

# Industrial Symbiosis Practitioner Training



## Part I: The need for a resource transition

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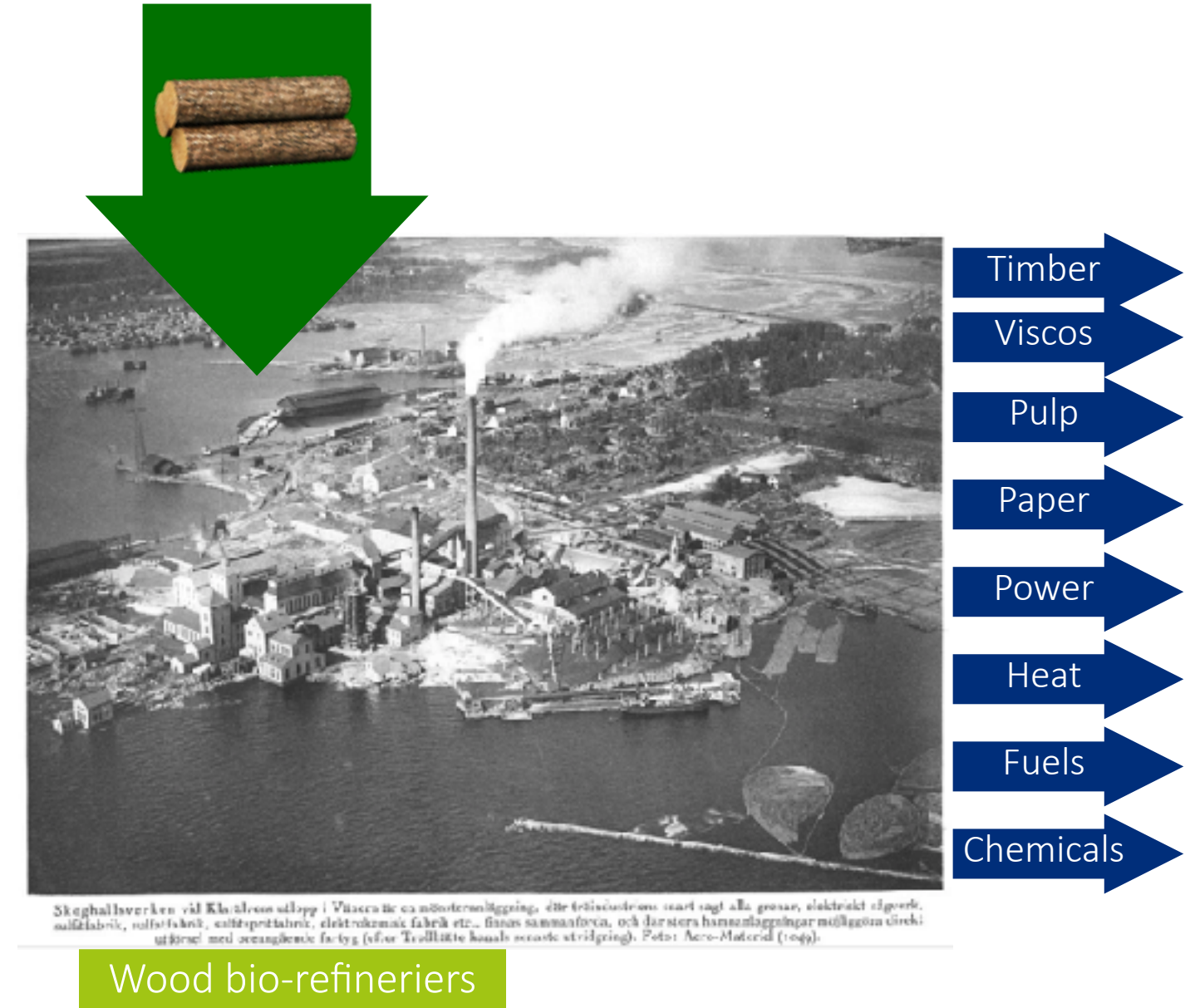
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# Industrial resource use dynamics in earlier days



## Raw material effectiveness

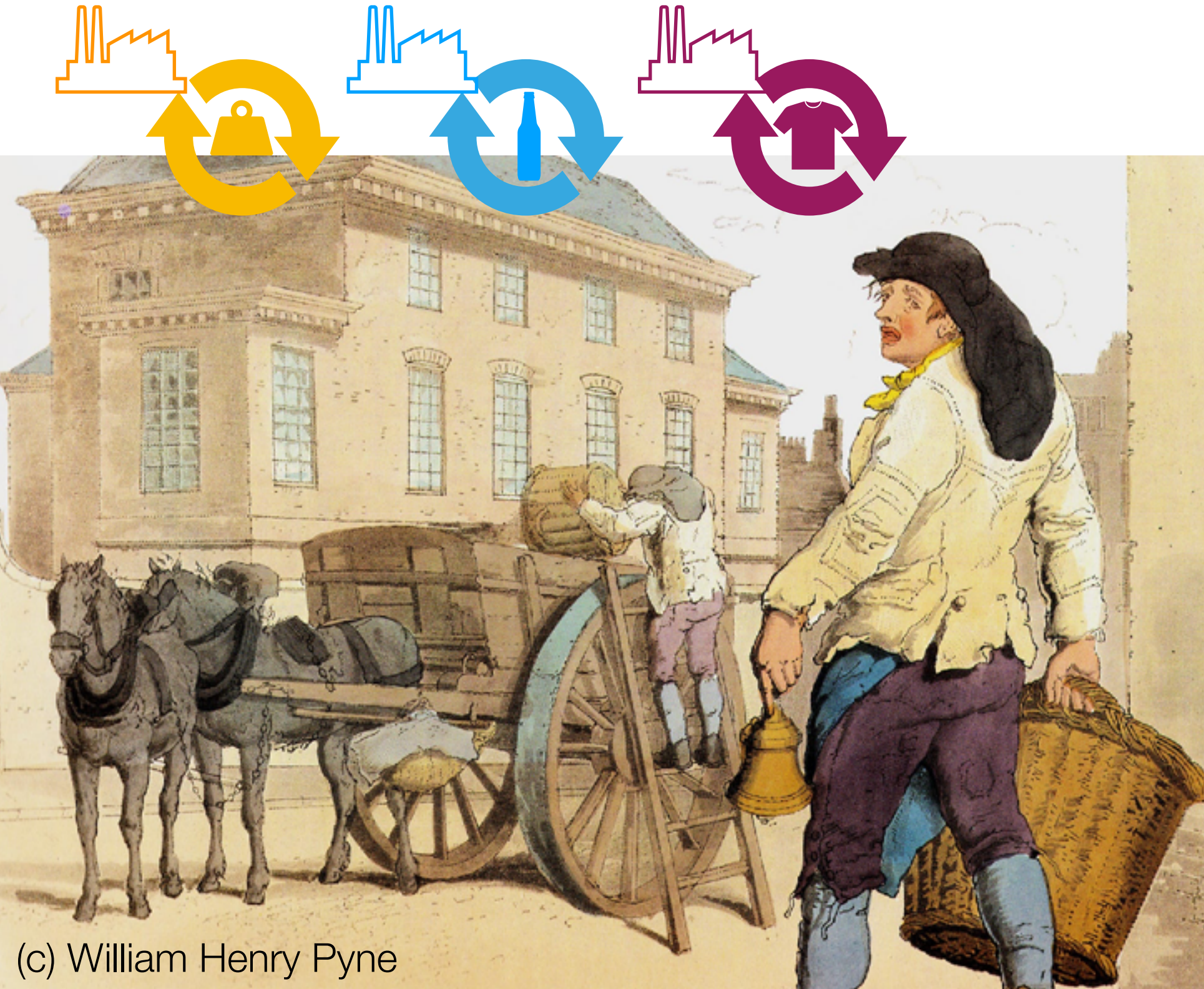


# Economies of scope

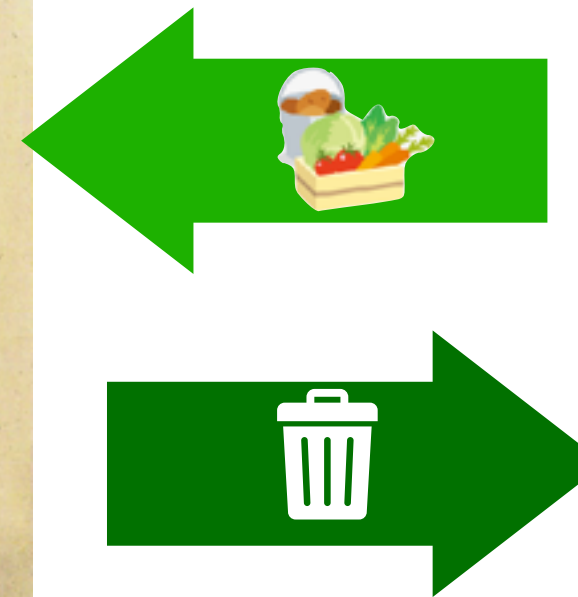
# Diversity & Integration



# Resource use dynamics in cities in earlier days



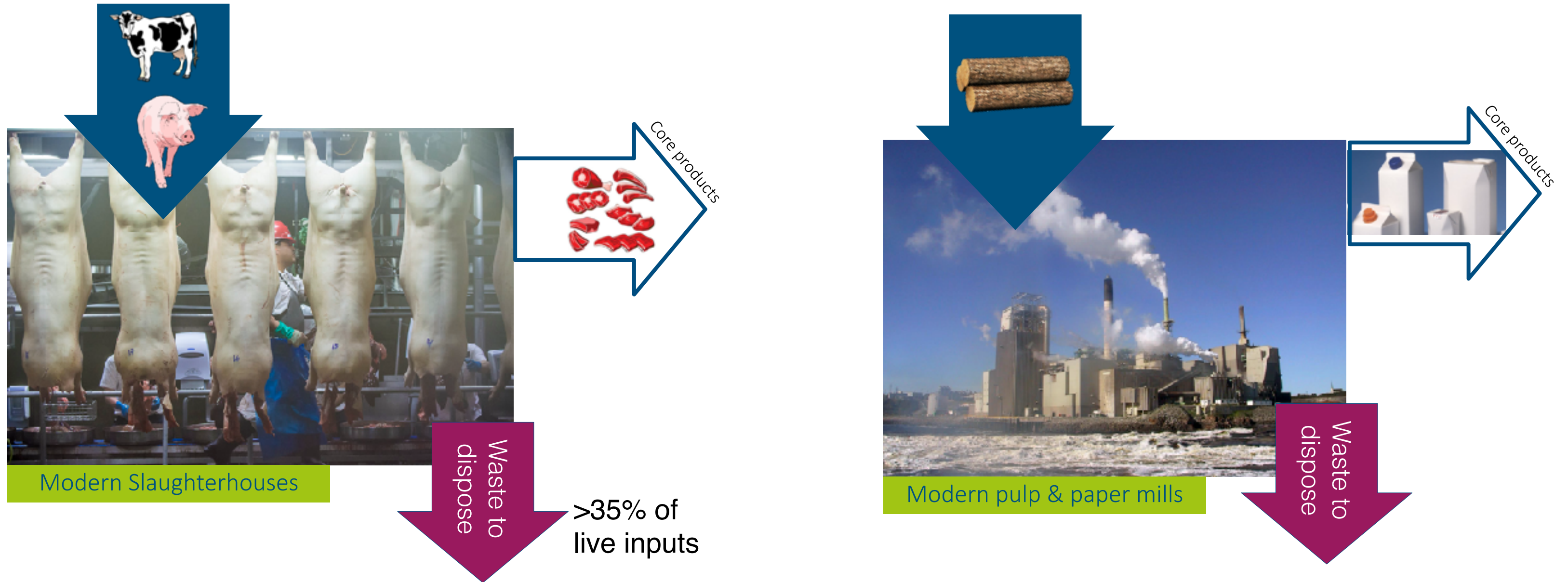
(c) William Henry Pyne



“one man’s trash is another’s treasure”



# Resources and modern industry



Product & market  
specialisation

Labor & machinery  
effectiveness

Economies of  
scale



# Large benefits for society and businesses



Increased supply of affordable products.







# Urbanisation

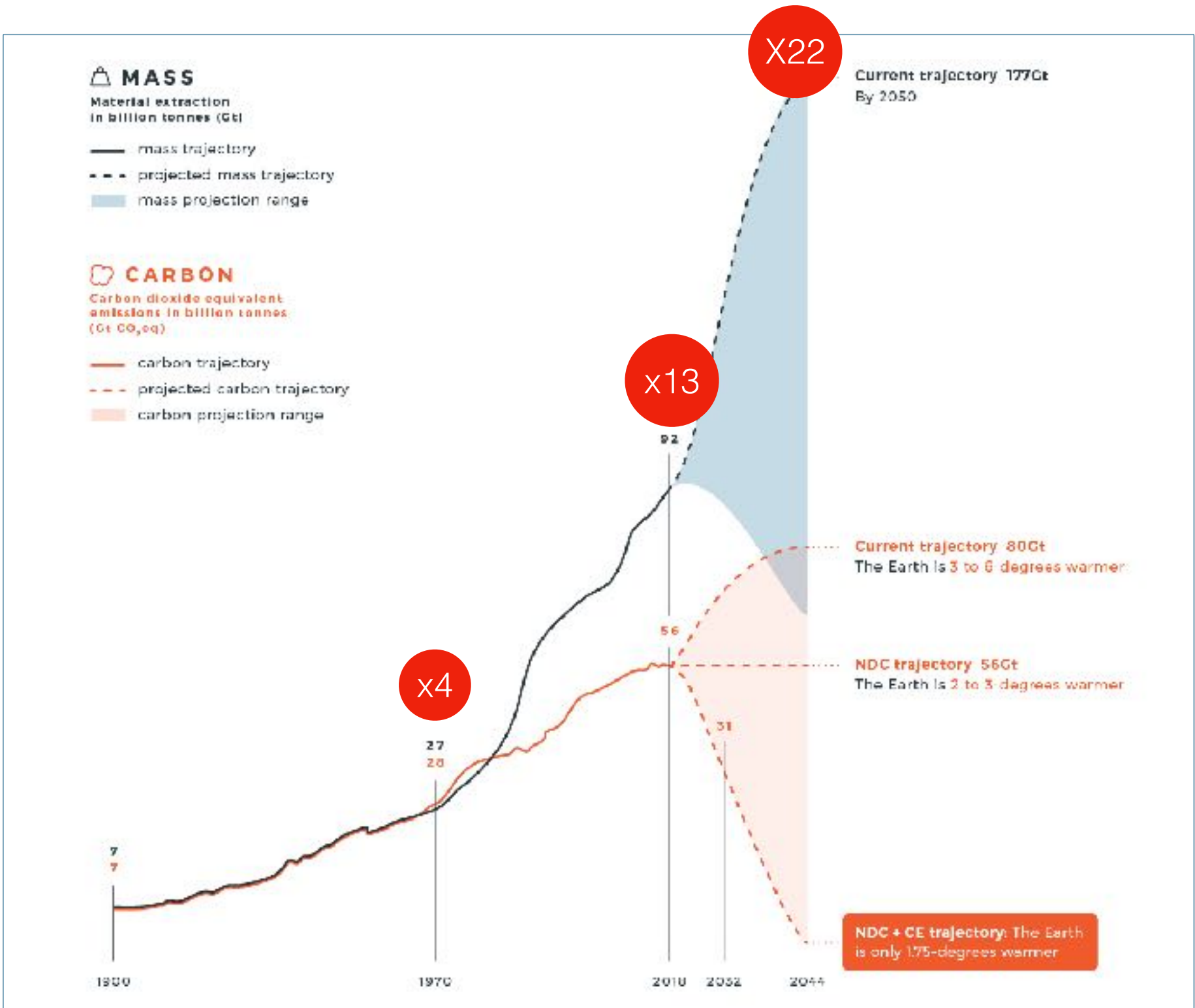
75% of  
resources

50% of global  
waste

70% of GHG  
emissions



# Big and growing problems



Source: Circle Economy, 2021

More of us...

... getting richer...

... using & wasting more!





# Growing environmental consequences



Images; Pexels



# Growing political pressures



## NZ to launch world-first climate change rules

14 April



New Zealand is to become the world's first country to bring in a law forcing its financial firms to report on the effects of climate change.

The country wants to be carbon neutral by 2050 and says the financial sector needs to play its part.

### Top Stories

#### Fears structural failure behind Mexico crash

Questions mount over the safety record of a Mexico City metro line after a deadly collapse.

11 hours ago

#### Bill and Melinda Gates have 'agreed estate split'

12 hours ago

#### Pfizer expects Covid vaccine demand for years

13 hours ago

### Features



Anger rises as Covid rages in Modi's constituency



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News ... Sweden Plans to Be Carbon Neutral by 2045

ANNOUNCEMENT / 19 JUN, 2017

## Sweden Plans to Be Carbon Neutral by 2045

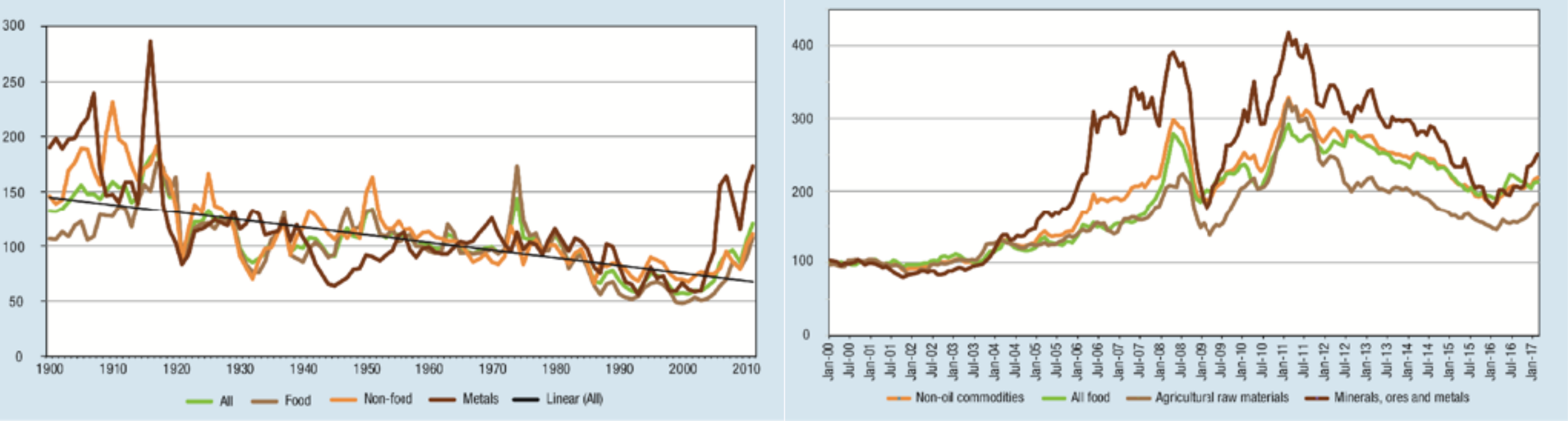


Source: Unfccc.int

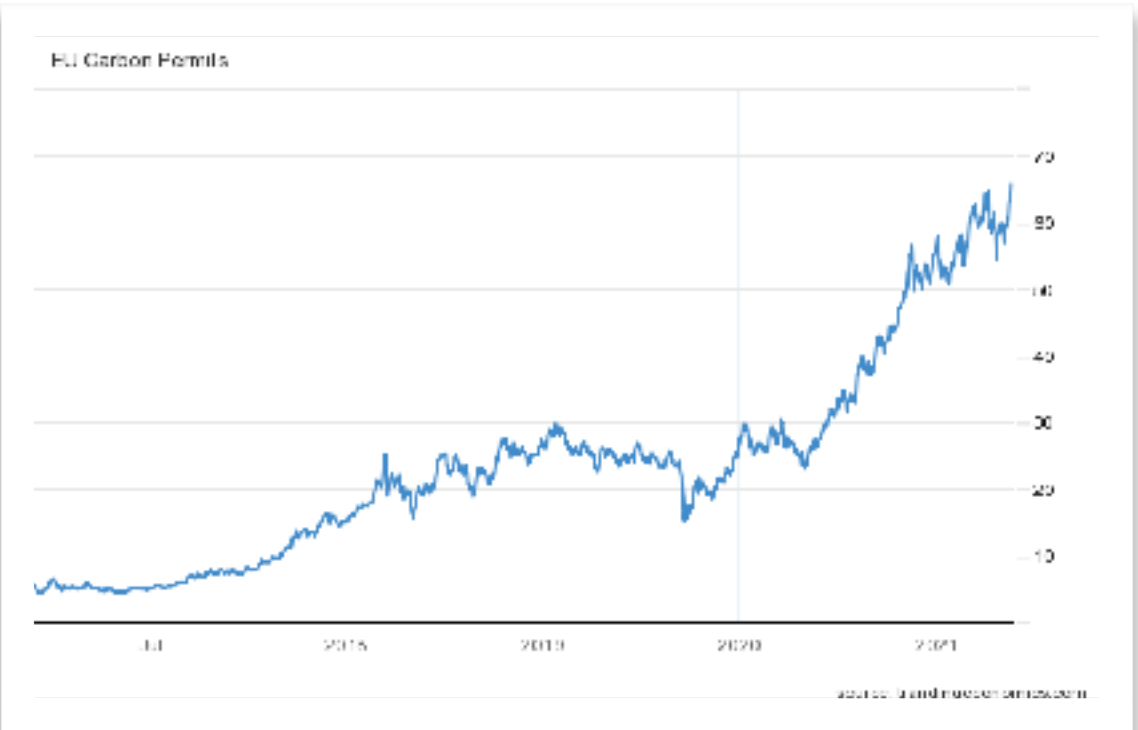
Sweden passed legislation last week which legally binds the country to reach net-zero emissions by the year 2045, five years earlier than previously planned. The new Climate Act passed in parliament with an overwhelming majority vote (254 against 41) and is more ambitious than what Sweden pledged under the Paris Climate Change Agreement.

1 legally binds the country to

# Growing economic consequences



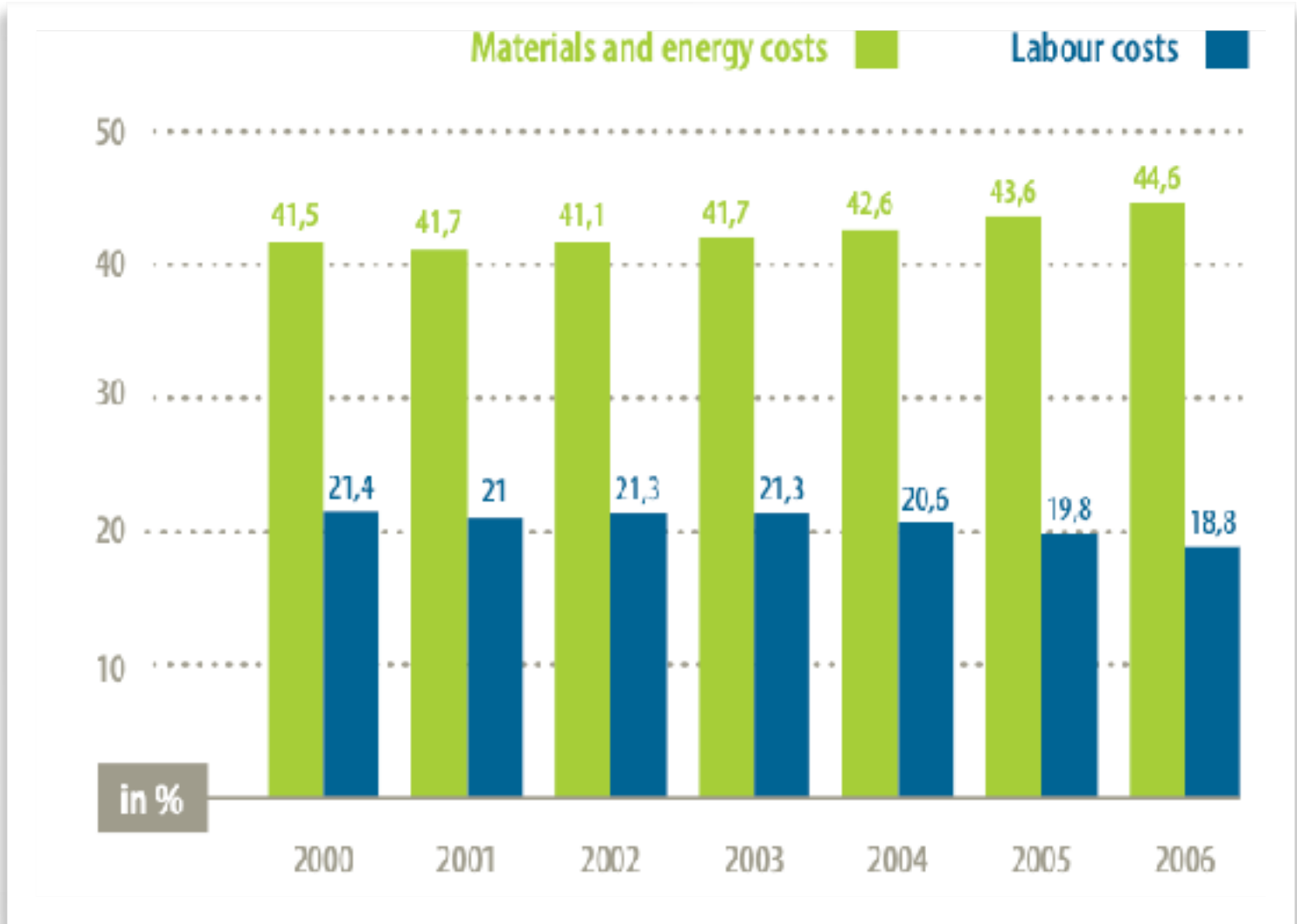
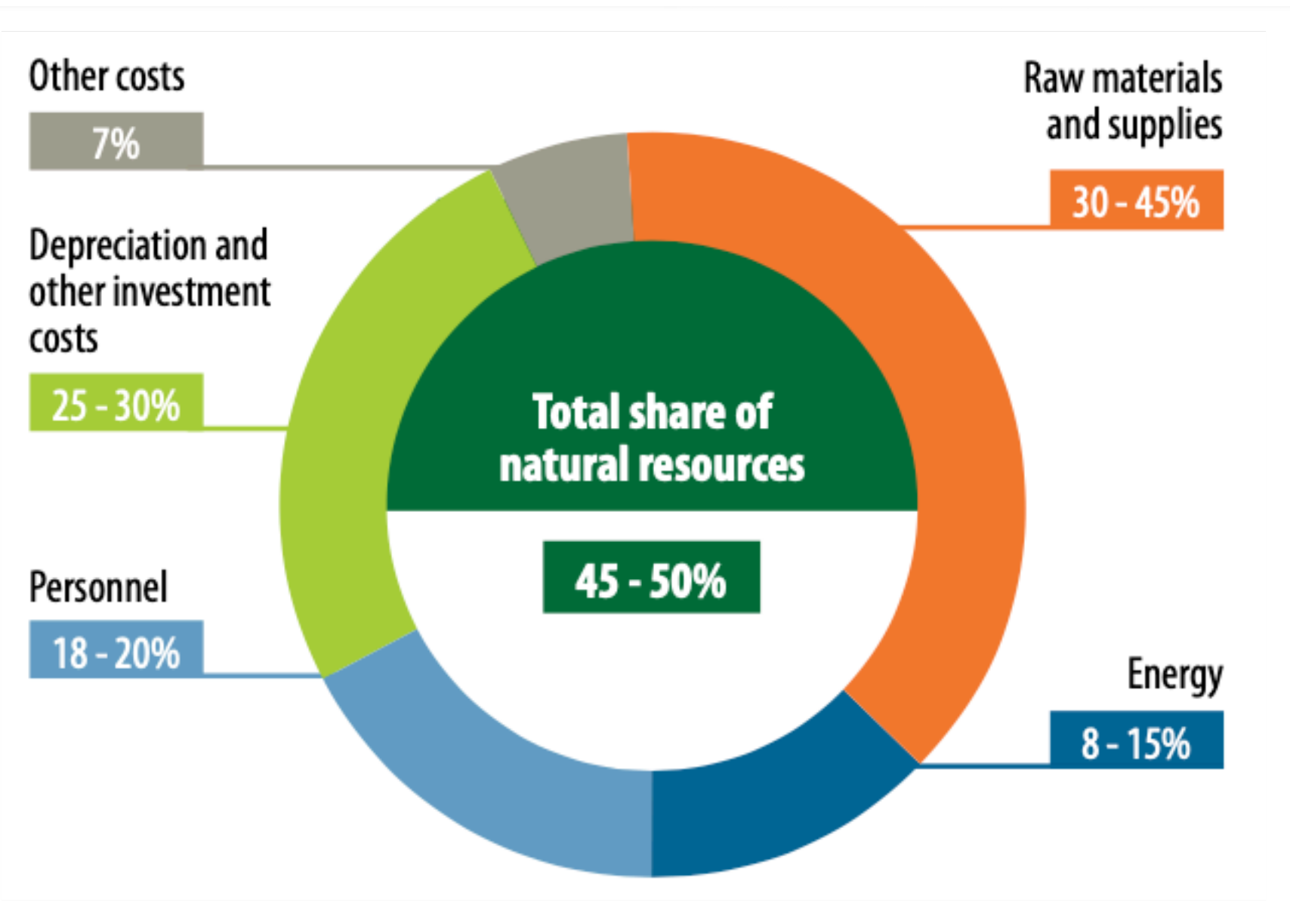
Commodity price developments since 1900 [Source: UN FAO, 2017. Commodity prices and development report.](#)



CO<sub>2</sub> prices in EU ETS



# Production costs in manufacturing industry



Breakdown of costs in European manufacturing industry.

Development of material, energy and labor costs in European manufacturing industry.

**Source:** Greenovate Europe, 2012. Guide to resource efficiency in manufacturing



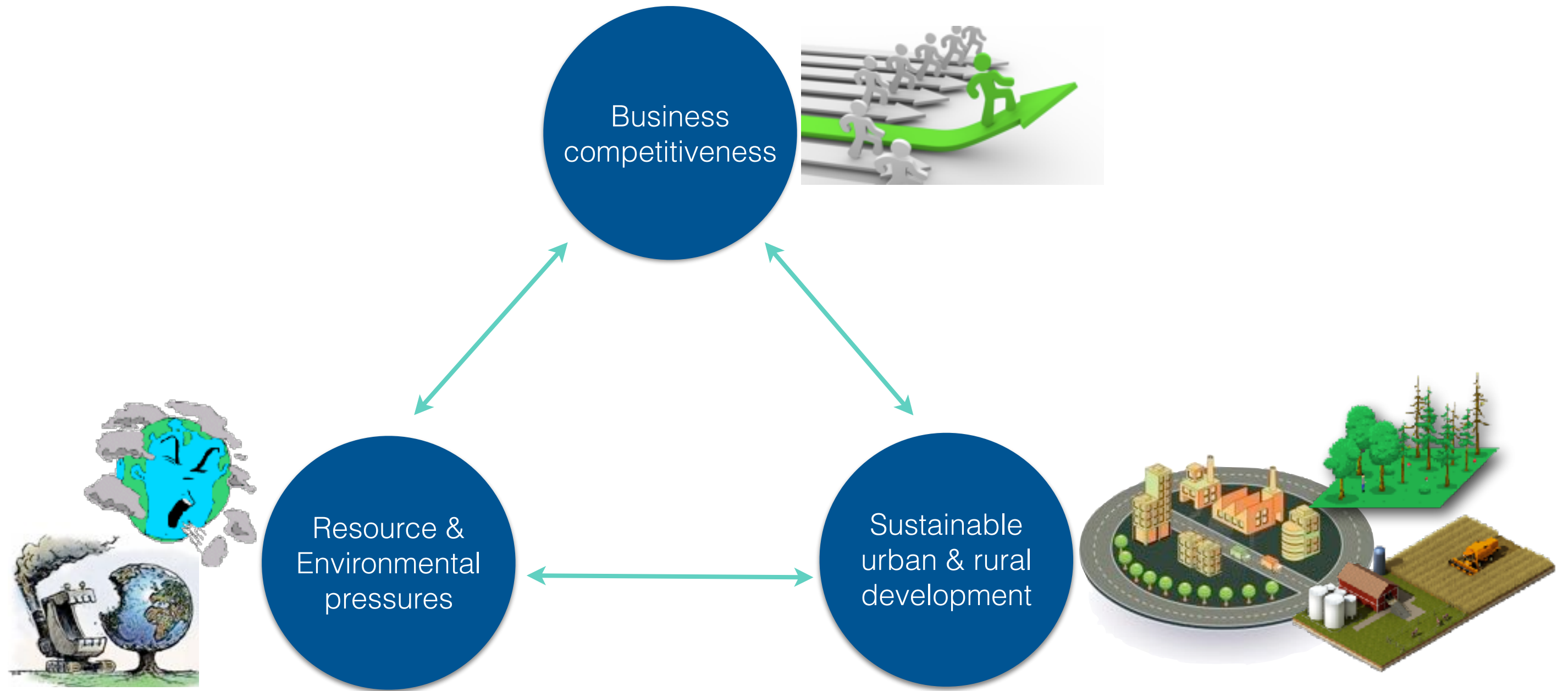
# Challenges to business & community managers

## Growing costs & risks liked to:

- Resource access & residue management
- Regulatory compliance
- Stakeholder demands



# Growing, interconnected challenges





USE  
BETTER

USE

RESOURCES

BETTER

Factor 10+  
improvements  
are needed



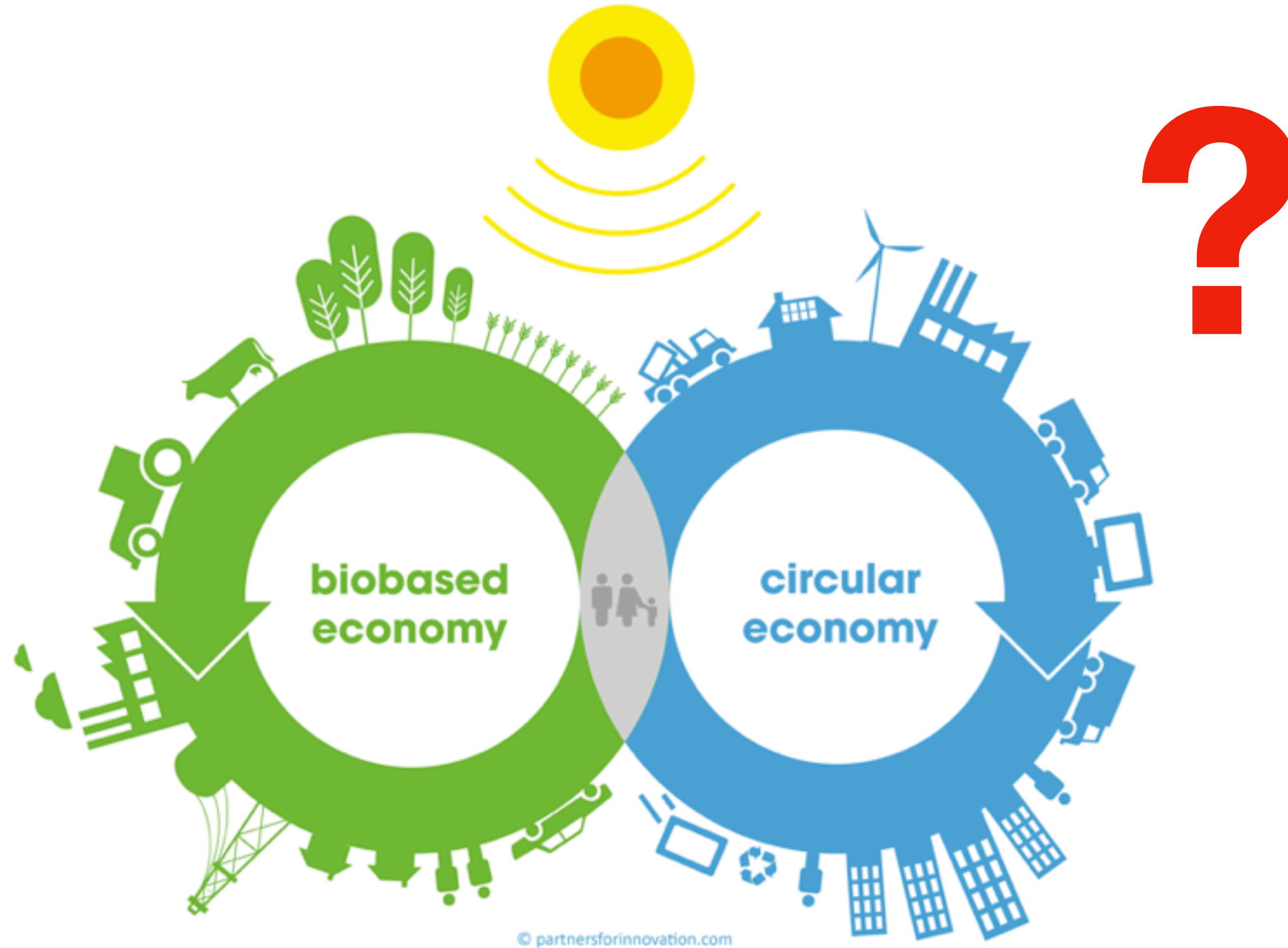
# Limitations of dominant silo approaches...



Focused approaches are important and necessary, BUT inadequate in bringing needed change.

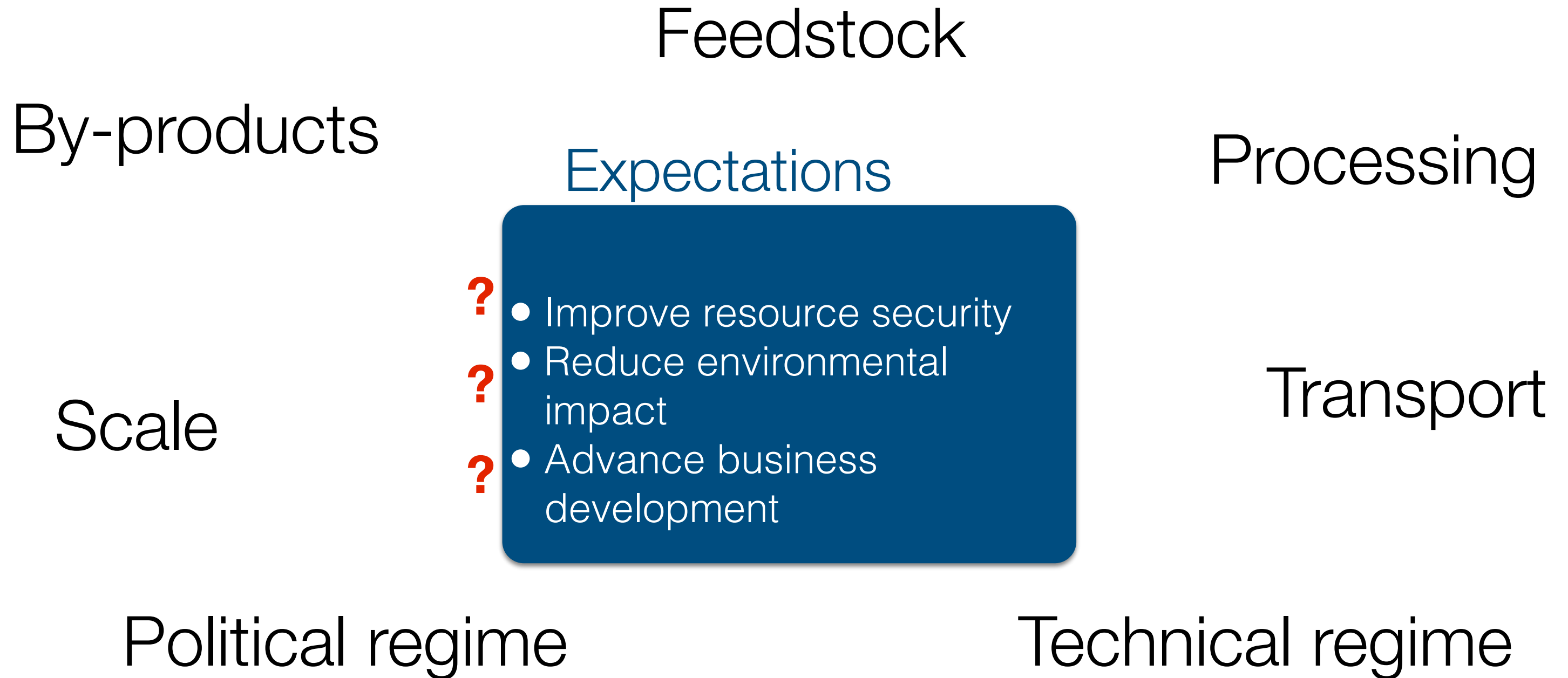


# Circular and bio-based economies



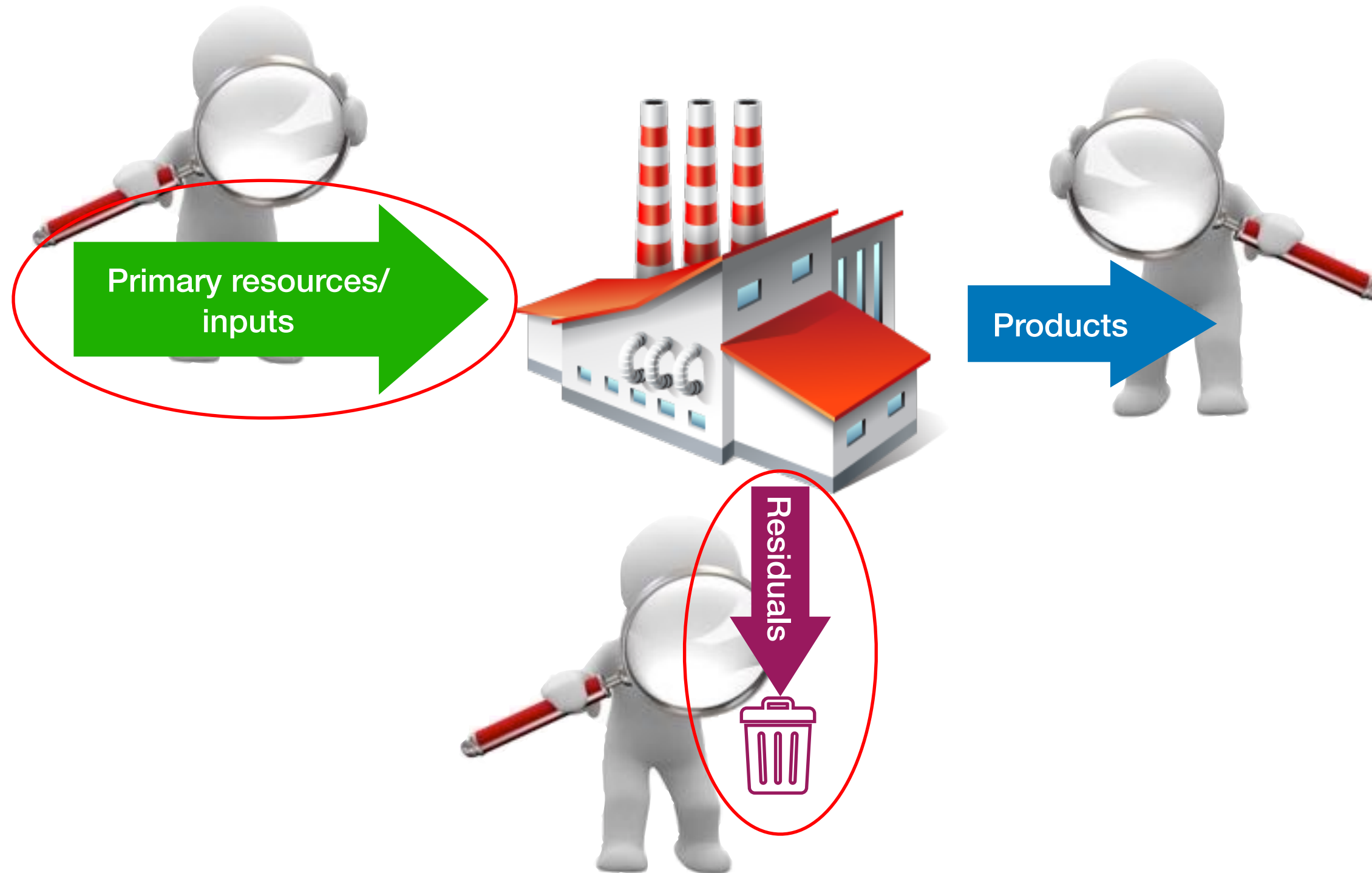


# Challenges to circular and bio-based economies





# Bringing back the focus on resources and residuals





**Need to think and act in new ways**

*Going beyond individual products, organisations and sectors.*



# QUESTIONS & INQUIRIES

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