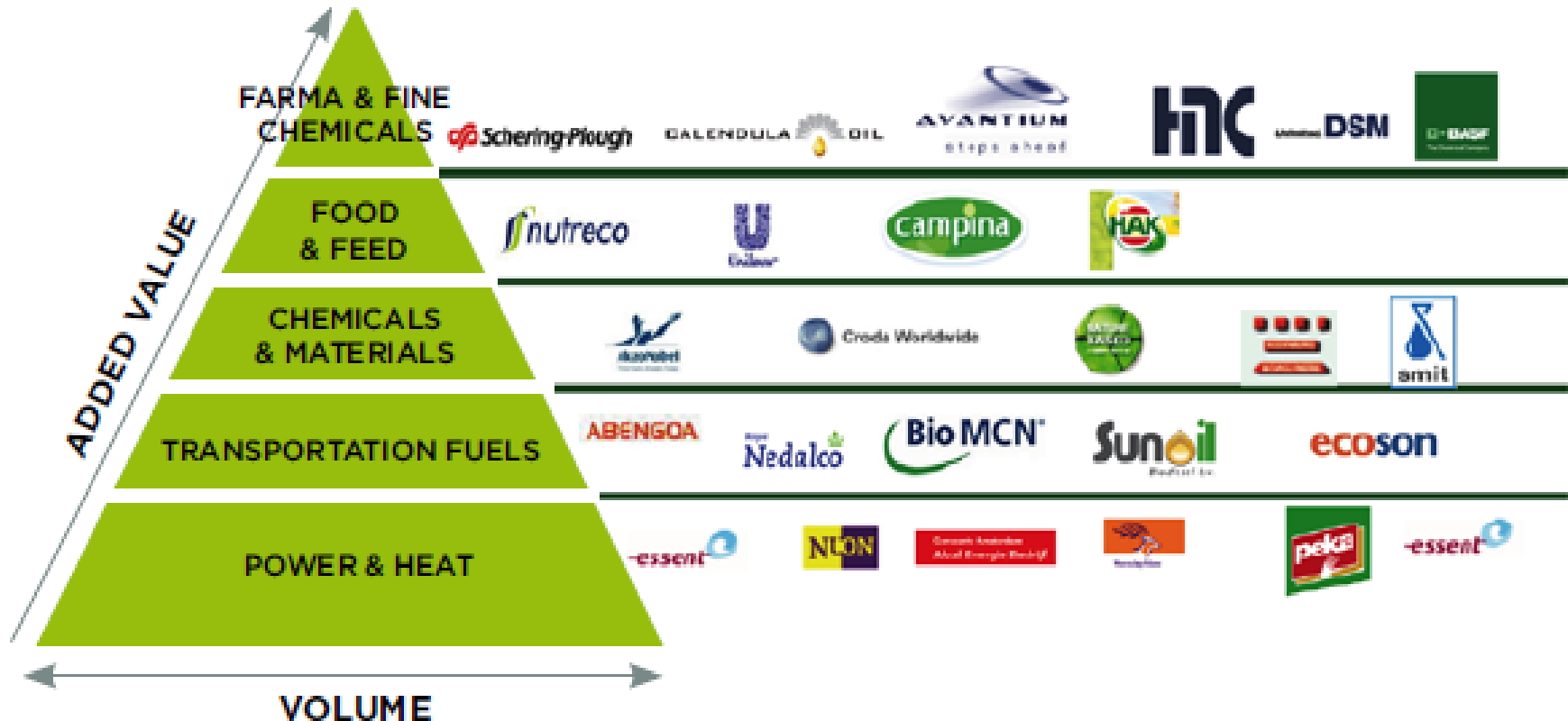


# Why not insects?

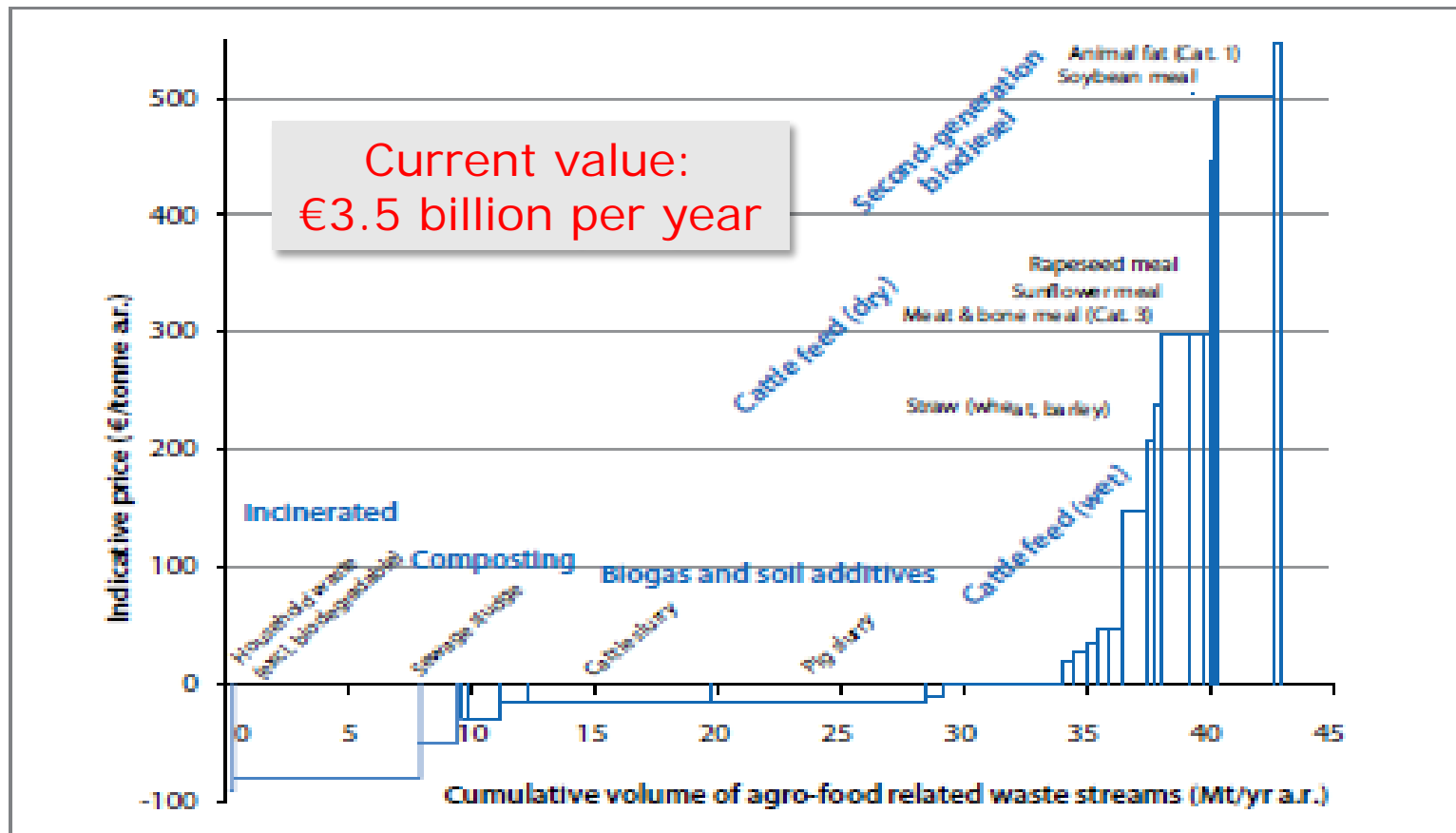


# Valorization means business

SEER

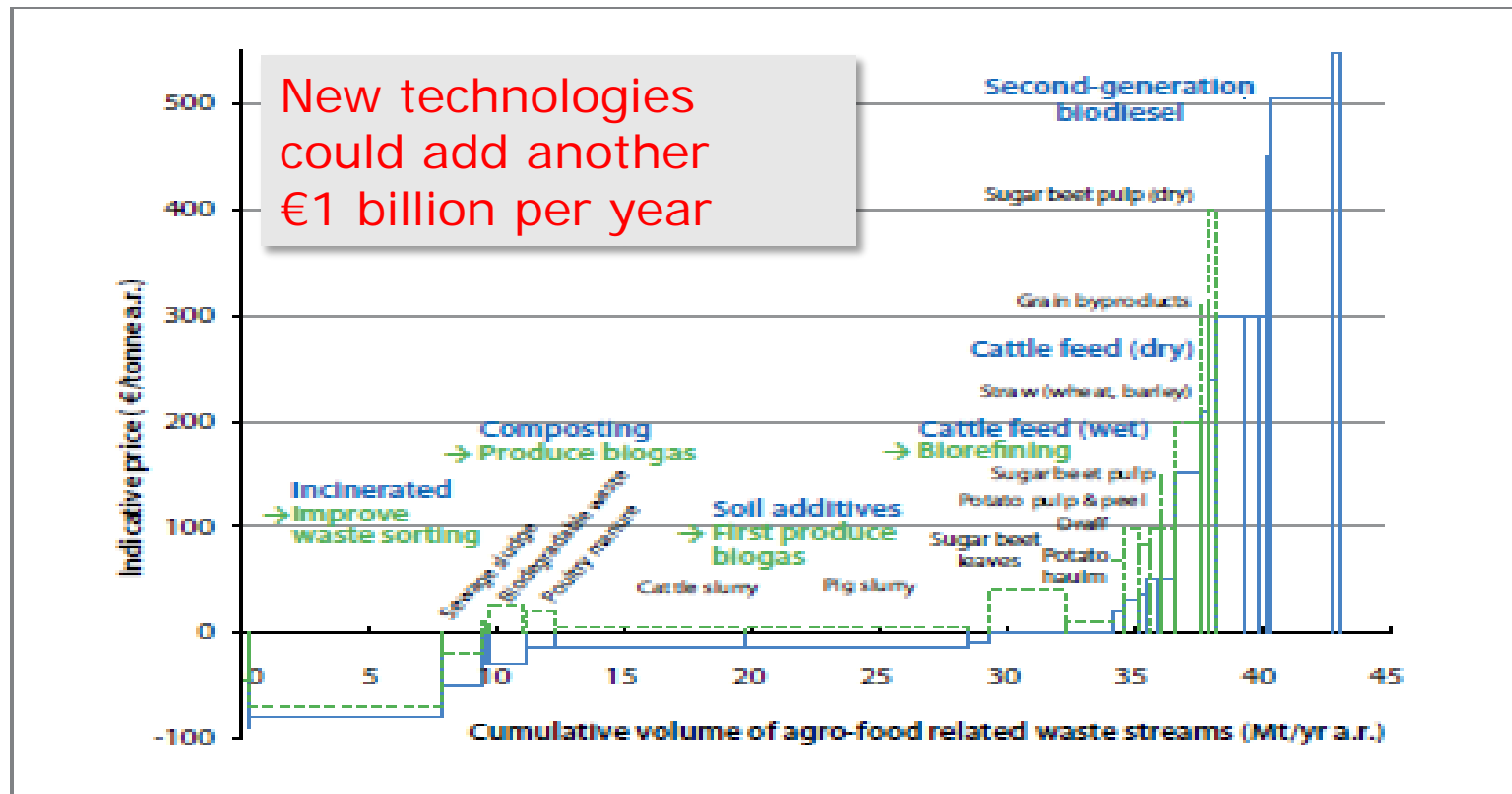


# Current value organic waste





















(TNO, 2013)

# Cascade & biorefining



(TNO, 2013)

# Circular economy: jobs

Activity	Low skilled	Skilled	Professional
Closed loop recycling			
Open loop recycling			
Servitisation			
Remanufacturing			
Reuse			
Biorefining			

The Netherlands:  
circular economy  
could create  
54.000 extra jobs  
(TNO, 2013)

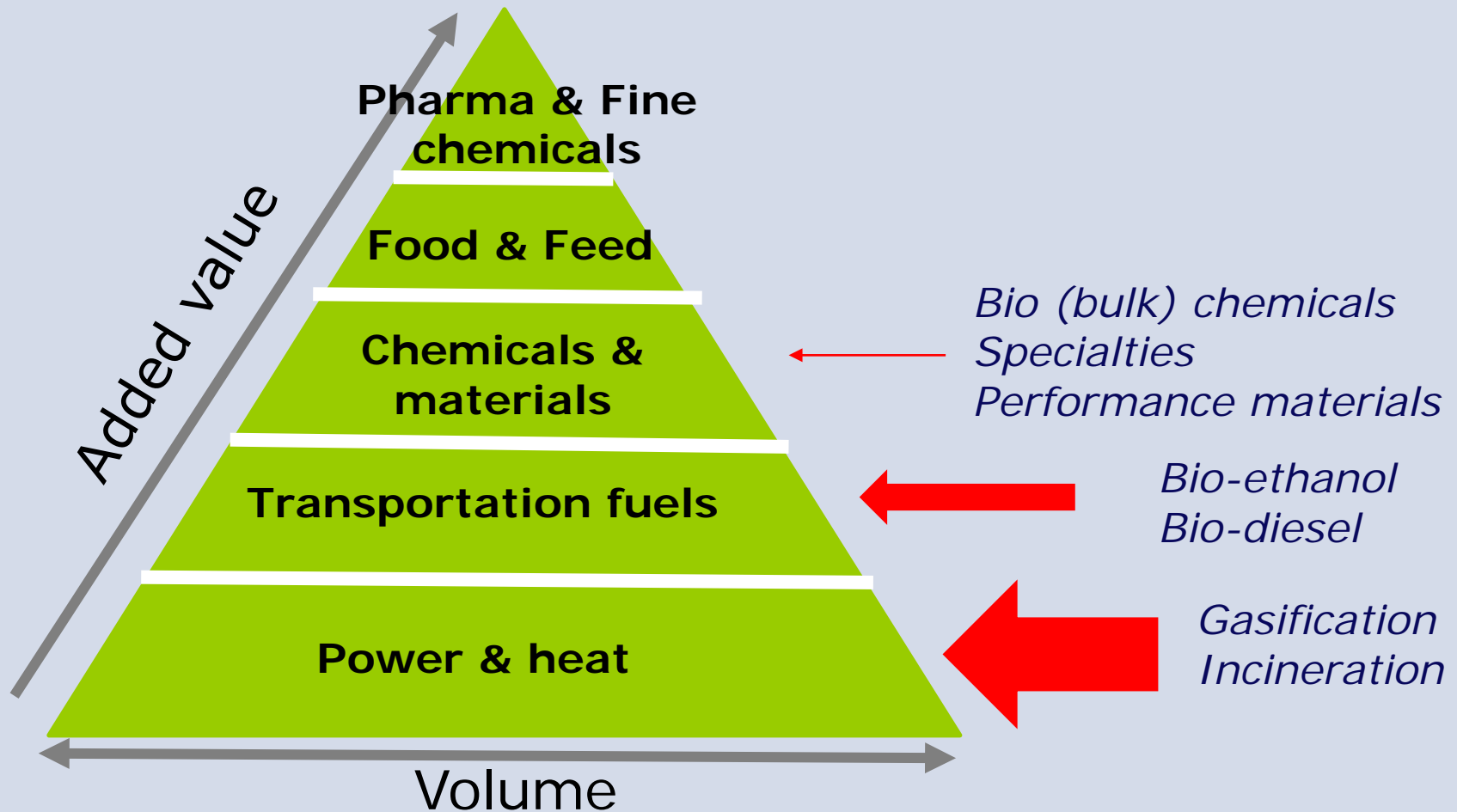


Bron: Morgan, J. en P. Mitchell (2016), *Employment and the circular economy- Job creation in a more resource efficient Britain*, Green Alliance/WRAP, London/Branbury.

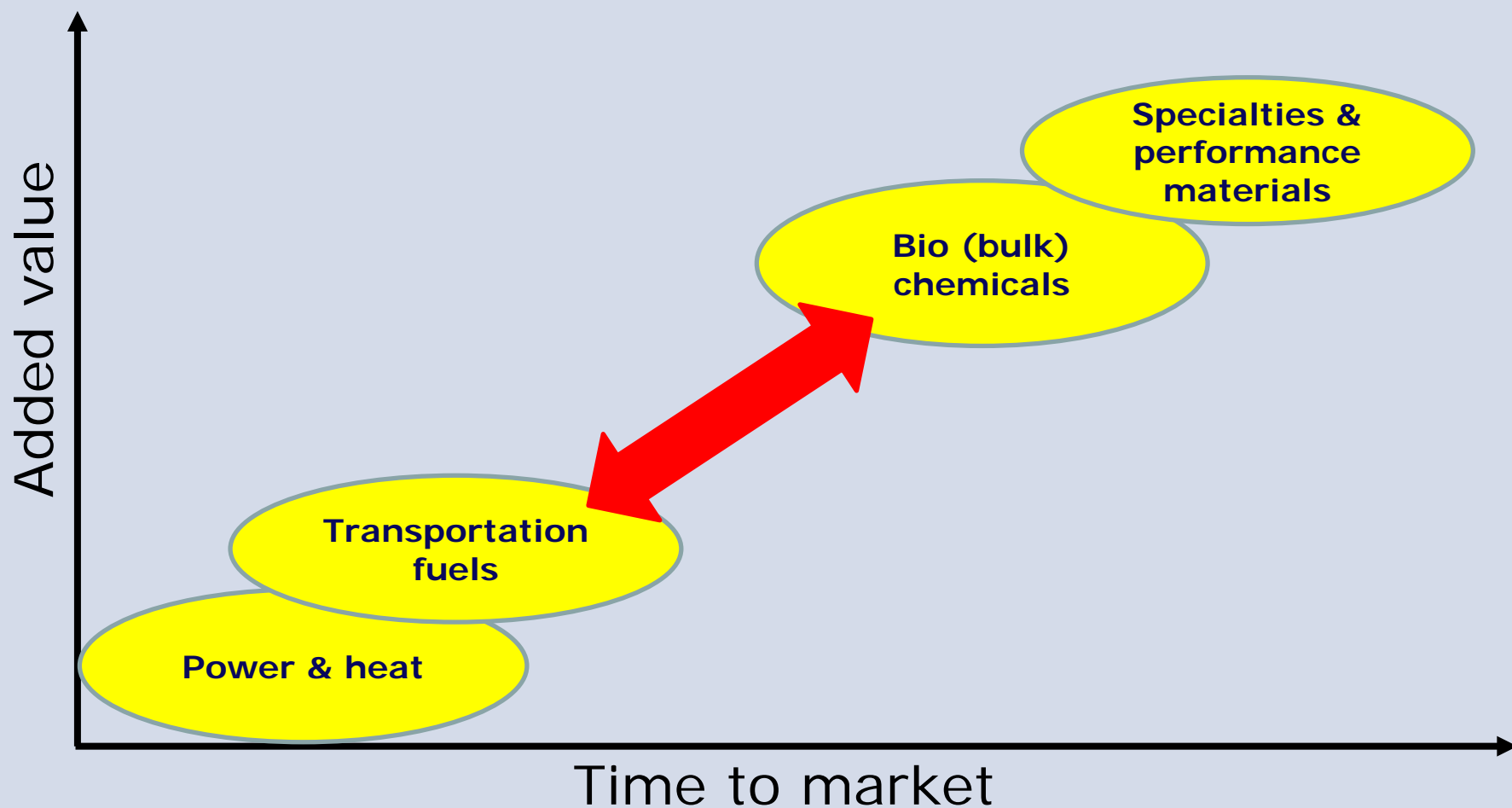


Maturity ....

SER



Time to market



# Main bottlenecks in transition

## *Technological innovation:*

- Limited R&D funding
- Societal resistance to biotechnology (and the like)
- Many small initiatives (niches)

# Main bottlenecks in transition

## *Technological innovation:*

- Limited R&D funding
- Societal resistance to biotechnology (and the like)
- Many small initiatives (niches)

## *Economic drivers*

- Low price of fossil resources (and CO<sub>2</sub>)
- Strong policy incentives for biofuels in transportation

# Main bottlenecks in transition

## ***Technological innovation:***

- Limited R&D funding
- Societal resistance to biotechnology (and the like)
- Many small initiatives (niches)

## ***Economic drivers:***

- Low price of fossil resources (and CO<sub>2</sub>)
- Strong policy incentives for biofuels in transportation

## ***Regime shift***

- Lock in: dominant demand from power and heat
- No consistent long term policy towards bio-economy
- Sustainability is a complex and disputed issue
- Many stakeholders & much at stake

# Conditions for succes

## ***Urgency:***

- Priority on the policy agenda, sense of urgency in society

## ***Understanding:***

- In depth analysis of bottlenecks and opportunities
- Respect for different positions / interests

## ***New governance:***

- Coalition of government, industry, unions, ngo's, financial institutions
- Define common ground, debate persistent issues

## ***Co-creation:***

- Transition agenda: short term action and long term perspective
- Joint development of viable business cases
- Independent monitoring & learning by doing



# A multi-stakeholder agreement

SER

The Agreement on energy

