EMBASSY OF
THE NETHERLANDS

JUNE 12

GÖTGATAN 16A,
STOCKHOLM

ICC INTERNATIONAL CHAMBER OF COMMERCE
The world business organization

Kingdom of the Netherlands

Holland.

RAGN SELLS

Adrianus "Ad" Lansink

FROM WASTE TO RESOURCE – MOVING TOWARDS A CIRCULAR ECONOMY.

Welcome to a half-day session and round table with Ad Lansink,
the creator of the Waste Hierarchy.

08.30 Ambassador Ines Coppoolse, The Netherlands
Margi Mataj Policy manager, ICC Sweden
Lars Lindén, CEO Ragn-Sells

08.55 Elin Bergman, WWF/Cradlenet **”Is the waste hierachy steering in the wrong direction?”**

09.05 Dr Ad Lansink och Dr. Graham Aid **”From a waste to a resources focus”**

10.05 Robine van Dooren - **International Green Deal och North Sea Resources Roundabout**

Jakob Sahlén, E.ON – ”**From waste, to energy, to what?”**

Anna Brodowsky, Essity **”Taking the next step to a circular society; through collaboration”**

Silvester Bombeeck, SNB, Ronald Hopman, HVC, Jan Svärd Easy-Mining
”**incinerated sludge ashes in The Netherlands a possible phosphorus mine”**

David Högnelid, LKAB, **”From mine waste to critical raw material”**

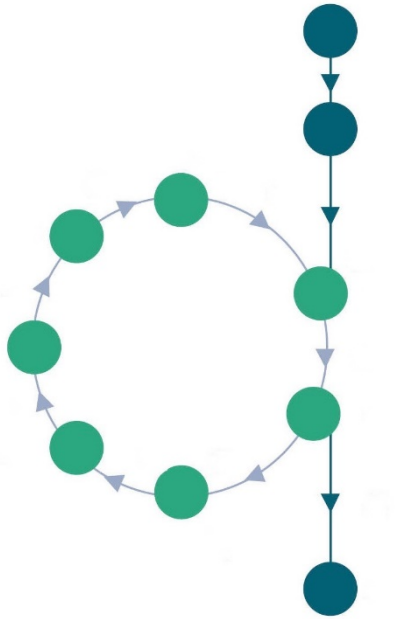
11.05 Fruits and Q o A – Business on stage

11.25 Jonas Borglin, CEO New Division “**The SDG:s as circular policy drivers?”**

11.40 Åsa Romson, Sofia Arkelsten

12.10 Lansink, Aid, Borglin, Romson, Arkelsten

Circular resource policy:
Waste hierarchy: roadmap for circular economy



Dr Ad Lansink
Author of Challenging Changes
ISWA Publication Award 2018

Seminar Ragn-Sells Group & Dutch Embassy
Stockholm 12 june 2019

Agenda

Circular Resource Policy: Waste Hierarchy Route Map for Circularity

Essential Preconditions

Origin and Significance of Waste Hierarchy

Circular Waste Policy Concepts

From Waste to Resource Hierarchy

Decoupling Economy and Ecology

Transition towards Circular Economy – Support and Business Models

Examples of Circular Value Creation

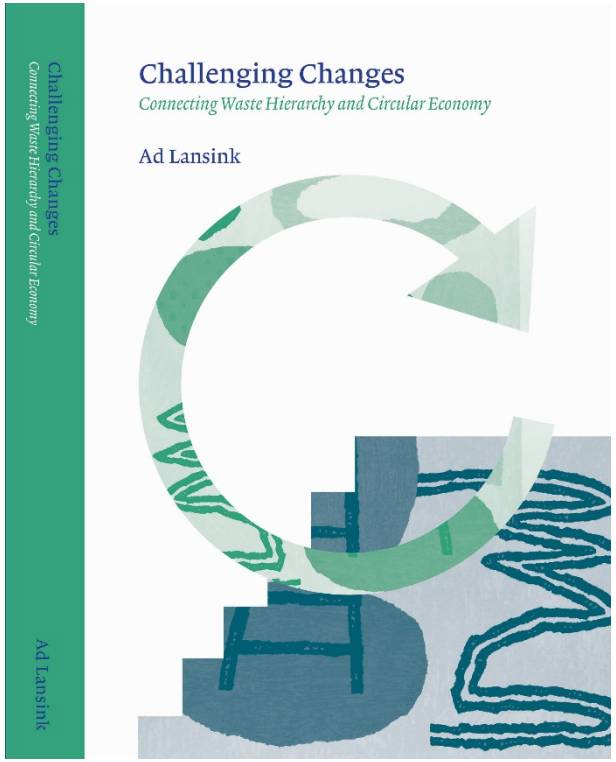
Circular Obstacles: Leaks and Dilemma’s

Main Lines – Outlook – Recommendations (related to UN SDG’s)

Circular Resource Policy

Essential Preconditions

- Clear aim: Long term vision
- Inclusive (system) thinking
- Looking for (loyal) chain partners
- Useful and available means
- Support of society
- Respect for nature + natural laws



Driving Forces Waste Hierarchy

Comparing old and actual decades

1970 – 1990

- Club of Rome
- Stewardship
- Energy Crises I and II
- Plea Selective Growth
- Lack of Landfill Capacity (NL)
- Soil Pollution (NL)

1970 (Netherlands)
Canal transport of waste

2010 – 2030

- Scarcity of raw materials
- Sustainability
- Climate Policy
- Circular Economy
- Urban Mining
- (Marine) Litter
- Biodiversity
- Geopolitical issues

2008 (Naples, Italy
Waste crisis

Origin of Waste Hierarchy

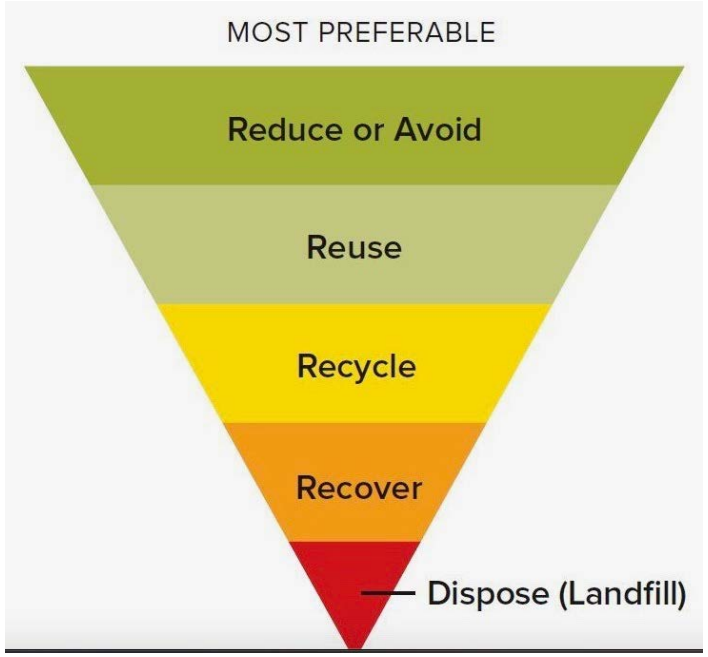
Text of Lansink's Parliamentary Proposal (1979)

- The Parliament, noting that quantities and disposal of waste are still increasing
- Whereas reducing waste production and recycling of resources contained in the waste must be objectives of environmental policy
- Invites the Government to establish a Waste Reuse Policy Plan, involving a.o.

a. preventive policy in respect of waste
b. reuse of raw materials from waste after separation at source
c. reuse of raw materials from waste after processing in separation plants
d. conversion of suitable waste into energy
e. controlled land filling or functional discharge of non-usable waste
f. other activities, i.e. research and development

Ladder and Pyramid

With upside down pyramid reboot thinking on waste



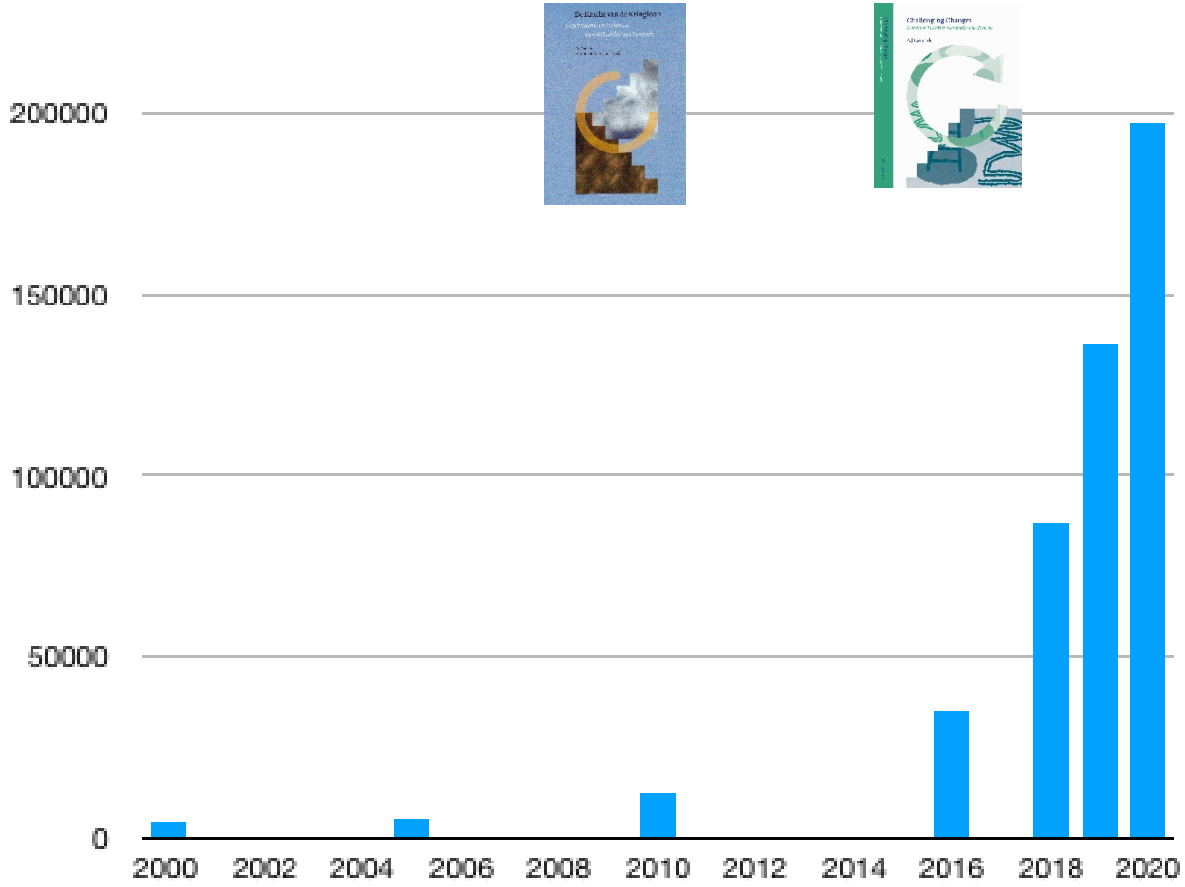
Scottie Paterson (Cairns Regional Council) introducing the upside down pyramid:
In 1979 Ad Lansink introduced a new way of thinking around maximizing the efficient use of resources, by ranking waste management options by what would best for the environment. He mapped out actions from most preferable to least, starting with **reducing** and avoiding waste, **reusing** materials where possible, **recycling**, recovering (**incineration & energy**), lastly **landfilling** disposal

Acquaintance Ladder van Lansink

Score Google Statistics from 2000 till June 2019

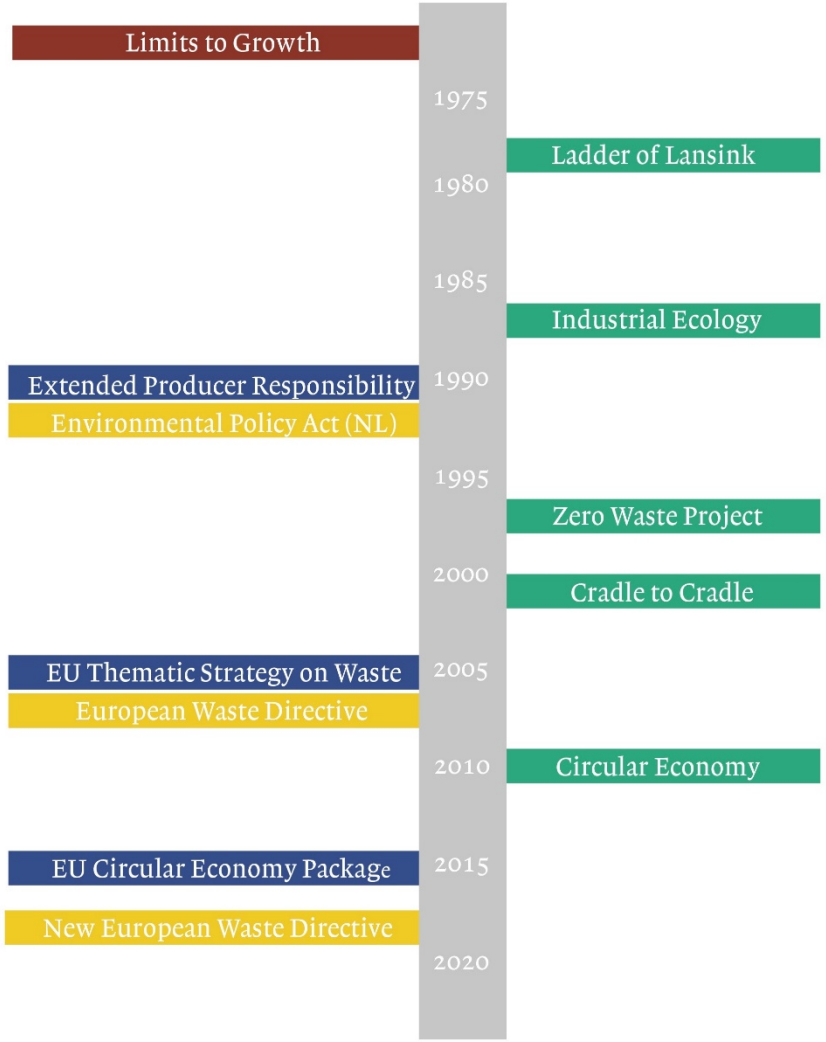
Explaining the waste hierarchy for Kassa on Dutch TV

Google References >



Circular Waste Policy Concepts

Starting point: Limits to Growth (Club of Rome)



Actual topics

Relation to Climate Policy

Biodiversity

Geopolitical Changes

Plastic Pollution

Chemical Recycling

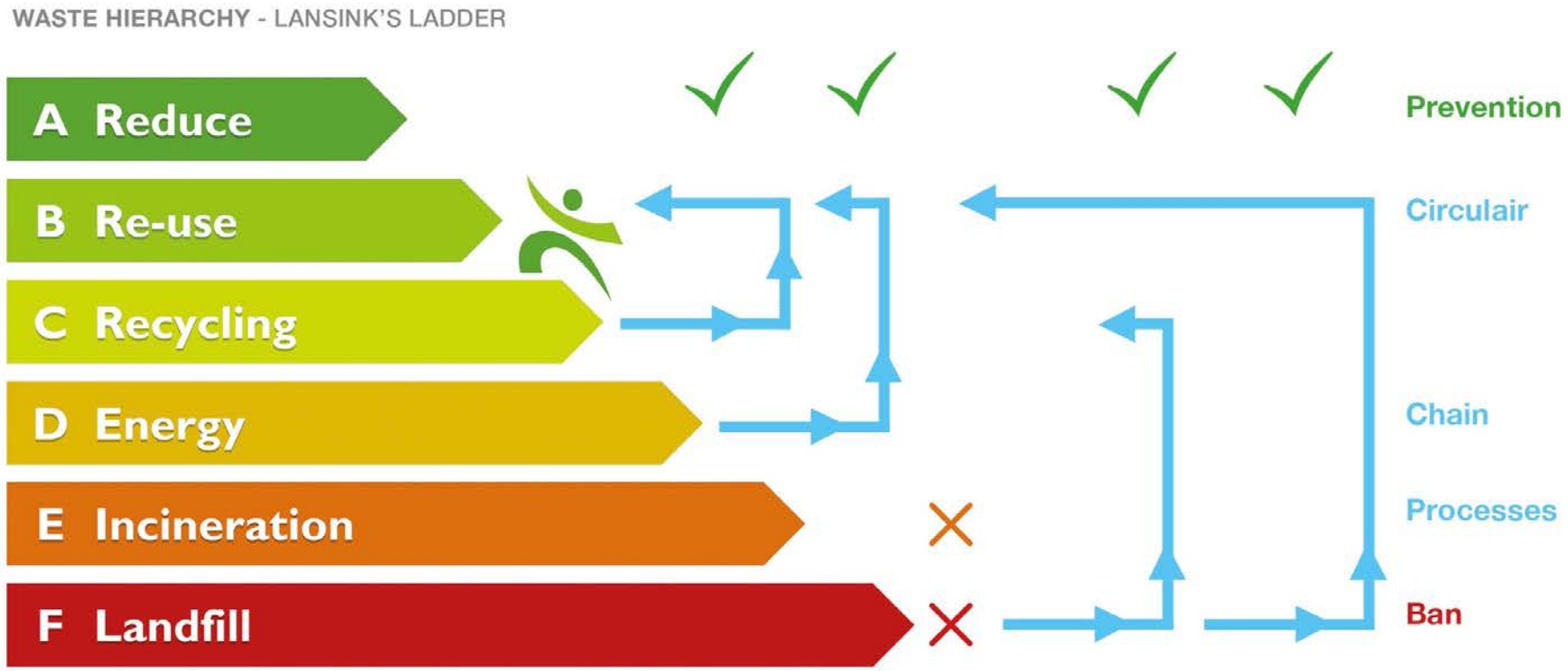
Food Waste

Public Awareness

4th Industrial Revolution

Significance of Waste Hierarchy

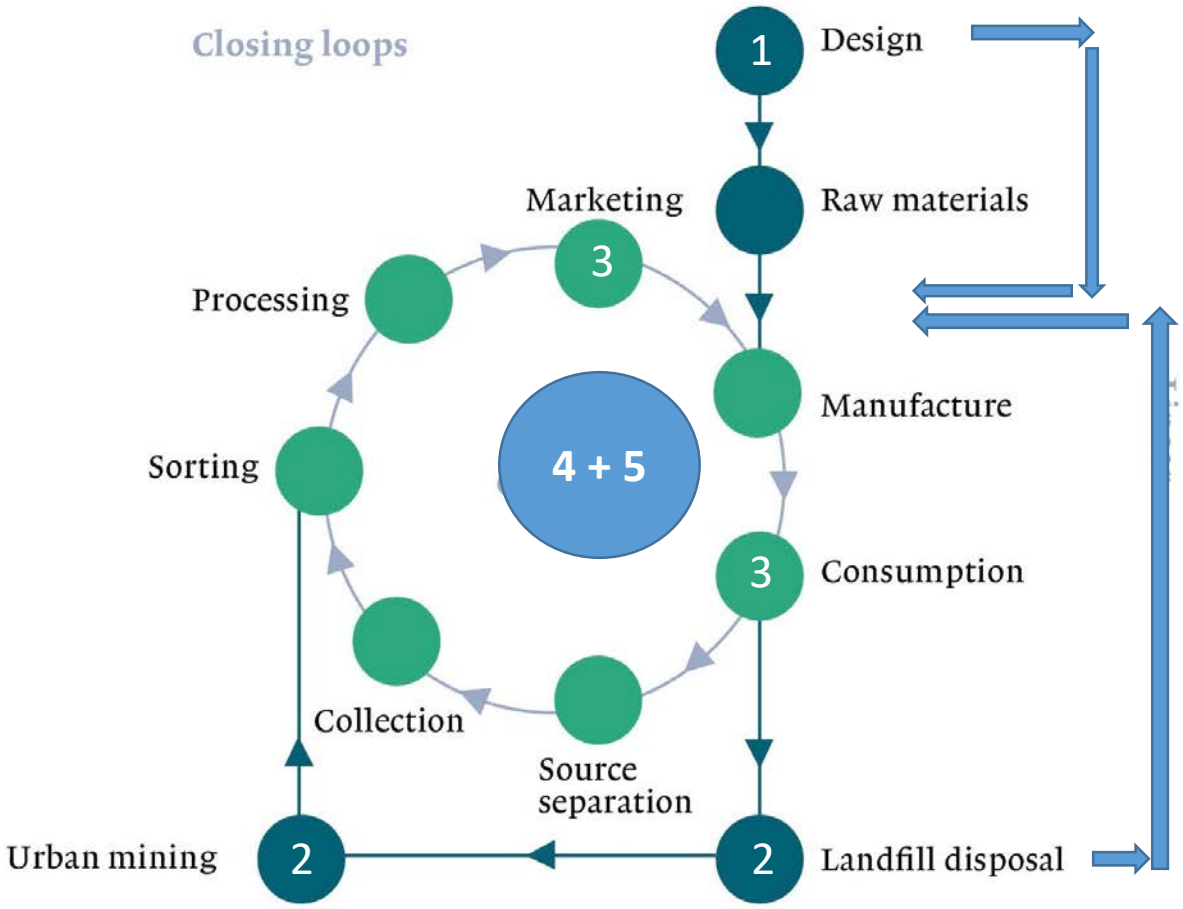
Changing Preference Order for Circular Resource Hierarchy



Connection of Climate Policy and Circular Economy asks for
Combining Prevention and Preservation of Resources for Future Generations

From Waste to Resource Hierarchy

Key points for research and application



1 Design for recycling

2 Urban mining

3 Consumer awareness

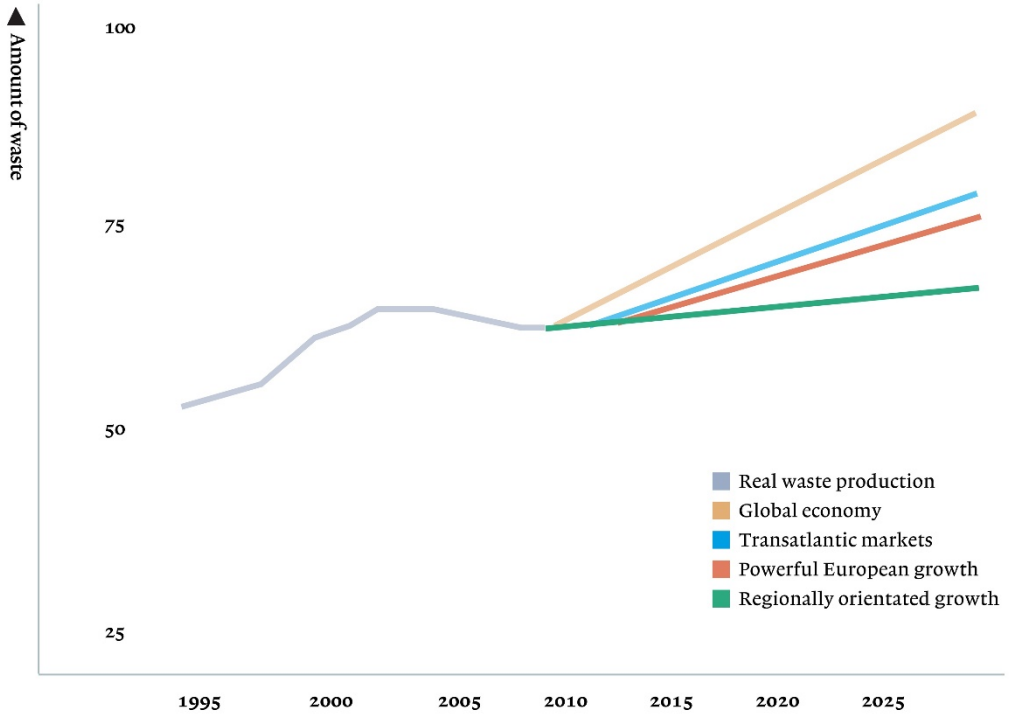
4 Chain management

5 Relation to climate policy

Challenge:
Digital Passports and Certificates for Materials, Processes and Products

Waste > Resource Policy: Avoiding Risks

Risk Drivers depend on Socio-Economic Patterns



- Prosperity (69%)
- Population Growth (51%)
- Raw Material Shortage (48%)
- Decreasing Re-Use (47%)
- Political Instability (26%)

possibly result in

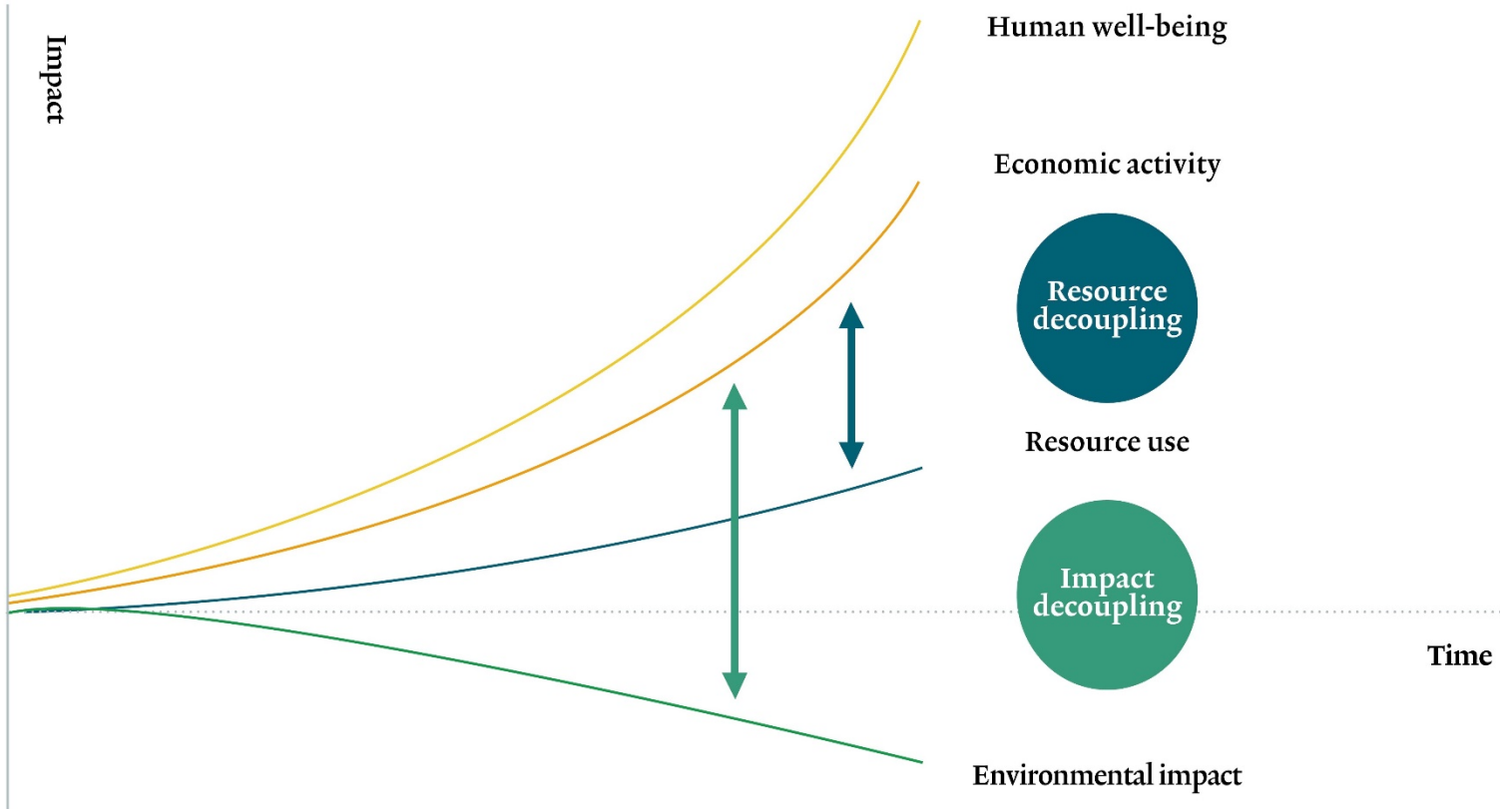
- Physical
- Economical
- Social
- Geopolitical Risks

Necessity of Value Creation: Financial, Social, Environmental, Political

Sharing Responsibility with Policy Options: Green Deals > Legislation

Decoupling Economy and Ecology

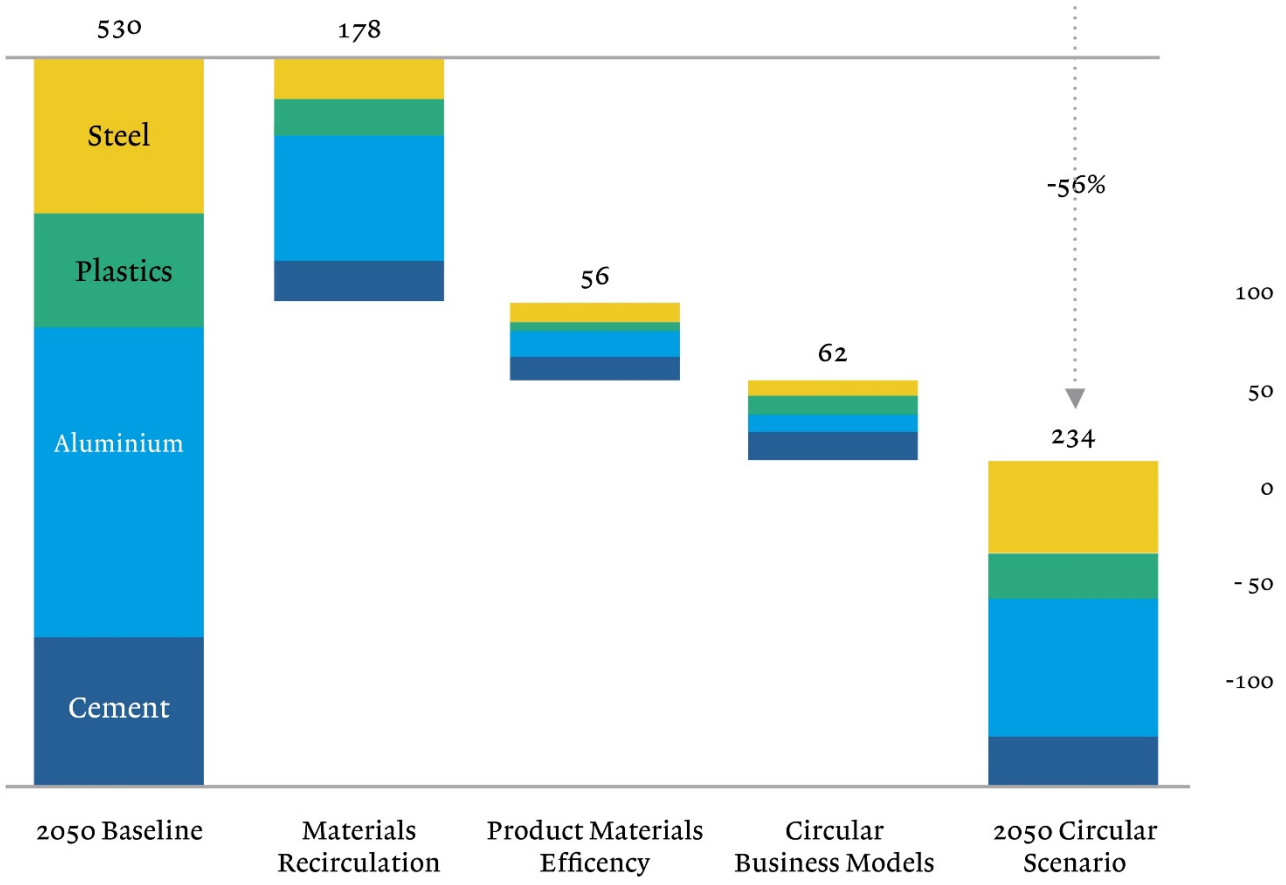
Essential for Sustainable Development



From: Resource Management - Vision, Opportunities and Challenges, by Janez Potocnik
Co-chair UNEP International Resource Panel (IRP) (2018)

Emissions Reduction Potential

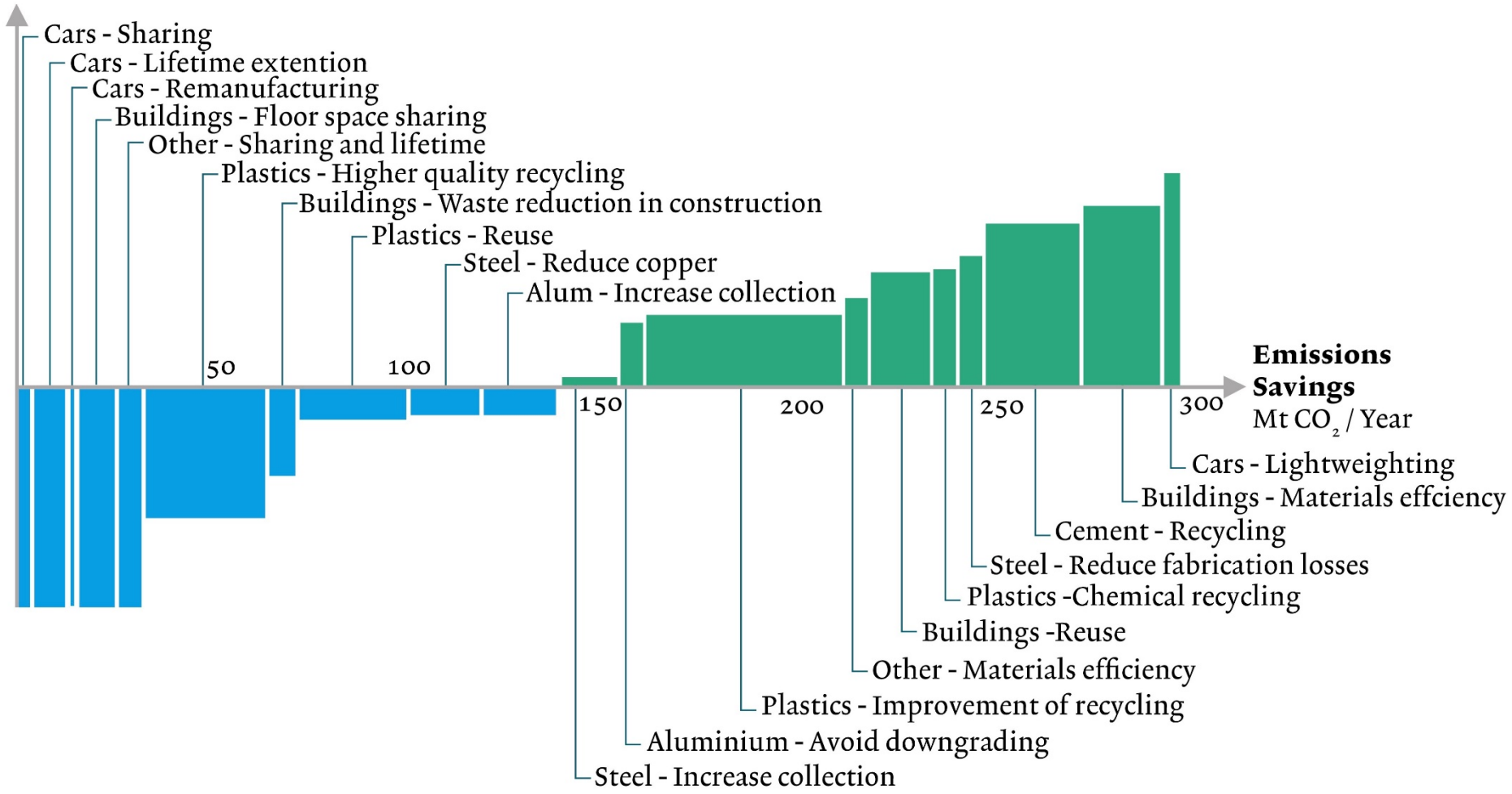
Circulair Economy can cut Emissions by 56% in 2050



- Yellow: Steel
- Green: Plastics
- Blue: Aluminium
- Dark Blue: Cement

Savings by Resource Management

Options for lifetime extension, sharing and (chemical) recycling



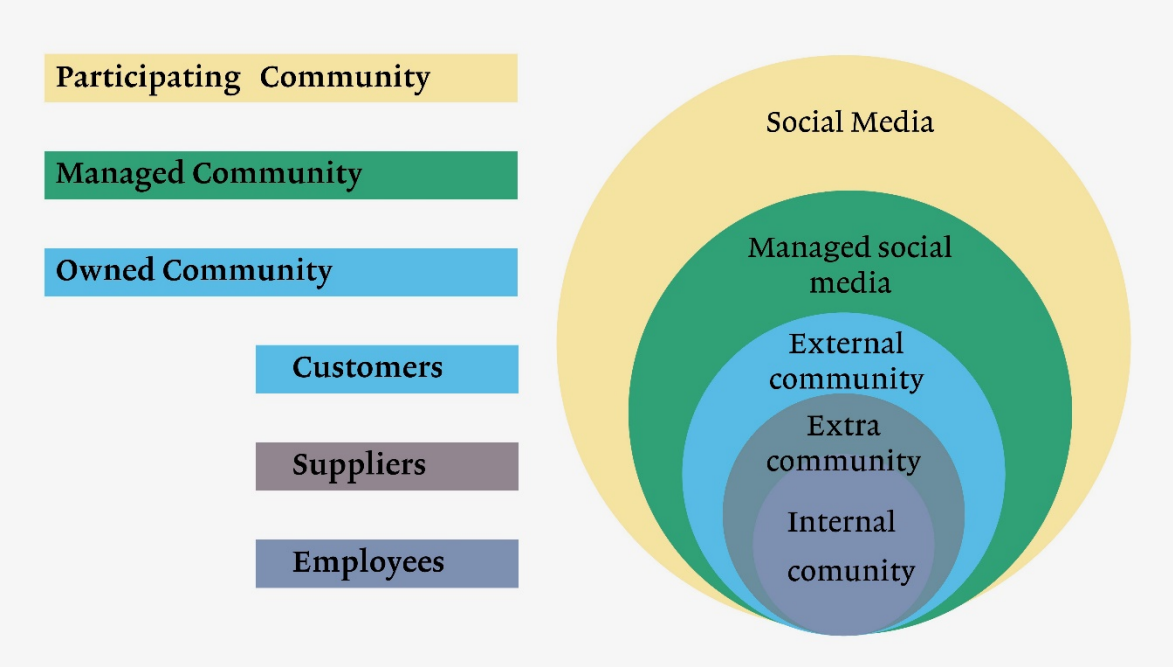
Transition towards Circular Economy

Key Challenges at Implementing Waste (Resource) Hierarchy

- Closing loops in several sectors and on various levels
- Developing new (design) technologies
- Creating financial, social and other values
- Shared responsibility producers, consumers, governments
- Creating broad – also global – support in society
- Decoupling economy from environmental impacts
- Development of achievable and effective business models
- Firm transition towards renewable energy

Creating support in society

Challenge: using appropriate communication means

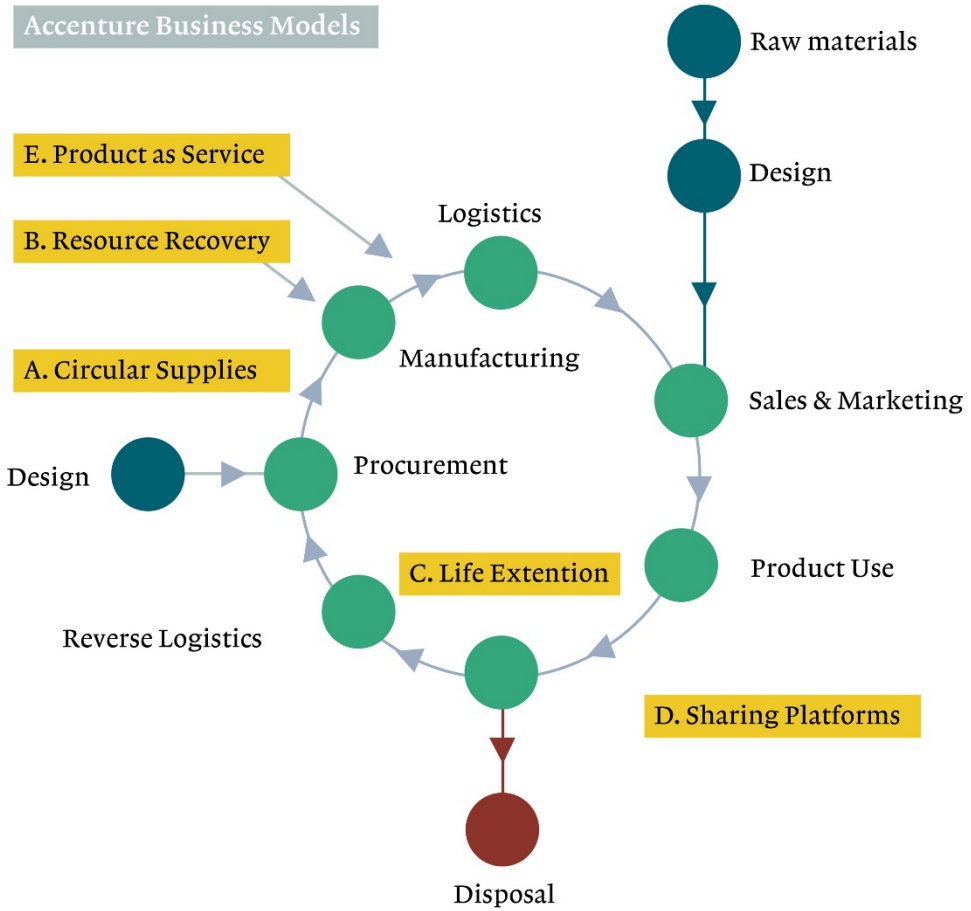


Recommendations

- Avoiding not achievable expectations
- Recognizing the value of natural laws
- Preventing confusion by univocal terminology
- Less emphasis on CE as marketing tool

Development business models

Challenge: Achievable and effective business cases



Plea for

- System thinking
- Design options
- Inclusive resource policy
- Value evaluation
- Chain management

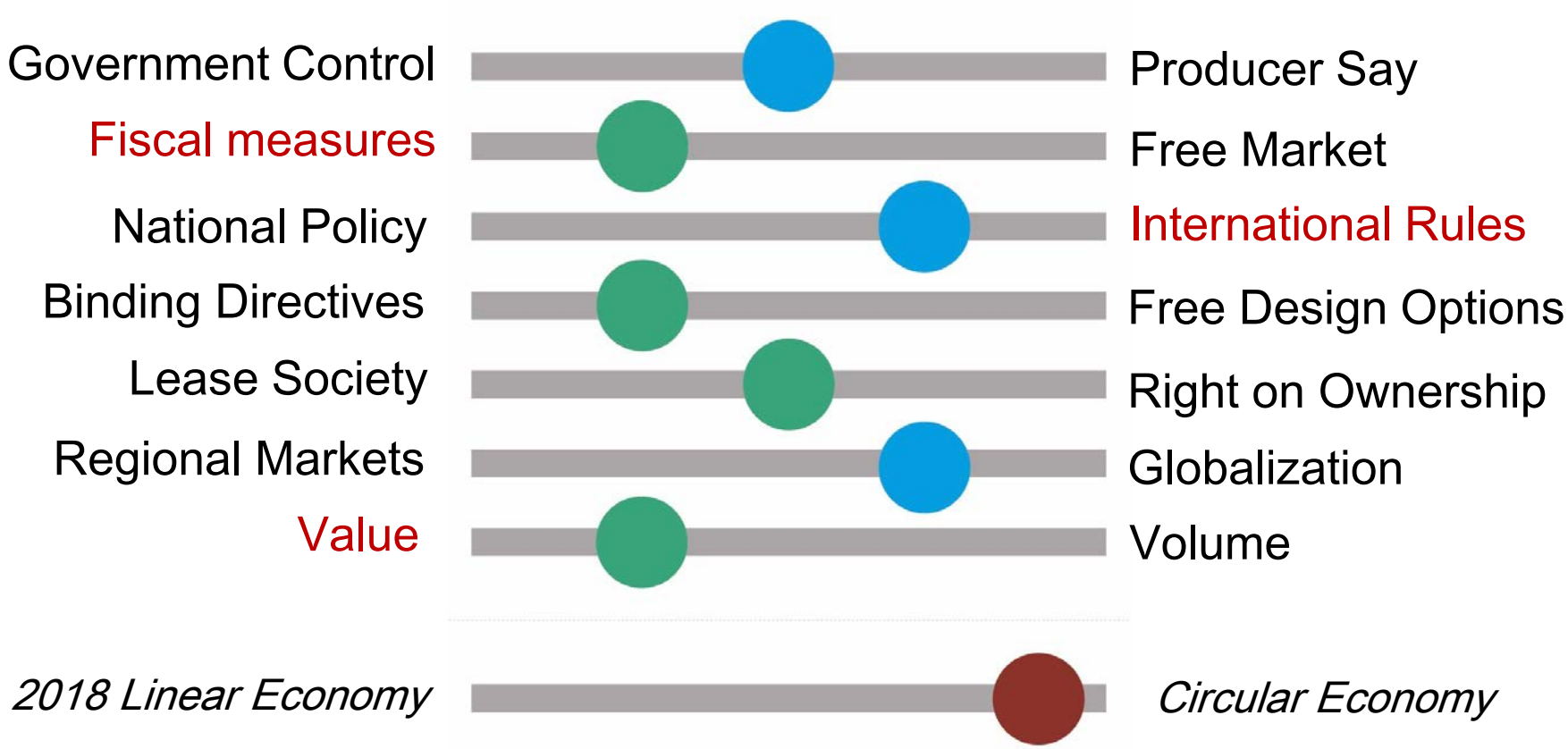
Special ‘Circular’ Topics

Connnecting Waste Hierarchy and Circular Economy

- Approaching (international) circular dilemmas
- Creating multiple resource streams from waste
- Comparing financial, social and other values
- Testing of values against time, function and location
- Repairing leaks in circular economy
- Differences between developed and less developed countries
- Importance of innovation in different areas

Circular Dilemmas

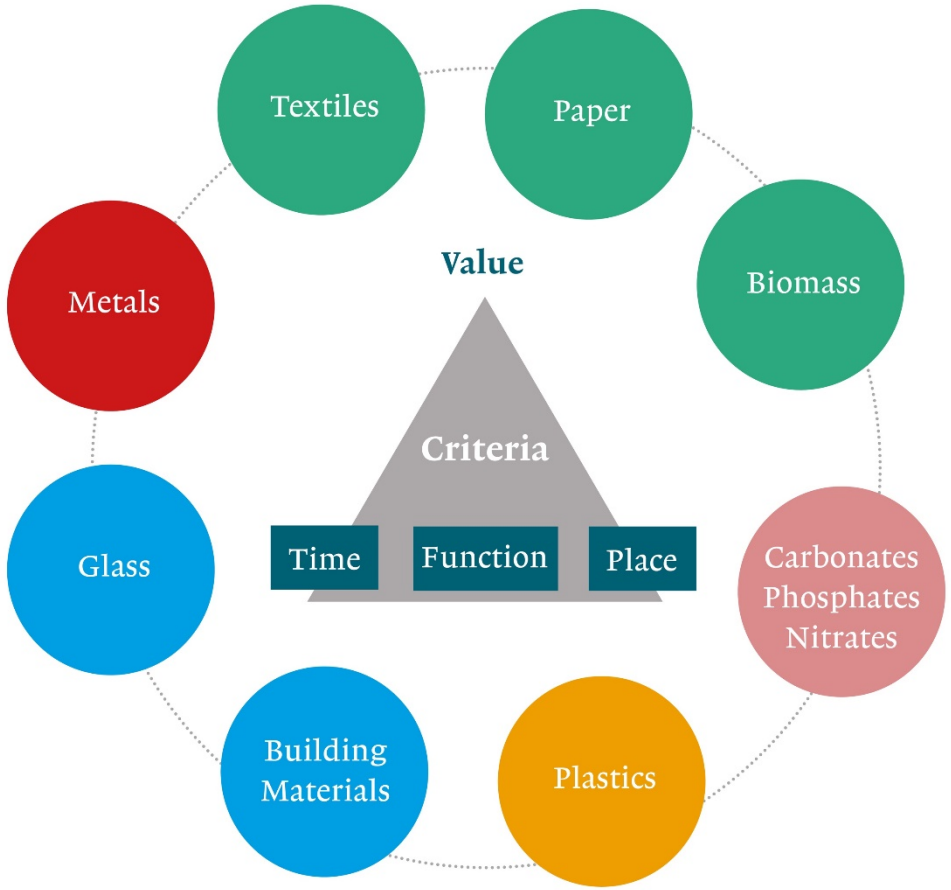
Necessity of (sometimes connected) choices



Main challenge: Development of international value indication

Multiple Resource Streams

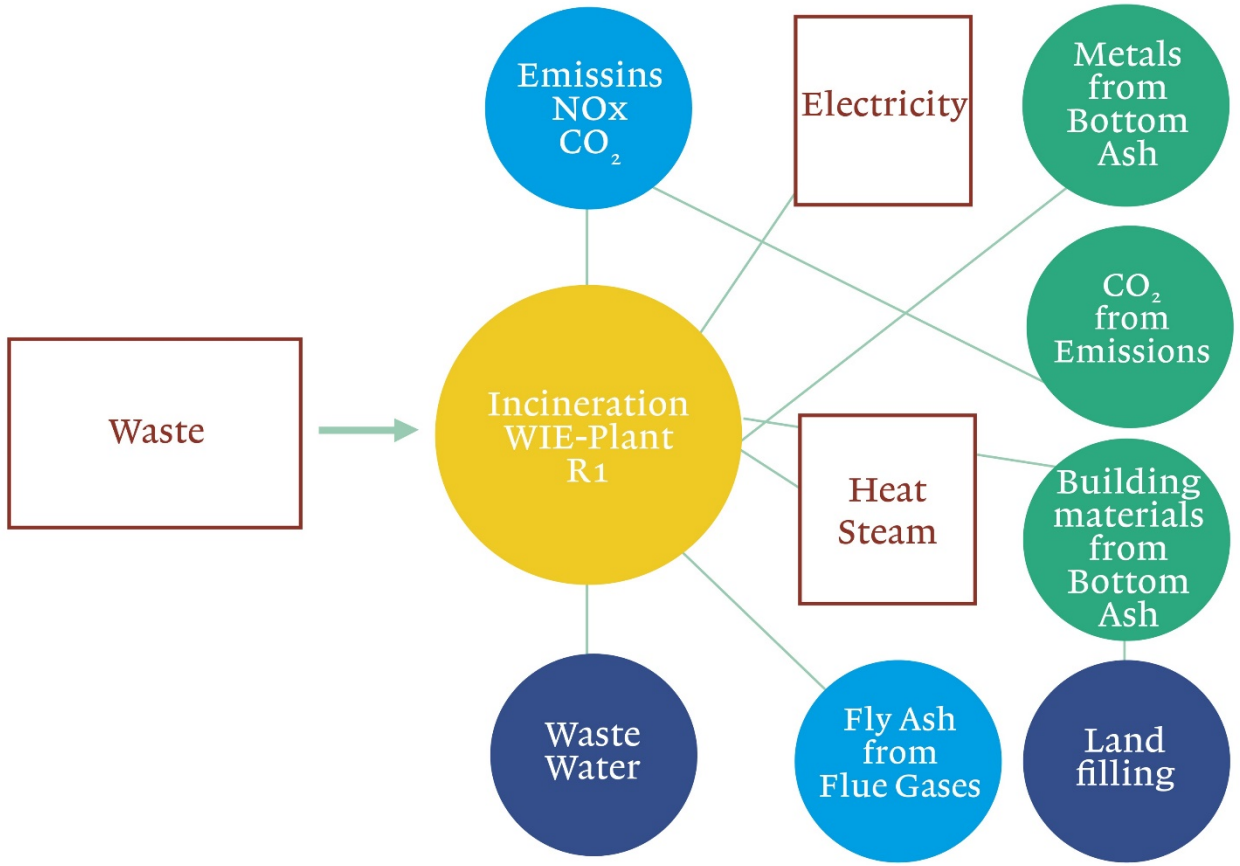
Influence of time, place and function on value creation



- Economic: depending on the prize of virgin materials
- Geopolitical, in relation to scarcity (rare metals)
- Financial, for government a.o. financing infrastructure
- Social, especially in the form of employment

Examples of Circular Value Creation (1)

From Waste to Resources: Secondary Materials and Energy



Value Creation in WfE Plants

Materials

- Metals
- Glass
- Building Materials

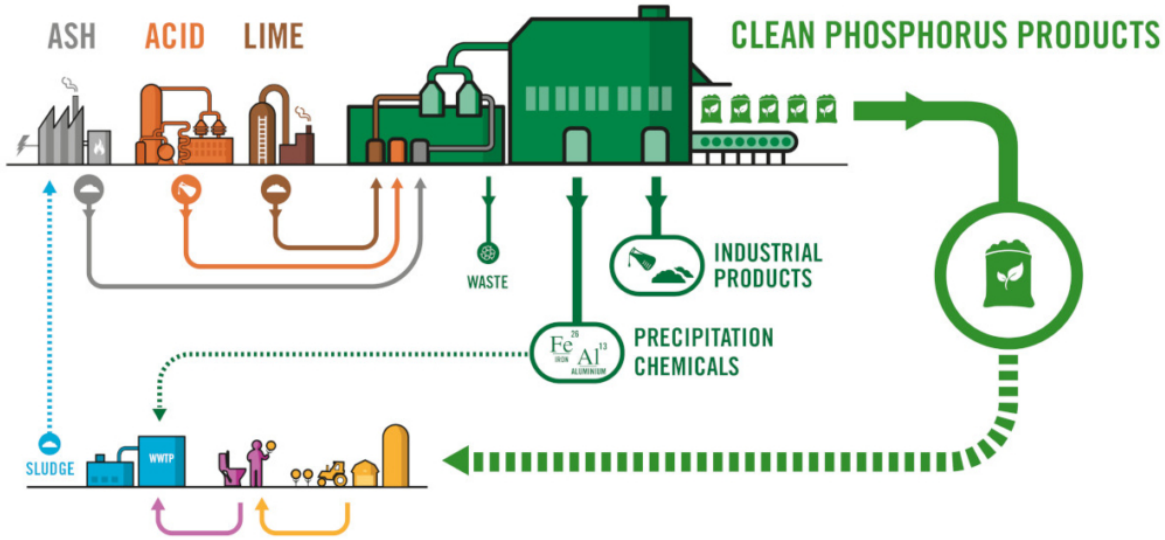
Energy

- Heat
- Steam
- Electricity

Examples of Circular Value Creation (2)

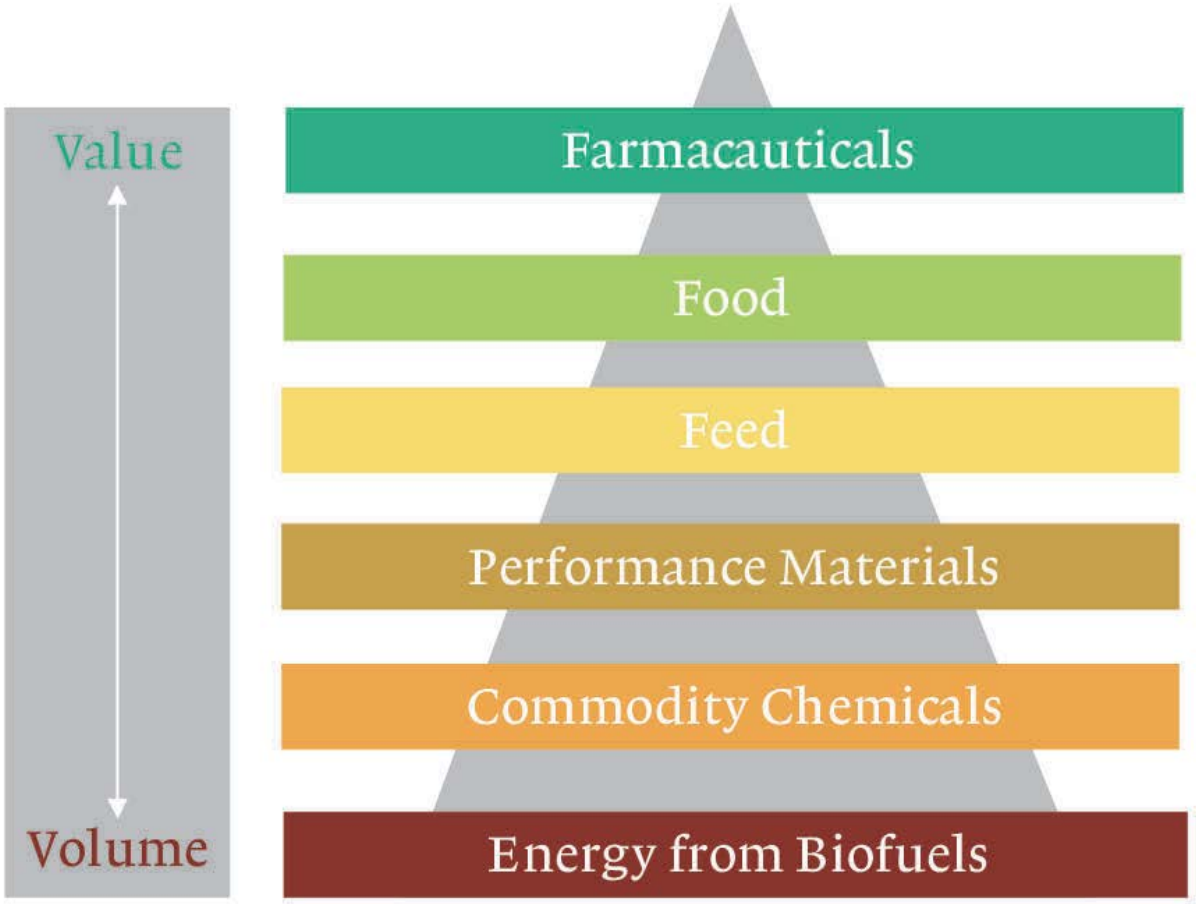
From Waste to Resources: Easy Mining

- Ash2Salt: Extraction of commercial salts from fly ash
- Ash2Phos: Extraction of phosphorus from mining waste
- Extraction of rare earth metals from ashes and landfilled waste



Examples of Circular Value Creation (3)

Biomass from Volume to Value > Biobased Economy



Cascading Biomass

Source:
Ad Lansink
Challenging Changes Connecting Waste Hierarchy and Circular Economy (2017)
Chapter 35

Circular Leaks

Solving Non-Integrated Externatilities and Negative Symptoms

1 Stigmatization

2 Environmental aspects

3 Macro-economical effects

4 Market failures

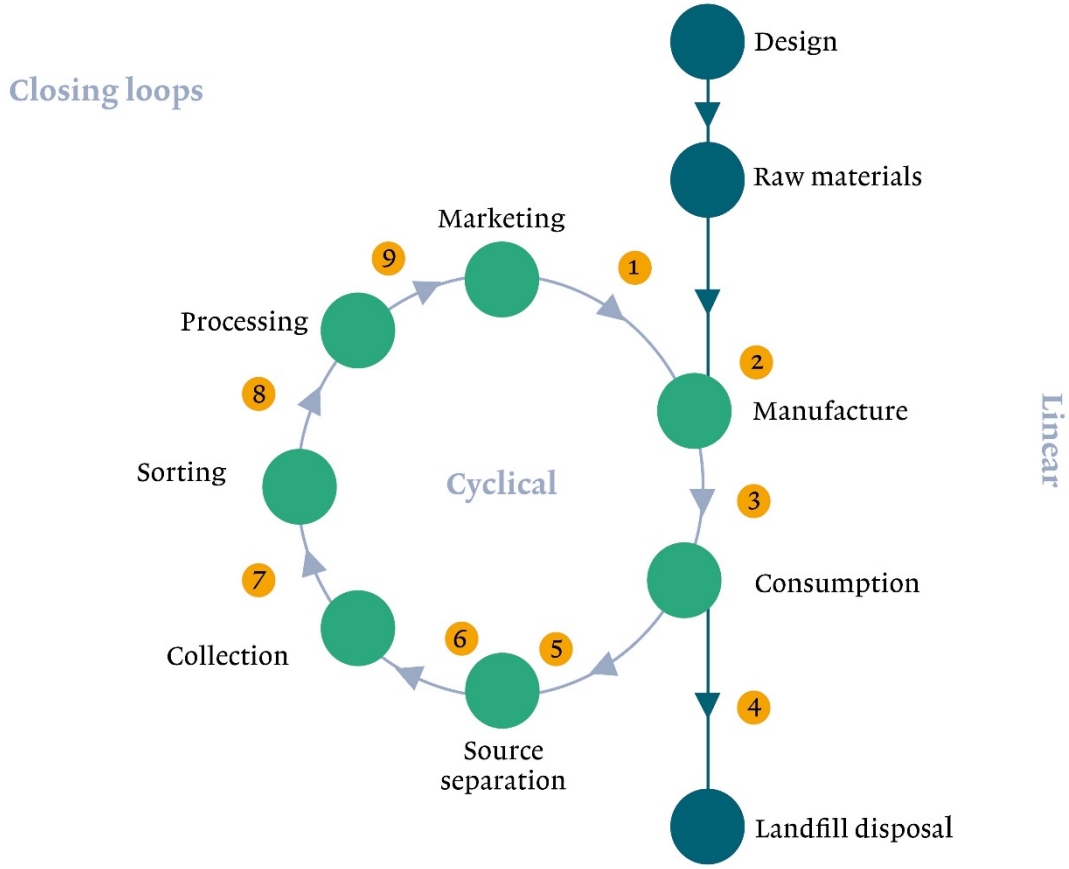
5 Consumer behaviour

6 Insufficient quality

7 Global barriers

8 Lagging technology

9 Downcycling/energy losses

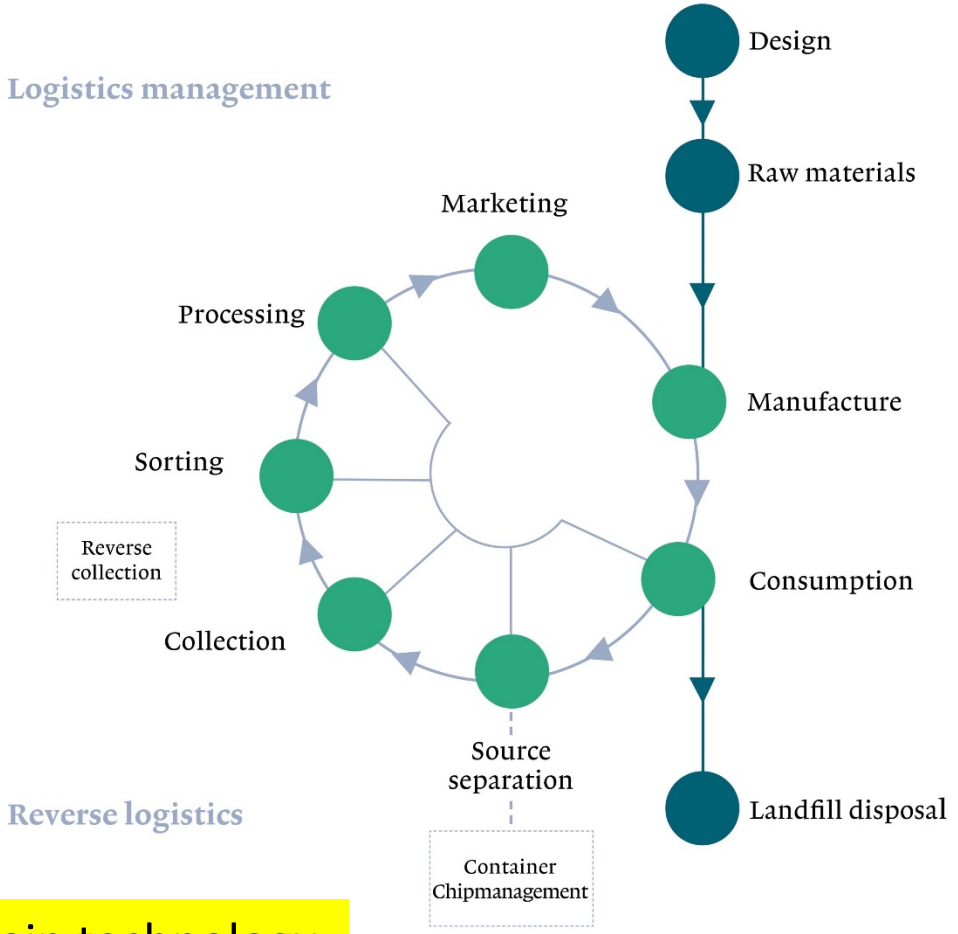


Main challenge: Internalisation of (non) material costs and aspects

Innovation Policy Topics

Big Challenges in Multiple Fields

- Design of Products
- Processing of Materials
- (Reverse) Logistics
- Energy Technology
- Immobilization Technology
- Balanced taxation
- Communication
- Chain Management
- Value Certification



Challenge: Digitization e.g by block chain technology

Main Lines Circular Economy

Related to the UN Sustainable Development Goals

Topics	Statements	SDG
Chain management	Strengthening chain resource management	
Prevention	Enlarging qualitative and quantitative prevention	
Re-use	Emphasis on reuse of products and materials	
Innovation	Constructive innovation by sustainable technologies	
Ecodesign	Circular product design (for recycling) and processing	
Recycling	Functional up-, re- and downcycling	
Criteria	Establishing achievable recycling and energy criteria	
Responsibility	Shared responsibility of chain partners and government	
Instruments	Rapid implementation of financial policy instruments	
Climate policy	Firm relation to energy and climate policy	
Procurement	Stimulation of green public procurement	
Public support	Activating and ensuring public support	

Outlook

Related to the UN Sustainable Development Goals

Topics	Outlook	SDG
Preventing scarcity	Saving of primary raw materials	
Energy	Reducing use of (fossil) energy resources	
Climate policy	Reducing CO_2-emissions	
Biodiversity	Maintaining and restoring biodiversity	 
Labor market	Promoting employment	 
Technology	Spin off new technologies	
Social cohesion	Chances for social innovation	 
Networking	Increasing influence of networking, platforms and ecosystems	
Industry 4.0	Transition from Third to Fourth Industrial Revolution	

Recommendations

Related to the UN Sustainable Development Goals

Topics	Statements	SDG
Terms	Use of universal, widely accepted terminology	
Prevention	Stimulating qualitative and quantitative prevention	
Recycling	Implementation of efficient and effective recycling processes	
Energy recovery	Limiting waste incineration to WfE-plants with large energy-production	
Consumers	Bring resource management and recycling closer to the needs of consumers	
Design for recycling	Emphasis on design for recycling, using recycling index as instrument	
Business models	Implementation of flexible, widely useful business models	
No green washing	Avoiding green washing	
Green procurement	Stimulation of green procurement	
Instruments	Transparent application of financial-economic instruments	
Tax harmonization	Development and implementation of international tax system	
Climate policy	Attention for the interaction between circular economy and climate policy	
Food packaging	Solving food wastage and litter by combined food and packaging policy	

Conclusion

Implementing the Waste Hierarchy will strengthen the gradual and careful transition to Circular Economy

Thank you for your attention

Any questions ?