



PBL Netherlands Environmental
Assessment Agency

Monitoring Circular Economy in the Netherlands

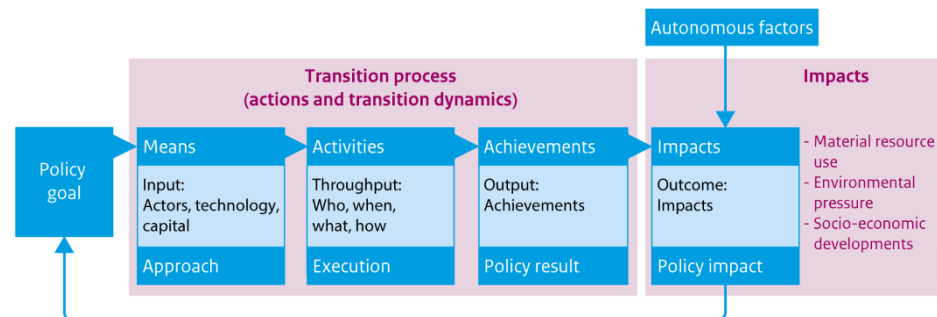
Integral Circular Economy Report (ICER) 2021

Aldert Hanemaaijer

ICER: progress of CE transition

- > Requested by Dutch Government
- > Every two years
- > Independent scientific knowledge base
 - Material resource use and effects
 - What's happening in society? and policy
- > Insights on how to accelerate transition by policy makers and other involved societal parties

Framework for measuring progress of the transition towards a circular economy



Source: Netherlands Court of Audit, 2005; adaptation by PBL



Working program Monitoring and Evaluation CE

- › Government broad Program CE 2016:
 - Importance to monitor progress transition CE
- › Working program M&S CE aims to broaden the knowledge base
 - Input for Dutch CE report
- › Annually 2 mln from Ministry IenW
- › PBL coordinates working program
- › *CBS, CPB, CML, RIVM, RVO, RWS, TNO & UU*



**Monitoring and Evaluation
Circular Economy**

Integral Circular Economy Report 2021 for NL



Planbureau voor de Leefomgeving

WCEF workshop, 30-09-2021





Main messages ICER 2021

- › Dutch CE policy forms basis and created structure
- › Several trends in resources/effects not going in the right direction
- › NL economy mostly functions in linear way
- › National policy mainly uses voluntary instruments





Stronger policy needed to realize ambitions:

1. Factor environmental damage in prices
2. Develop vision and concrete goals
3. Make more use of coercive measures
4. Implement stepwise increases in circularity requirements
5. CE requires a government-wide approach





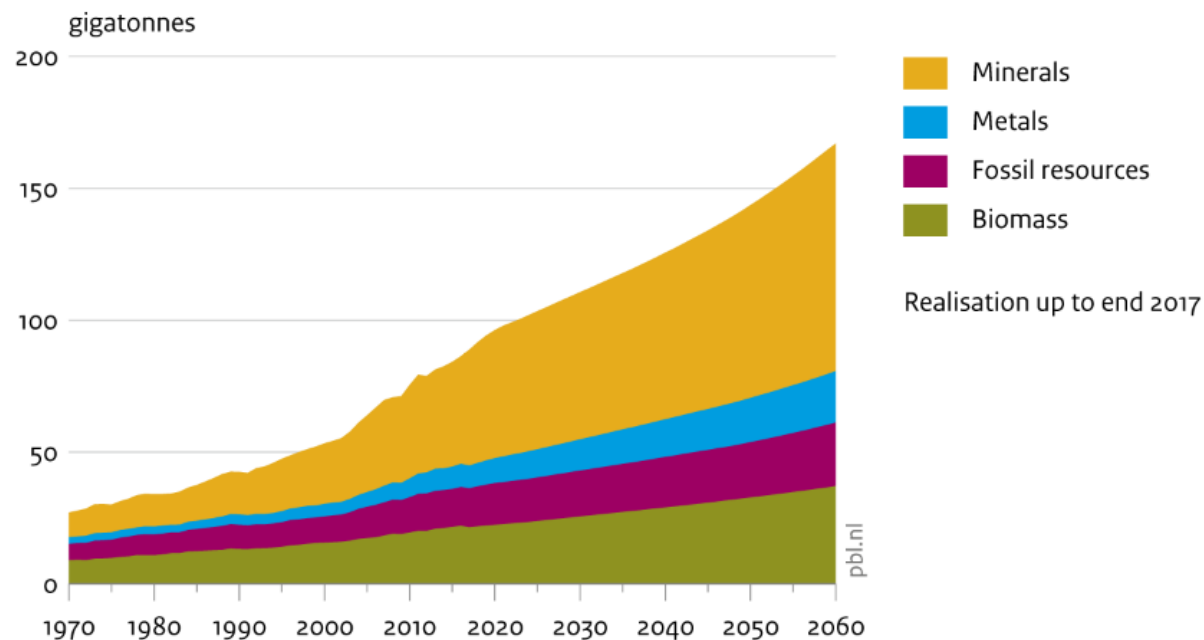
Why circular economy?
What is circular economy?





Global demand for raw materials rose sharply and doubles with current trends in the coming decades

Global material resource use



Source: Global Material Resources Outlook to 2060, OECD 2019

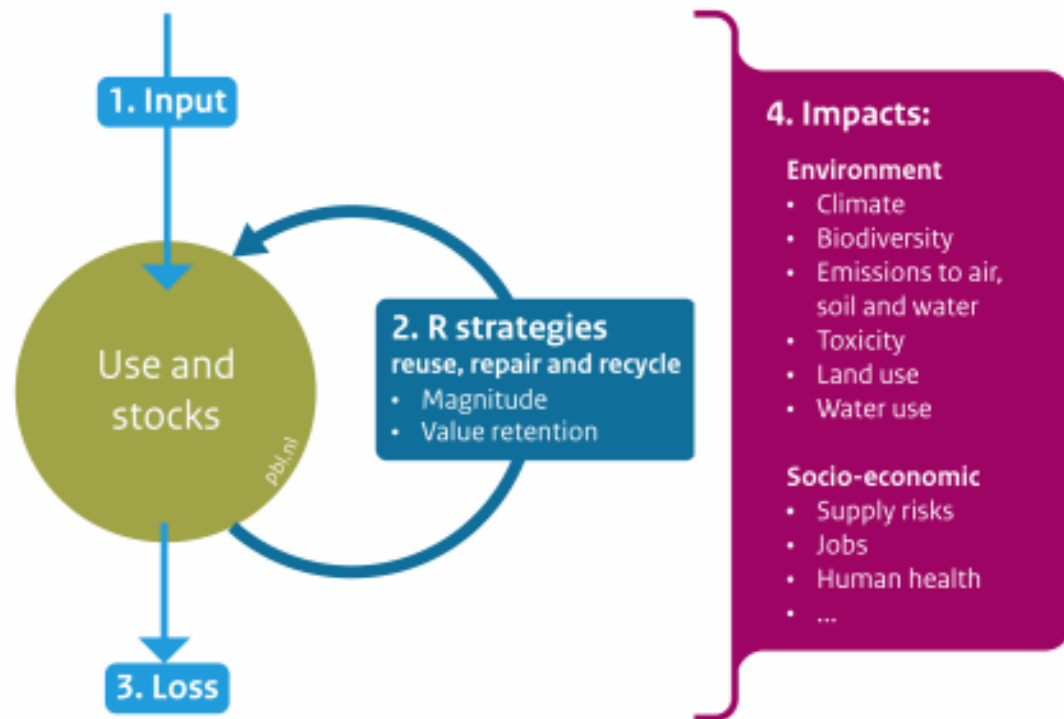
Extraction, processing and use contributes to:

- GHG-emissions
- Loss of biodiversity
- Water scarcity
- High concern substances

And waste, plastic soup, etc after use phase

CE is about efficient and high value use of materials

Framework for targets and indicators of circular economy monitoring



Source: PBL

- CE is more than recycling
- CE contributes to multiple challenges
- CE is an opportunity



Resource use and effects in NL

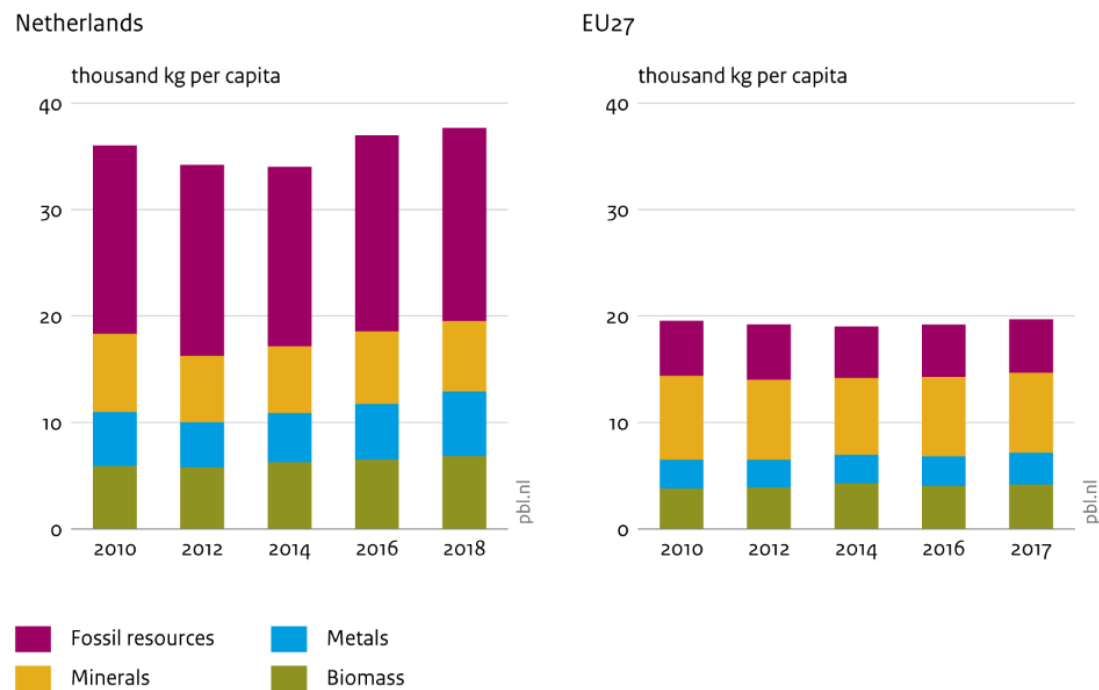


Indicator	Magnitude			Trend		Compared with EU-27 per capita in 2018
	2010	2016	2018	2010-2018	2016-2018	
Natural resources required						
Material resources for domestic use, DMC ¹ (Mt)	195	193	195	0%	1%	-22%
Material resource footprint domestic use, RMC ² (Mt)**	-	-	-	-	-	-
Resource efficiency (GDP in EUR/kilo DMC)	3	4	4	12%	5%	+125%
Material resources for the economy, DMI ³ (Mt)	401	402	397	-1%	-1%	+95%
Material resource footprint of the economy, RMI ⁴ (Mt)	597	627	647	8%	3%	+89% (2017)
Share bio-based resources (kilo/DMI, in %)	24	25	26	8%	5%	+5%
Total sustainable renewable material resources (kilo/DMI)	-	-	-	-	-	-
Share secondary materials, CMUR (kilo secondary/DMI, in %)	-	13	14	-	6%	+167% (2017)
Use phase						
Lifespan	-	-	-	-	-	-
Value retention	-	-	-	-	-	-
Waste processing and recovering						
Dutch waste (Mt)	60	60	61	2%	2%	+44% (2016)
Share recycled waste in processed waste (recycled waste/waste, in %)	81 (2014)	79 (2014)	80	-1%*	+1%	+31%
Recycled waste in the Netherlands (Mt)	54 (2014)	52	53	-1%*	3%	+111% (2016)
Incinerated waste in the Netherlands (Mt)	10 (2014)	10	11	11%*	6%	+74% (2016)
Waste disposal in the Netherlands (Mt)	2	3	3	51%	14%	-81% (2016)
Effects						
Environmental impact						
National greenhouse gas emissions (MtCO ₂ eq)	214	195	188	-12%	-4%	+33%
Greenhouse gas emission footprint of consumption (MtCO ₂ eq)	300	252	282	-6%	12%	+35% (2015)
Greenhouse gas emission footprint of production (MtCO ₂ eq)	462	432	-	-7% (2016)	-	+54% (2015)
Emissions to air, water and soil, such as nitrogen and particulate matter	-	-	-	-	-	-
Land-use footprint of consumption (million ha)	10	-	10 (2017)	3% (2017)	-	-15% (2015)
Land-use footprint of production (million ha)	11	12 (2015)	-	9% (2015)	-	-28% (2015)
Water abstraction	-	-	-	-	-	-
Water footprint consumption (km ³)	52 (2008)	-	-	-	-	+21% (2008)
Biodiversity footprint of consumption (million MSA loss ha/year)	19	-	-	-	-	+1% (2010)
Biodiversity footprint of production (million MSA loss ha/year)	20	-	-	-	-	+2% (2010)
Toxicity	-	-	-	-	-	-
Socio-economic impact						
Supply risks (indicator being developed)	-	-	-	-	-	-
Added value of circular activities (EUR billion)	28	31	34	23%	9%	-
Share circular activities (added value circular / GDP in %)	4	4	4	1%	0%	-
Circular employment (no. of circular jobs in FTEs) (*1,000)	311	318	326	5%	2%	-
Share circular employment (no. of jobs/total no. of jobs in %)	4	4	4	-2%	-2%	-

NL is one of the frontrunners in EU

- > High recycling rate: 80%
- > Relatively high (and increasing) resource efficiency
- > Relatively small amount of waste is landfilled
- > However...
- > Relatively high resource use
- > NL citizen has 43 percent more waste than EU average

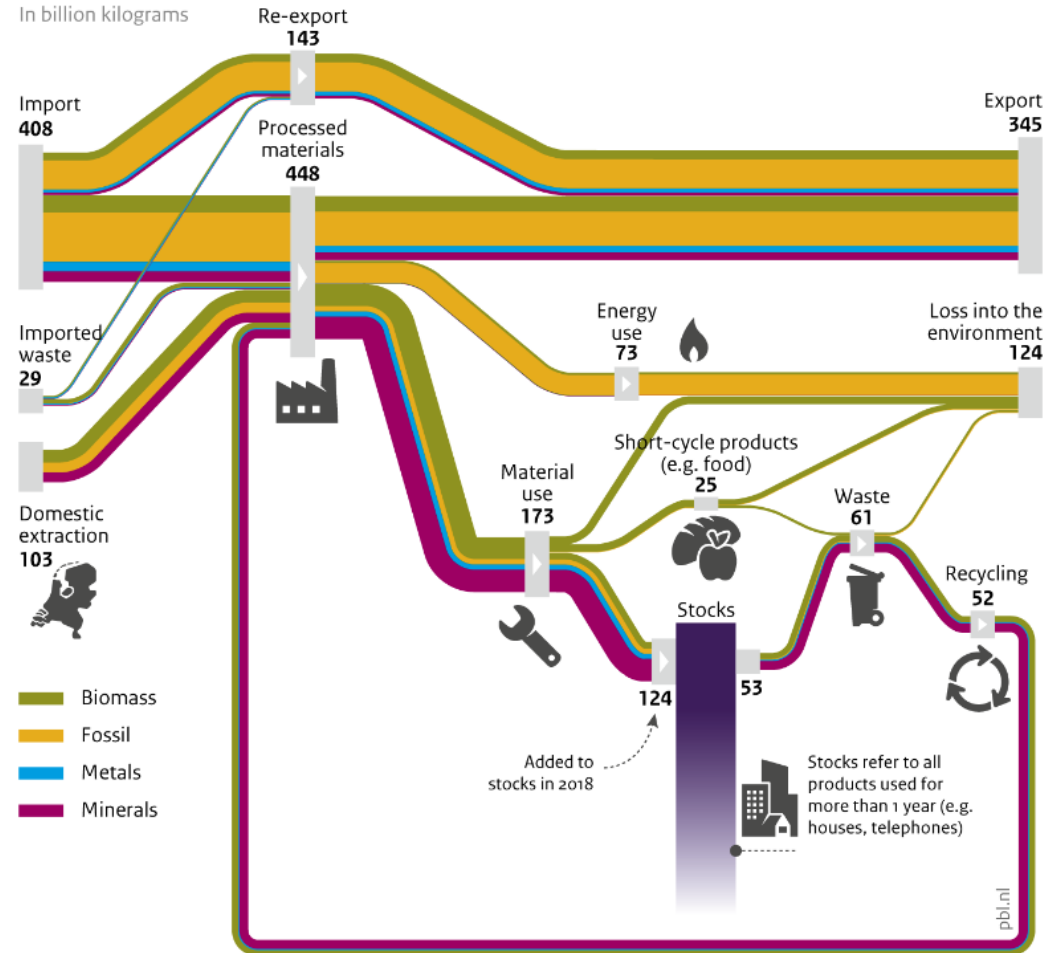
Footprint of material resource use in the economy of the Netherlands and the EU27



Source: CBS 2021, Eurostat

More resources for NL economy than NL consumption

Resource flows Dutch economy, 2018



Source: CBS 2021



Different trends going the wrong direction

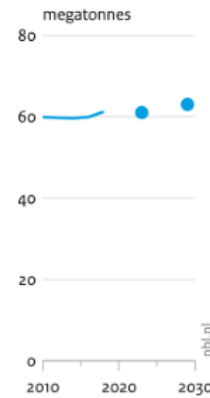
- › Resource use is not decreasing (almost constant)
- › Landuse in production chain increased
- › Supply risks for several materials increased (relevant for industry)
- › Increase in amount of waste landfilled and many national waste targets will not be met



Most EU targets for waste are met, but the stricter national waste targets not

Objectives around Dutch waste

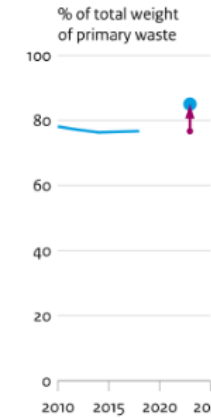
Total primary waste generation



Waste disposal at incineration plants or as landfill

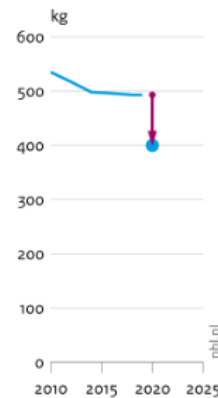


Preparation for reuse and recycling of waste

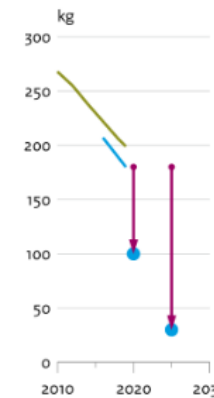


- Realisation
- Objective
- Separation according to source, without further separation
- ▼ Task ahead

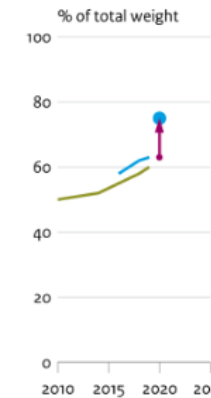
Total household waste, per capita



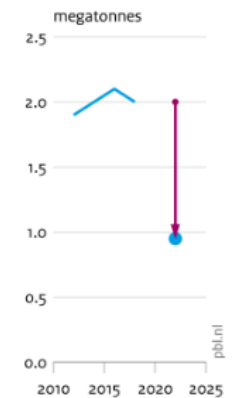
Residual household waste, per capita



Percentage of separated household waste



Residual waste from businesses, organisations and government authorities



Source: RWS



Progress

Transitionprocess

What happens in society?



Monitoring transition
processes is needed to make
timely adjustments

Increase in:

- number of CE firms
- number of CE publications
- amount CE subsidies
- CE education and courses

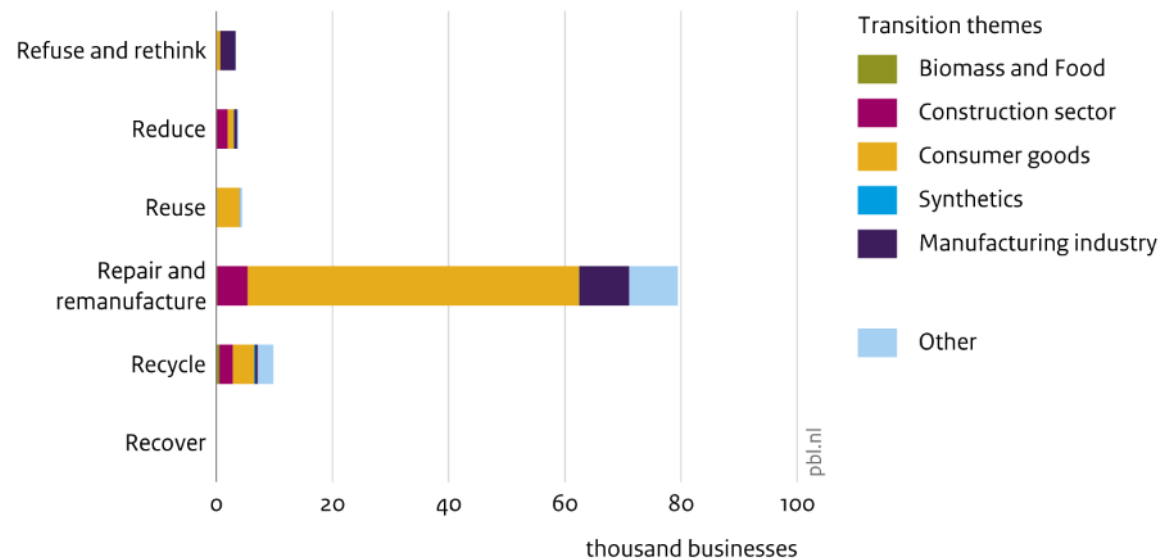


Source: PBL 2021, based on Hekkert et al. UU 2021 in prep

Transition still in early phase

- > Share of CE firms is limited (6%) and declining
- > Dutch economy is mainly linear
- > Many CE firms already existed; repairing bikes, cars, clothes, etc

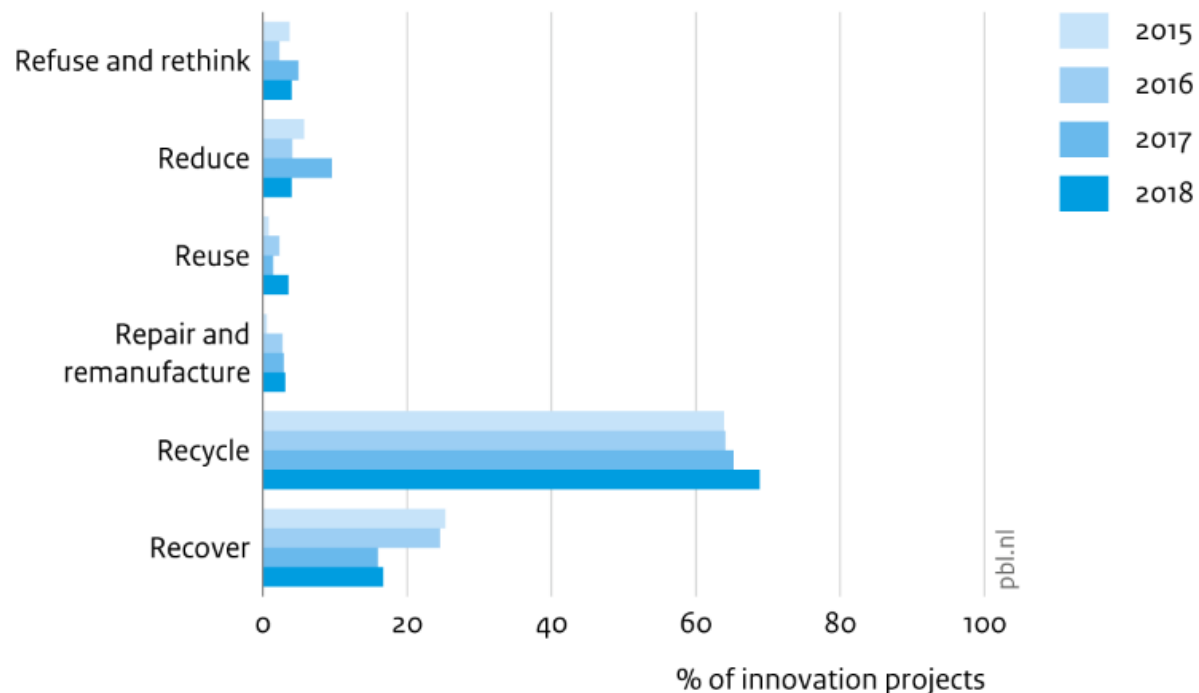
Circular businesses, per R-strategy, 2020



Source: RHDHV 2020

Attention goes mainly to recycling and technology

Share of innovation projects per R-strategy



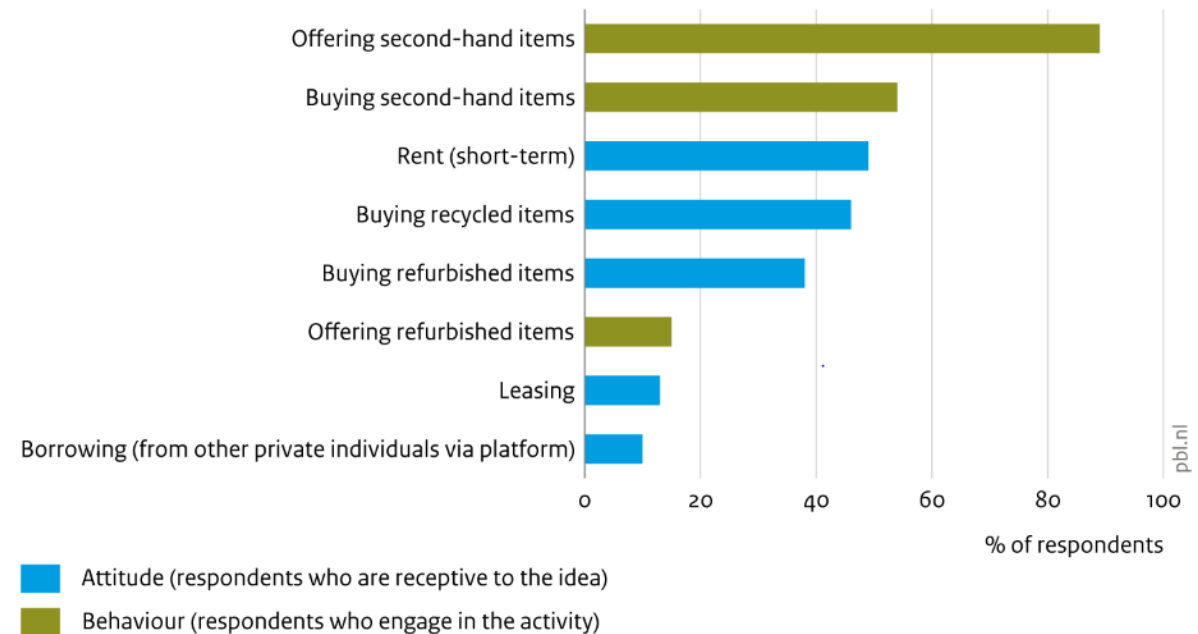
Source: RVO.nl

- > Startups and innovative firms
- > Scientific research
- > R&D projects
- > Subsidies

Consumers limited open for CE

- > 50% buys second-hand products
 - 90% offers second-hand
- > Less willing to buy recycled and refurbish, or lease, share, rent

Consumer attitude and behaviour with regard to circular products and services, 2018 – 2019



Source: ABN AMRO 2018, Kantar 2019



Circular Economy Policy



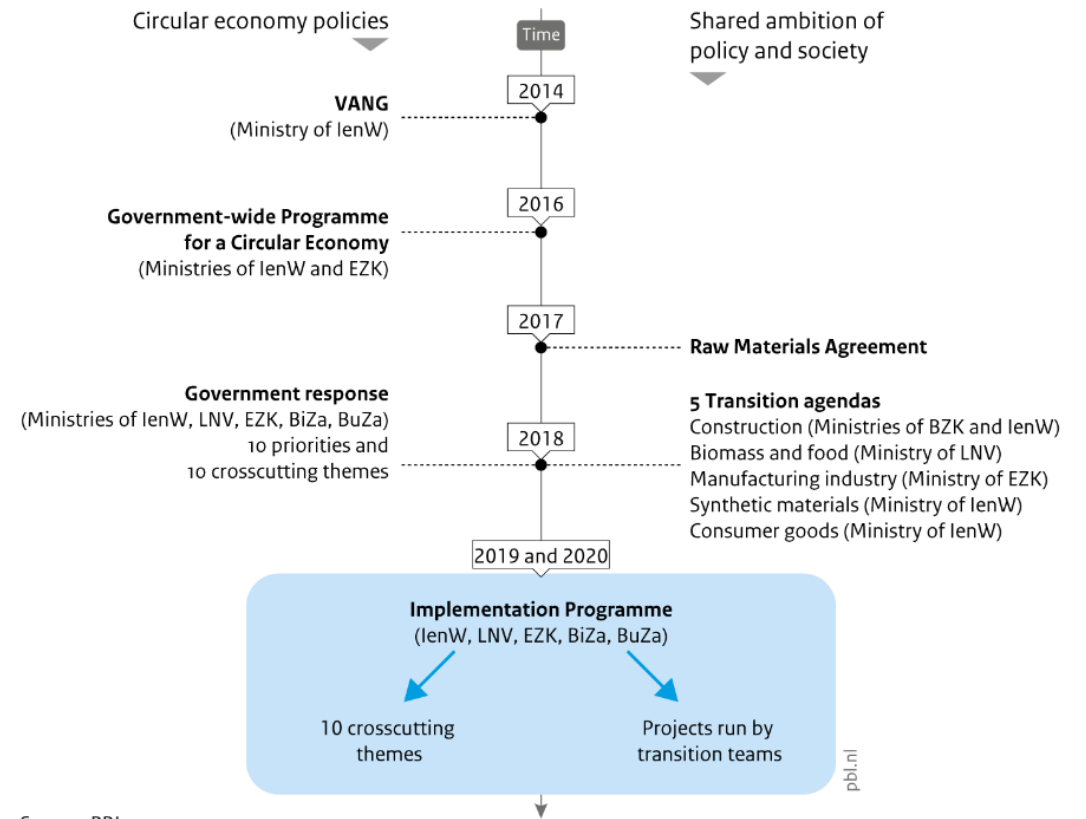
WCEF 30-09-2021



Circular Economy Policy in The Netherlands

- > Government broad program CE 2016
 - NL fully circular 2050; 50% less input 2030
- > 2017 “Resource agreement”
 - Signed by > 400 organizations
- > 2018 Transition CE agenda’s 5 domains
 - Companies, ngo’s and government
- > 2019 Cabinet’s reaction / Action program
 - 4 Ministries involved; Min IenW coordinates

Circular economy policies in the Netherlands and the common ambition of policy and society



Dutch CE policy forms basis and created structure

- › Public-private approach (gov, NGO, firms)
 - Focus on 5 transition themes
- › National CE policy mainly a voluntary approach
 - Knowledge development, Plastic Pact, Betonakkoord, Acceleration House, etc.
- › Fits with early phase of transition



Manufacturing Industry, Biomass and Food,
Plastics, Consumer Goods, Construction

Stronger policy needed to realise ambitions:

1. Factor environmental damage in prices
2. Develop vision and concrete goals
 - What is fully circular 2050?
 - How to measure 50% reduction 2030?
 - Set of targets on input, use, output and effects
 - Differentiated approach
 - Industry ≠ Biomass and Food; Sand ≠ Gold



Stronger policy needed to realise ambitions:

3. Make more use of coercive measures
 - Environmental taxes on fossil as material
 - Obligatory product information
 - Recycled content norms
4. Implement stepwise increases in circularity requirements for EPR and circular procurement
5. CE requires a government-wide approach
 - Climate, fiscal, trade, innovation, education, security of supply
 - EU CE policy crucial for LPF and product policy
 - E.g.: standards for products, design requirements and warranty period





Thank you for your interest!

- > For more information:
- > aldert.hanemaaijer@pbl.nl
- > [Integrale Circulaire Economie Rapportage 2021 | PBL Planbureau voor de Leefomgeving](#)
- > <https://www.pbl.nl/en/news/2021/icer-2021-use-of-natural-resources-hardly-declining-in-the-netherlands-stronger-policy-on-circular-economy-is-needed>
- > <https://www.pbl.nl/en/publications/international-workshop-on-targets-for-a-circular-economy-summary>
- > <https://www.pbl.nl/publicaties/doelstelling-circulaire-economie-2030> (EN summary)
- > <https://www.pbl.nl/en/publications/monitoring-progress-of-the-circular-economy-in-the-eu>
- > <https://www.pbl.nl/en/publicaties/circular-economy-what-we-want-to-know-and-can-measure>