



National Circular Economy Programme

2023-2030



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How to use this document

In 2016, the Netherlands was one of the first countries in the world to lay down its ambition for a circular economy in policy, by means of the government-wide programme entitled 'A Circular Economy in the Netherlands by 2050'. This concerned an agenda-setting programme; it described the dot on the horizon and created awareness in society. The fact that general support for a circular economy increased as a result was reflected by the signature of the National Raw Materials Agreement (in Dutch: *Grondstoffenakkoord*), among other things. This Agreement was signed by over 400 parties. It set out the ambition for 2050. Subsequently, five transition agendas were elaborated, for consumer goods, plastics, construction, manufacturing, and biomass & food. In the Circular Economy Implementation Programme 2019-2023 (in Dutch: *Uitvoeringsprogramma Circulaire Economie 2019-2023*), these transition agendas were translated into concrete actions and projects for the period up to 2023. With the present National Circular Economy Programme 2023-2030, we are building on the solid foundations which have already been laid.

Chapter 1 sets out a vision of the circular economy up to 2050, and of what it means for the period between now and 2030. It shows the urgency of the transition to a circular economy and explains what is needed to achieve it.

Chapter 2 addresses general measures used by the government to help realise a circular economy in the Netherlands. The chosen measures have an impact on the various phases of the product value chains. They are clustered based on the four ways to focus on raw material flows. This chapter also includes measures intended to give substance to the achievement of the ambitious climate goal, as well as a regional substantiation.

Chapter 3 describes measures that relate to specific product groups, such as furniture, plastic packaging and housing. For each product group it is indicated which targets we are aiming for, and in what way.

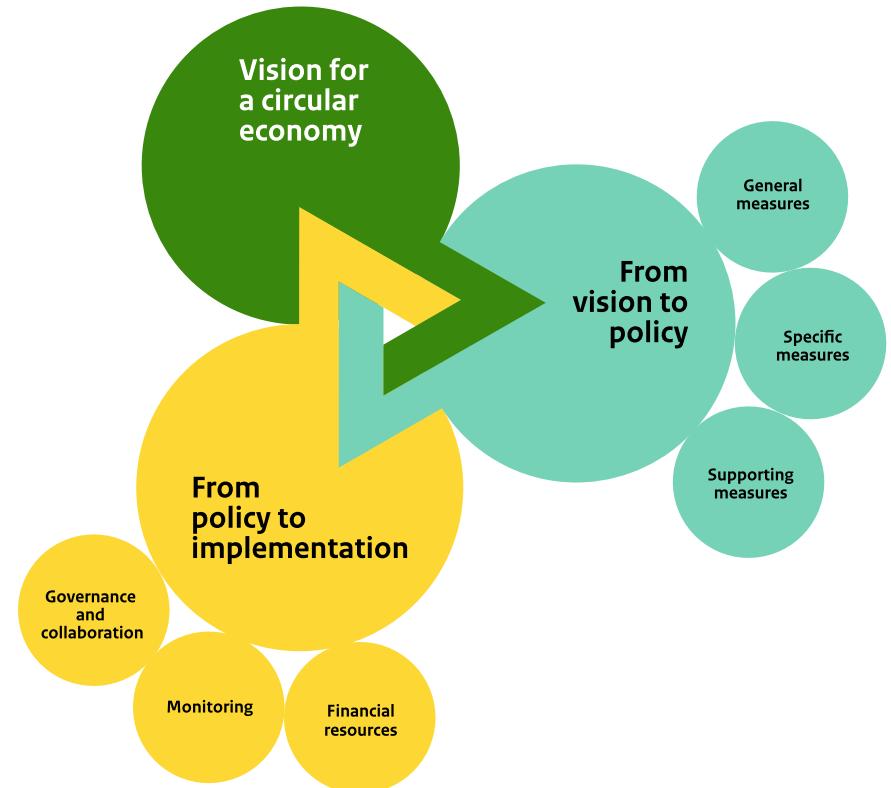
Chapter 4 addresses supporting measures for a number of topics, such as knowledge & innovation, the Circular Netherlands Accelerator! (in Dutch: *Versnellingshuis Nederland Circulair!*), market incentives, financing instruments, circular procurement, behaviour, education, and the labour market.

Chapter 5 covers the collaboration between the parties involved in the National Circular Economy Programme 2023-2030. It also explains what policy cycle we are following in this regard. Monitoring is discussed as well.

Chapter 6 describes which resources are available for the plans in this programme.

The chapters are interspersed with interviews with people who are putting the transition to a circular economy into practice with the work they do and with their personal drive.

Figure 1: National Circular Economy Programme 2023-2030 (NPCE)



Preface

A new perspective

Over the past year I have spoken to a great number of people who are putting the circular economy into practice. Whether it concerns a zero-waste festival for tens of thousands of people that runs on clean energy, an entrepreneur who turns old bicycles into new ones or a construction business that uses second-hand materials: people are taking wonderful initiatives in all kinds of areas, and I come across a lot of drive and enthusiasm. This really inspires me to move up a gear to achieve our ambition.

That ambition is clear: the Netherlands aspires to have a fully circular economy by 2050 that generates as little waste as possible and where raw materials are not wasted unnecessarily. This has become even more urgent. The circular economy is not something that is nice to have; it is absolutely essential. The use of raw materials around the world causes 90% of the global loss of biodiversity, 90% of the world's water shortage, and 50% of greenhouse gas emissions. We cannot achieve the climate goals if we do not have a circular economy. It will also make us less dependent on other countries for the supply of raw materials. The situation in Ukraine has shown how important this is. We need this transition if we want to make sure the world remains liveable for future generations.

Since 2016 we have been laying strong foundations for this. We have placed a dot on the horizon and set up an implementation programme, and the main economic sectors have started taking action as well. We have created a lot of awareness and people have become enthusiastic.

However, more is needed to achieve our targets. With this new National Circular Economy Programme 2023-2030, the government is taking the next step to accelerate and scale up the process, by means of more intensive policy, concrete targets for specific product groups like furniture and textiles, and guiding measures. Think of factoring environmental damage into product prices and introducing a mandatory percentage for the use of second-hand materials. We also want products to last longer, which can be achieved by designing them differently or making them easier to repair, for example.

There are other conceivable measures as well. The key is that through this National Programme, the government is offering a perspective on what we are working towards and how we want to get there. All those involved need to act on a large scale to realise this acceleration: businesses, public authorities and citizens. When I think of what has already been achieved, it makes me feel very confident about this next step. I am looking forward to working with all parties involved to make the Netherlands a healthier and more liveable country.



Vivianne Heijnen

Minister for the Environment



Summary

A Fully Circular Economy in the Netherlands by 2050

In the year 2023, we are facing daunting sustainability issues: global warming, a drastic decline in biodiversity and increasing pressure on human habitats around the globe. This is largely due to the vast quantity of raw materials we use to produce goods, energy and food – the pressure this places on the environment is systematically exceeding the Earth's capacity to regenerate. At the same time, we need to ensure resilience to geopolitical shifts by becoming less dependent on other countries for the supply of raw materials.

We owe it to future generations to ensure that our planet remains habitable. That's why we need to make the transition to a circular economy.¹ This involves adapting our use of raw materials to cut carbon emissions, protect biodiversity, improve air, water and soil quality, create a safe and clean living environment, and ensure the security of raw materials supply.

Circular economy flows are made up almost exclusively of reusable primary, secondary and sustainable bio-based raw materials. Products are manufactured, distributed and consumed in closed-loop systems. As a result, the value of natural resources, materials and products is retained as long as possible, virtually eliminating waste.²

Ambitions and targets for 2050 and 2030

By 2050, the Netherlands aspires to have a fully circular economy. This means that the environmental effects of the use of raw materials for Dutch production and consumption will fall within 'planetary boundaries'. The government is working to give concrete shape to these boundaries and the resultant 'safe operating space' for the Netherlands' use of raw materials, and is also pressing at European level to operationalise this further. This

will allow us to show what impacts we are aiming for and how the circular economy will contribute to this process. In addition, circularity targets on the use of raw materials have been set at product group level.

Measures to achieve a circular Dutch economy

To date, circular economy policy has focused primarily on a voluntary, non-binding approach. To achieve our ambition, however, measures of a more target-oriented and mandatory nature are required³. To this end, we will be adopting a mix of pricing, standard-setting and stimulus measures.

The National Circular Economy Programme 2023-2030 (in Dutch: *Nationaal Programma Circulaire Economie 2023-2030* or NPCE) elaborates the ambitious circular economy goal, which is simultaneously a climate goal. After all, by steering and facilitating national and international sustainable, circular systems, circular economy policy also promotes climate targets.

The government needs to shape the economic, physical and social environment so as to make sustainable, circular products the obvious, easy and fair choice for businesses and the public.

Whereas policy had previously focused primarily on the back of the supply chain, we will now be targeting measures more at the input side (such as circular design) and in the user phase. Based on the findings of the biennial Integral Circular Economy Report (in Dutch: *Integrale Circulaire Economie Rapportage* or ICER) issued by the Netherlands Environmental Assessment Agency (in Dutch: Planbureau voor de Leefomgeving, PBL), we will be augmenting the package of measures and where necessary extending it to other sectors and product groups.

¹ The report of the Intergovernmental Panel on Climate Change shows that there are sufficient affordable options around the world to achieve this. They entail a complete transition to renewable energy and to a circular economy.

² Even in a fully circular economy there will always be some residual flows that cannot be put to good use and will have to be disposed of as waste.

³ The *Integral Circular Economy Report 2021* by the Netherlands Environmental Assessment Agency (in Dutch: *Planbureau voor de Leefomgeving* or PBL) recommends 'more use of coercive measures'.



International and integral approach

Globalisation of value chains means that the negative impacts of production are often felt outside the Netherlands. If a just transition is to be achieved, international agreements on environmental standards, sustainable jobs (terms of employment) and working conditions in production processes need to be transposed into legislation. Moreover, we must link the transition to a circular economy with efforts to achieve climate, environmental and biodiversity goals. These endeavours will thus reinforce each other, jointly helping to make the Netherlands fit for the future.

General measures

There are four ‘knobs’ we can turn to make our use of raw materials more circular via circular economy policy, and they are accordingly the focus of measures set out in this NPCE.

- 1 **Reducing raw material usage:** using fewer (primary) raw materials by abstaining from the production or purchase of products, sharing products or making them more efficient (‘narrow the loop’).

This NPCE aims, for example, to achieve a significant increase in circular procurement across government. This covers everything from desks and chairs to roads and waterworks.

- 2 **Substituting raw materials:** replacing primary with secondary raw materials and sustainable bio-based raw materials (in high-value applications), or with other, more generally available raw materials with a lower environmental burden.

An example is a mandatory percentage of recycled content.

- 3 **Extending product lifetime:** making longer and more intensive use of products and components through reuse and repair will slow demand for new raw materials (‘slow the loop’).

An example of a measure aimed at increasing longevity is the introduction, as of 2023, of a registry of repairers of electric and electronic goods, so that people can easily find a technician to repair their appliance or device;

- 4 **High-grade processing:** closing the loop by recycling materials and raw materials.

This will not only reduce the amount of waste being incinerated or dumped, but ensure a more high-grade supply of secondary raw materials as well (‘close the loop’).

By 2050, incinerating recyclable material will be a thing of the past. This will require measures at the front of the value chain. We will therefore be helping Dutch municipalities and residents, amongst others, to separate waste even better.

Specific measures for priority product chains

In 2018, transition agendas were drawn up for the five product chains with the most harmful environmental impact. Concrete targets have now been formulated and specific policy has been developed for the most impactful product groups within these product chains, namely:

- **Consumer goods:** electric and electronic goods; packaging and disposables; textiles; furniture.
- **Plastics:** plastic packaging; plastics in the construction industry; plastics in agriculture.
- **Construction:** housing; offices and industrial buildings; concrete viaducts and bridges; road surfaces.
- **Manufacturing:** Capital Equipment; wind farms; solar PV systems; climate control systems.

Activities within the **Biomass & Food** value chain fall under the transition agenda for circular agriculture.

Supporting measures

In addition to general and specific measures, the government is creating a conducive environment for the circular economy transition. For instance, we seek to increase relevant knowledge and skills on the circular economy and on sustainability in the broader sense and give scope for giving these subjects due attention within education, based on demand. Circularity will also be covered in short courses aimed at, for instance, procurement and marketing professionals. We will additionally be supporting the transition through funding, behavioural change, the Circular Netherlands Accelerator! (in Dutch: *Versnellingshuis Nederland Circulair!*) and regional circular economy networks.



Joint effort needed

The government is responsible for policy on the transition to a circular economy and is accountable to the House of Representatives in this regard. Within the government the State Secretary for Infrastructure and Water Management is responsible for coordinating the transition, while the members of the government at the line ministries most closely connected with this issue are each responsible for circularity within their own remit.

A successful transition to a fully circular economy in the Netherlands demands a joint effort by all parties: businesses, authorities, the public, and knowledge and educational institutions. After all, it is businesses and their employees who produce and sell products, and consumers who acquire them. Other actors, in turn, speak for nature and the environment, or for young people. Local and regional authorities also have a big role to play in steering developments at community level.

Funding

The transition to a circular economy requires both public and private funding. To this end, the government has various financing options at its disposal. These are set out in this NPCE. Legislative measures, both national and European, will impact enforcement, implementation and oversight, including financial supervision.

This NPCE represents another step towards a fully circular economy. But more is needed to achieve our aspirations. In the coming years, therefore, the government seeks to move ahead and find ways of making the goals attainable. In the run-up to this programme, many actors indicated their willingness to contribute. Together, we will carry the transition forward.





Chapter 1

A Circular Economy in the Netherlands by 2050!



Promising prospects: A Circular Economy in the Netherlands by 2050

Imagine we are in the year 2050. In the Netherlands we are living within the planetary boundaries of the Earth rather than permanently crossing them. This is because our relationship with nature, which used to be highly disturbed and led to climate change, has changed for the better⁴. This is evident from the fact that our biodiversity has recovered and the quality of our air, soil and water is adequate again. We are confident that with our consumption pattern, our business activities and our economy, we are not causing any harm to the planet or to other countries.

This is because once everyone was looking in the same direction, things happened fast: in the 2020s, the ‘rules of play’ were changed in favour of circular entrepreneurs – think of the repairability requirement for all or nearly all products and the statutory requirement to factor environmental damage into product prices. By imposing requirements on design and by confronting businesses with the environmental costs of their products during their use or at the end of their lifetime, we were able to offer the right incentive for the creation of better products⁵. Raw material chains became adaptive in nature: they are now constantly adapting to the changing demand for product and material innovations⁶. Subsequently, circular business models based on leasing, sharing and reusing really took off.

The transition also required big, well-established businesses to reorganise their operations and industrial processes. Digitisation and technological innovations were the main driving forces behind this. The result was the ‘digital circular factory’, where information on raw materials and products is shared transparently both within and outside the value chain. The circular economy became a breeding ground for technological innovations, which resulted in endless possibilities for sustainable reuse of materials and elements in all kinds of sectors. Thanks to innovations, many consumables were turned into products that can be used multiple times, and providers of products with a short useful life gradually disappeared. As a result, consumers definitively made the switch from excessive consumerism to goods sharing and long-term product retention, too.

Consumers often develop a bond with products, because they use them for a long time⁷. It is now a national sport, so to speak, to use products for as long as possible. Because the older products get, the more valuable they become in the eyes of consumers, while their functionality remains intact and they can still be updated technologically. They are tangible proof of their owners’ environmental awareness.

This has caused a revolution on the labour market. Businesses with a circular business model quickly gained a greater market share and were able to attract the best-qualified employees, while actors in the linear world had ever more difficulty retaining talent. The mentality shift towards long-term product retention generated significantly more employment in the areas of the repair, upgrading and improvement of modular equipment and high-grade collection and sorting of goods, for example. In the Netherlands we have obtained an international frontrunner position, which has inspired and encouraged other countries to work, produce, build and consume in circular ways as well.

Moreover, the physical space has changed unrecognisably compared to the start of the 21st century. Cities are buzzing with activity. In workshops and studios, craftspeople, creators and technicians are busy maintaining and repairing clothing, bags, laptops, toys and furniture. The buildings where they work often have a modular design: they can be easily adapted to changing needs, and in case of demolition the materials can be reused in new buildings almost entirely.

In short, the Netherlands has permanently changed its ways of working, producing, building and consuming. The Netherlands now has a circular economy. We have achieved this thanks to collaboration between public authorities and businesses in the development of circular laws and regulations, and thanks to behavioural changes among consumers. From the start, all products are now designed to last as long as possible, and to ensure repairability and reusability⁸. Everything is aimed at leaving behind a healthy, safe and comfortable living environment for future generations.

4 Essay by Kees Klomp, *Welkom in de Betekeniseconomie!* [Welcome to the purpose economy!].

5 Essay by Robert van Beek, *Verre planeten in een circulaire economie*, [Faraway planets in a circular economy].

6 Essay by Manon Bloemer, *Bouwstenen voor een circulaire toekomst* [Building blocks for a circular future].

7 Essay by Ruth Mugge, *Toekomstbeeld van een Circulaire Economie in 2050* [Vision of the future of a circular economy in 2050].

8 Essay by Benjamin Sprecher, *Circulair Nederland: waarom wachten tot 2050?* [A circular Netherlands: why wait until 2050?].



We want the Earth to remain habitable

At present we face daunting sustainability issues. We are systematically exceeding the Earth's capacity to regenerate. How we handle the raw materials used for goods, energy and food has enormous negative effects on the climate, biodiversity and the living environment, and on the health of people around the world. We owe it to current and future generations to put a stop to this and to ensure that our planet remains habitable. That is why we are committed to reducing global warming to no more than 1.5 degrees centigrade, improving our biodiversity, and creating a clean environment and a safe, clean and healthy place to live – both in the Netherlands and internationally. This requires a big effort in all kinds of areas.

We need a paradigm shift in the way we handle raw materials. The quantity of raw materials we use globally has more than tripled since 1970⁹. And it is expected to double again between now and 2060, due to greater population growth and increased prosperity. This is problematic, because the extraction and processing of raw materials for their use in food, energy and goods causes 90% of the global loss of biodiversity, 90% of our water shortage, and 50% of our greenhouse gas emissions¹⁰. The consequences are becoming ever more apparent: heat waves, drought and flooding are on the increase around the world. In the Netherlands we are also experiencing the negative health effects of poor air quality caused by the current economic activities¹¹.

“Circularity is our response to the problem that our economic system is simply using too many raw materials at present. This is analogous to how the energy transition is our response to the problem of emitting too much CO₂.”

– Benjamin Sprecher

The [report of the Intergovernmental Panel on Climate Change](#) warns us that a drastic reduction in global greenhouse gas emissions is needed within the present decade if we want to keep the maximum temperature increase of 1.5 degrees in sight. The IPCC report shows that there are enough affordable options around the world to make this possible, which entail a full transition to renewable energy and to a circular economy.

Earth Overshoot Day

Earth Overshoot Day marks the date when humanity's demand for ecological resources and services in a given year exceeds what the Earth can regenerate in that year. Globally, this milestone occurred on 28 July in 2022; in the Netherlands it was 12 April. This means that if everyone in the world lived like we do, we would need 3.6 times the Earth to have enough raw materials. Or, in other words: that between 1 January and 12 April we used as many raw materials as the Earth can produce in an entire year. Clearly, we are eating into the Earth's reserves. Earth Overshoot Day emphasises that we need to accelerate the energy, raw material and food transitions to stay within the planetary boundaries, if we want to keep our planet habitable for future generations and if we want to ensure that their basic needs can be met as well.



9 <https://www.pbl.nl/sites/default/files/downloads/pbl-2021-integral-circular-economy-report-2021-4582.pdf>

10 <https://www.resourcepanel.org/reports/global-resources-outlook>

11 <https://www.pbl.nl/publicaties/monetaire-milieuschade-in-nederland>



The Netherlands is vulnerable to supply risks

Due to the greater population growth and increased prosperity (growing consumption), the demand for raw materials is rising. This manifests itself, among other things, in a significant construction challenge, as a result of which vast quantities of raw materials are needed not only for housing but also to build (and maintain) infrastructure and to ensure that our country can be adapted to the changing climate. In addition, the energy transition and further digitisation create more demand for specific – often critical – raw materials for the supply of which we depend on other countries. The energy transition leads to a shift in demand from fossil resources such as coal, oil and gas to critical raw materials like lithium, cobalt and rare earth metals. Among other things, these raw materials are needed for solar panels, batteries, wind turbines, and electrolyzers for the production of hydrogen, as well as for technologies in healthcare and in defence equipment. Especially now that the new energy infrastructure is being developed, vast quantities of these materials are needed¹². The digital transition, too, leads to a change in the demand for raw materials, albeit on a smaller scale than the energy transition. For chips, computer screens and quantum technology, for example, raw materials like silicon are needed. In short: our economy of the future requires more and different raw materials than our economy to date. For certain raw materials, including critical raw materials, circular strategies cannot keep up with the increasing demand in the short term, and more of these materials will need to be brought into circulation.

This growing demand for raw materials is at odds with the goal of reducing the environmental burden caused by the use of these materials to a level that the Earth can handle. Shortages of raw materials may also increase due to the enormous demand, resulting in rising prices if the supply does not increase at the same pace. European countries, including the Netherlands, strongly depend on third countries for the import of many raw materials. This involves risks for the security of supply and makes us vulnerable to price increases and to geopolitical risks. To ensure that future generations will have sufficient critical raw materials at their disposal to safeguard public interests like the energy supply, healthcare and national security, it is important to be proactive now.

¹² [‘Towards a Circular Energy Transition’](#), Metabolic, Copper, et al., June 2021.

National Raw Materials Strategy

Internationally, strategic dependencies also pose a risk to the open strategic autonomy of the Netherlands. This actually means that the Netherlands, like the EU, wants to maintain the openness of its economy and works on this with others to achieve greater independence. Specific attention is paid to the safeguarding of our public interests for which the Netherlands and Europe want to act strategically, such as the realisation of the energy transition. For this reason, the government has developed a [National Raw Materials Strategy](#) (in Dutch: *Nationale Grondstoffenstrategie*). The main goal of the National Raw Materials Strategy is to increase the security of supply of critical raw materials¹³ in the medium term. Besides an economic dimension, global control over critical raw materials has increasingly acquired a geopolitical dimension, too. Europe is an important player, but is vulnerable as well. The energy transition and other transitions offer the Netherlands and the EU an opportunity and responsibility for addressing vulnerabilities in raw material chains and reducing the negative impact of the extraction and processing of critical raw materials on people and the environment, preferably at European level. The realisation of a circular economy is one of the most important action perspectives to help achieve this main goal.

The need for an entirely different system: a circular economy

In the current linear economy we extract raw materials, process them into products and discard them after use, after which they are incinerated or landfilled – with all the associated negative effects on the environment. In a sustainable, circular economy, there is no more wastage or loss of value of raw materials throughout the value chain.

“The real economy must be inextricably linked to the ecological reality.”

– Kees Klomp

¹³ On the European market, as a consequence of import or recovery, or the extraction of raw materials in EU territory.



Raw materials are used and reused responsibly, so that the environmental effects remain within the planetary boundaries (see the box on *Planetary boundaries*). In a circular economy, we view prosperity and well-being, and the distribution thereof, from a broader perspective. The first question then is whether certain products are actually necessary, or whether the need can be fulfilled in a different way.

This demands judicious and sometimes hard choices, and huge interests are at stake. At the moment, many people are mainly aiming for convenience, and possessions are commonly associated with status and wealth. Acting in the spirit of a circular economy actually requires extra effort sometimes – think of having items repaired – and seemingly results in less convenience¹⁴ (based on the idea that repaired items are of lower quality). What's more, there is a convenience gap here: our economic system has been set up in such a way that new goods are easier to come by than second-hand ones. In addition, the purchase of new products is quicker, easier and often cheaper than fixing a defect, because repairs are relatively expensive. This is the case even though a longer product life actually offers a lot of added value (also ecologically and socially) and convenience: people don't need to replace products when they don't want to yet, as they can repair and therefore retain their trusted appliance.

"At the moment, consumers are quite negative about the possibility to repair things. They indicate that they lack the expertise and that products are generally not easy to repair. In addition, consumers often need products on a daily basis, so that it is impossible to wait for a few days until they have been repaired."

– Ruth Mugge

In a circular economy, products which are needed are produced, distributed and consumed in closed-loop systems: the value of natural resources, materials and products is maintained for as long as possible and they are used or reused carefully, so that the end of the useful life of products and materials is postponed as much as possible. When their end of life is reached after all, materials are recycled as well as possible and residual waste flows are processed with due regard for the risks for people and the environment.

Clearly, a circular economy is radically different from our current linear economic system – transformations are needed in all sectors. We need strong direction from the government and coordinated collaboration at international level to realise this transformation and set up our socio-economic system based on other rules of play.

A circular economy can help us tackle various social issues

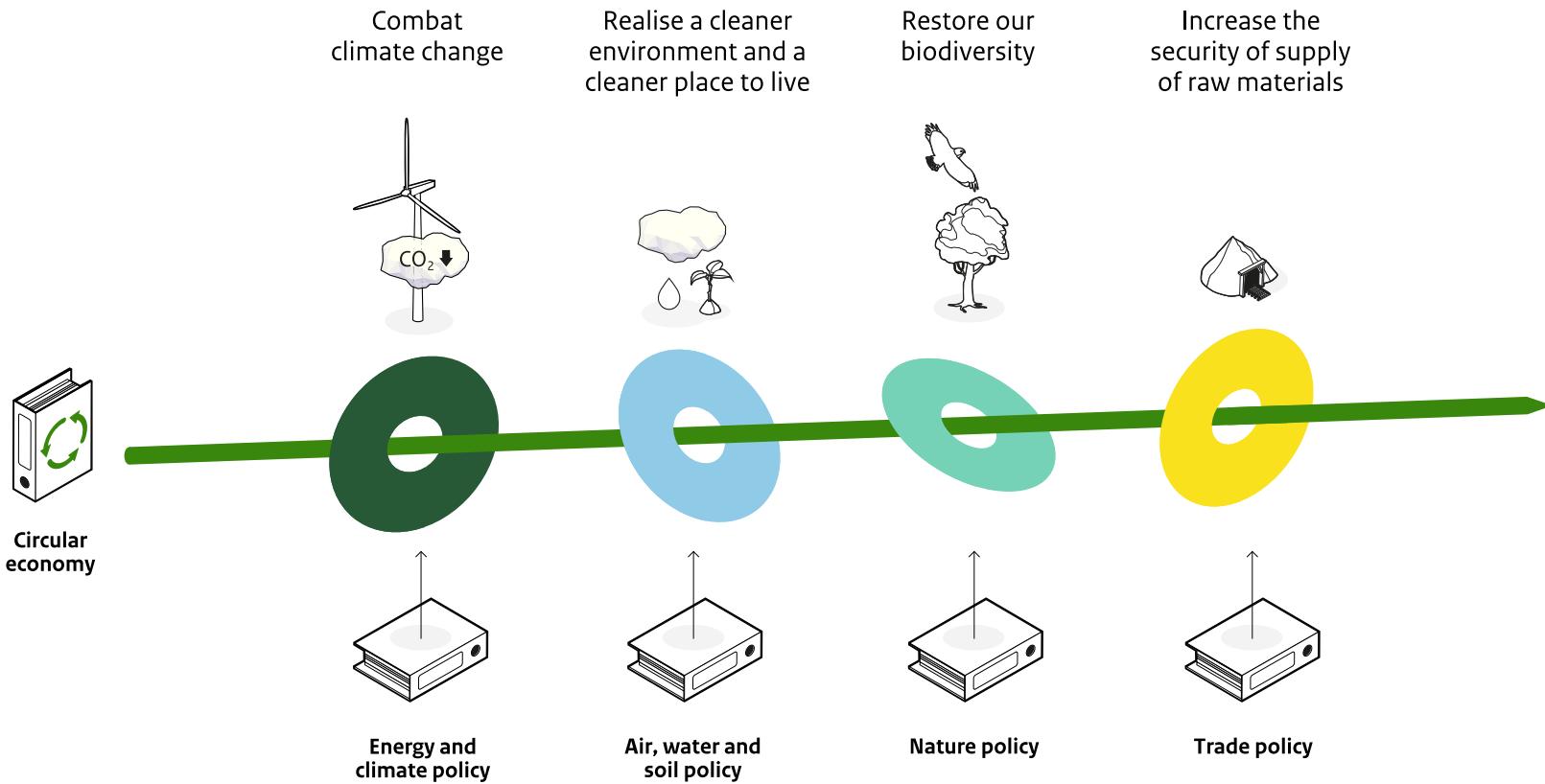
Many problems related to nature and the environment are caused by the wasteful way in which we use raw materials for food, energy and products. In a circular economy, the use of raw materials and the negative effects thereof (both in the Netherlands and in production countries) will be strongly reduced. In this way, a circular economy can help us tackle four significant social issues in a significant way:

- 1 **Combating climate change**, by avoiding greenhouse gas emissions when manufacturing and using products and after the end of their lifetime.
- 2 **Realising a cleaner environment and a cleaner place to live** (better air, water and soil quality), by reducing the use of primary raw materials and the harmful effects of their extraction and processing, by phasing out Substances of Very High Concern (SVHCs) where possible, and by preventing litter.
- 3 **Restoring biodiversity**, by using less land for the extraction and cultivation of primary raw materials, reducing emissions of pollutants into air (including CO₂), water and soil during the production process and the usage and waste phases, and reducing the occurrence and severity of droughts.
- 4 **Improving the security of supply of raw materials** (among other things for new energy technologies), by focusing on value preservation and therefore reusing raw materials in a high-value manner. This increasingly also applies to clean freshwater.

¹⁴ PBL academy lecture by Marko Hekkert: [De Circulaire Paradox](#) [The circular paradox], 9 June 2022.



Figure 2: Positioning of the circular economy in relation to social challenges and other policy topics



Source: PBL; edited by the Ministry of Infrastructure and Water Management



Socio-economic aspects are also important for the transition to a circular economy. Think of good, safe working conditions, proper terms of employment (including investment in and training of employees), socially inclusive work environments and a fair distribution of benefits and burdens – among citizens and businesses, but also nationally versus internationally and between generations.

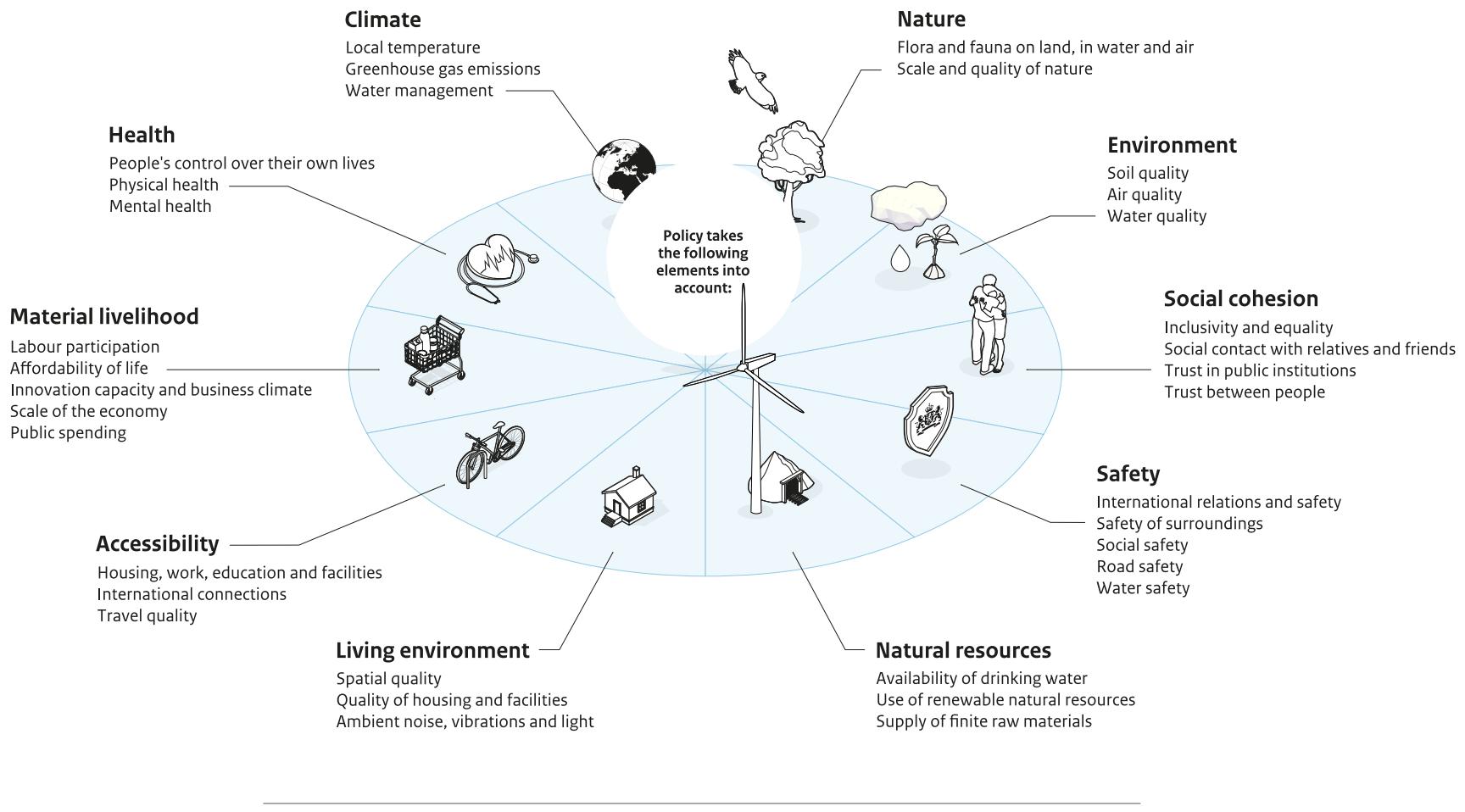
With a circular economy we can ensure that no negative consequences will be shifted to the environment, to other countries or to future generations. Although the circular economy is intended to have positive effects both here and in other countries, negative effects may occur as well, like the loss of mining jobs. We also need to keep an eye on the negative impact of this transition. This is in line with the basic principles of broad prosperity: our natural and social capital, here and now, elsewhere and in the future¹⁵.

The importance of changes in consumption and production processes to reduce negative effects is recognised internationally as well. For example, the twelfth Sustainable Development Goal (SDG) is ‘Responsible consumption and production’. A circular economy will also help us achieve other SDGs, like SDG8, ‘Decent work and economic growth’, and SDG 13, ‘Climate action’.

¹⁵ <https://www.cbs.nl/en-gb/publication/2022/20/monitor-of-well-being-the-sustainable-development-goals-2022>



Figure 3: Broad prosperity: here and now, elsewhere and later



What is broad prosperity?

Broad prosperity concerns the quality of life as it is here and now, and the extent to which it is to the detriment of the quality of life of future generations and/or of people elsewhere in the world.



There are basically four ‘knobs’ we can turn to make our use of raw materials more circular. These have been derived from the advice provided by PBL¹⁶. It actually concerns a simplified version of the R-Ladder¹⁷:

- 1 Reducing raw material usage:** using fewer (primary) raw materials by abstaining from the production or purchase of products, sharing products or making them more efficient ('narrow the loop');
- 2 Substituting raw materials:** replacing primary with secondary raw materials and sustainable bio-based raw materials¹⁸ (in high-value applications), or with other, more generally available raw materials with a lower environmental burden;
- 3 Extending product lifetime:** making longer and more intensive use of products and components through reuse and repair will slow demand for new raw materials ('slow the loop').
- 4 High-grade processing:** closing the loop by recycling materials and raw materials.

This will not only reduce the amount of waste being incinerated or dumped, but ensure a more high-grade supply of secondary raw materials as well ('close the loop').

An important strategy to achieve circularity that contributes to all these four ‘knobs’ is circular design. Circular design can help reduce and substitute primary raw materials used in products, can help extend product lifetime by constructing products in a way that makes repair possible, and can ensure that products can be processed better.

Circular economy flows are made up almost exclusively of reusable primary, secondary and sustainable bio-based raw materials, and more generally available raw materials with a lower environmental burden, like potassium, calcium and sodium¹⁹. Nearly everything that people discard is reused – so there is hardly any waste²⁰ that needs to be incinerated or landfilled. This means that the economy is no longer dependent on the extraction or import of primary raw materials, but rather on preservation of the value of raw materials and ecosystem services²¹. Because in a circular economy all raw materials are reused or recycled in a high-grade manner, much less energy and water is needed for the extraction of new raw materials. The manufacture of materials and products based on recycling generally requires less energy than production by means of primary raw materials.

Scope

Circularity is a broad concept and relates to all raw materials (biotic and abiotic, including water). In this NPCE we have opted for a focus on a number of specific raw materials and product groups. This definitely does not exclude the importance of, or attention paid to, other circularity topics. We expect to add other product groups when the next review takes place.

¹⁶ <https://www.pbl.nl/sites/default/files/downloads/pbl-2021-possible-objectives-for-a-circular-economy-q685.pdf> (English summary).

¹⁷ The R-Ladder indicates the degree of circularity. As a rule of thumb, the higher a strategy (like ‘refuse and rethink’) is on the R-Ladder, the more it can help avoid the use of raw materials. However, this needs to be assessed per product group. To extend the product life of a lift, for example, it may be necessary to initially use more raw materials to increase the lift’s longevity. As a result, the total use of raw materials and the associated environmental burden are reduced.

¹⁸ Point of departure for the use of bio-based raw materials is the *Duurzaamheidskader biogrondstoffen*. [Sustainability framework for bio-based raw materials].

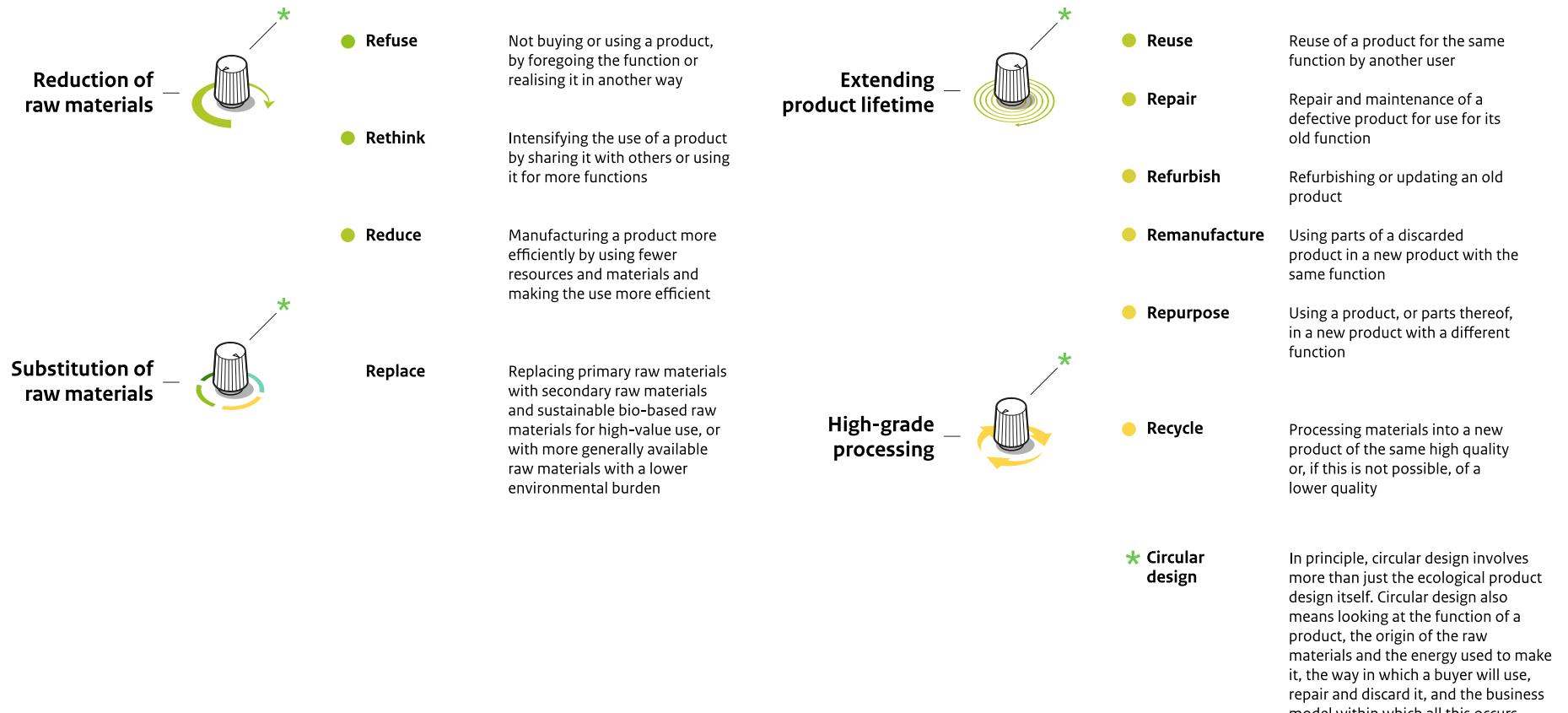
¹⁹ <https://repository.tno.nl/islandora/object/uuid%3A23ef1dc7-c7ba-4f17-9c9e-f7f543dbfb1a>

²⁰ Even in a fully circular economy, there will always be a limited residual waste flow that cannot be put to good use and requires waste disposal.

²¹ Nature provides all kinds of services to people. Sometimes this is clearly visible, like in the production of food and wood (provisioning services). Often it is less visible, however, like the removal of pollutants from surface water by reed beds and natural pest control in agriculture using natural enemies (regulating services). And finally in the form of cultural services, because nature makes an important contribution to our sense of well-being, through the beauty of nature and the identity that certain cultures derive from it. These services are referred to as *ecosystem services*.



Figure 4: ‘Knobs’ and strategies for circularity



Besides all strategies of the R-ladder there is a coloured dot that represents the degree of raw material reduction (see footnote 17). Substitution is not part of the R-ladder and therefore does not have a dot.



Ambitions and targets for 2050 and 2030

New set of targets needed

In the government-wide programme entitled 'A Circular Economy in the Netherlands by 2050' (in Dutch: *Nederland Circulair in 2050*), which dates from 2016, the government stated its ambition to work towards the realisation of a circular economy by 2050, and to aim to be at the halfway point in 2030. The latter has been translated into the guiding target of a 50% reduction of the use of primary abiotic raw materials. Even though these targets have had a mobilising effect, we need more concrete targets to give clear direction to what we are working towards, both for 2050 and for the 2030 target. After all, PBL has shown in its two policy briefs²² that a circular economy involves more than just reducing the use of primary raw materials. Via our use of raw materials, we ultimately need to help cut carbon emissions, protect biodiversity, improve air, water and soil quality, create a safe environment and a safe and clean place to live, and ensure the security of raw materials supply. The use of raw materials can be changed by focusing on the 'knobs' explained above. Therefore, a circular economy requires a set of targets which visualise both the intended impact and the circularity goal itself. This results in a framework of circularity targets (shown in the image below as the four 'knobs') that relate to the use of raw materials, and targets concerning the impact of raw material use, as shown in Figure 5.

The link with other government programmes is therefore evident. In the National Environmental Policy Plan (in Dutch: *Nationaal MilieuProgramma* or NMP) (see the box on the *National Environmental Policy Plan*) the connection with the challenges mentioned is further explained. PBL also emphasises that we need to set targets at product group level to be able to examine the entire value chain and life cycle of a product. The impact of the turning of the aforementioned four 'knobs' on the social issues varies between product groups. Therefore, it is important to determine for each product group in what way the 'knobs' can be turned to achieve the best possible effect, and to formulate targets for this.

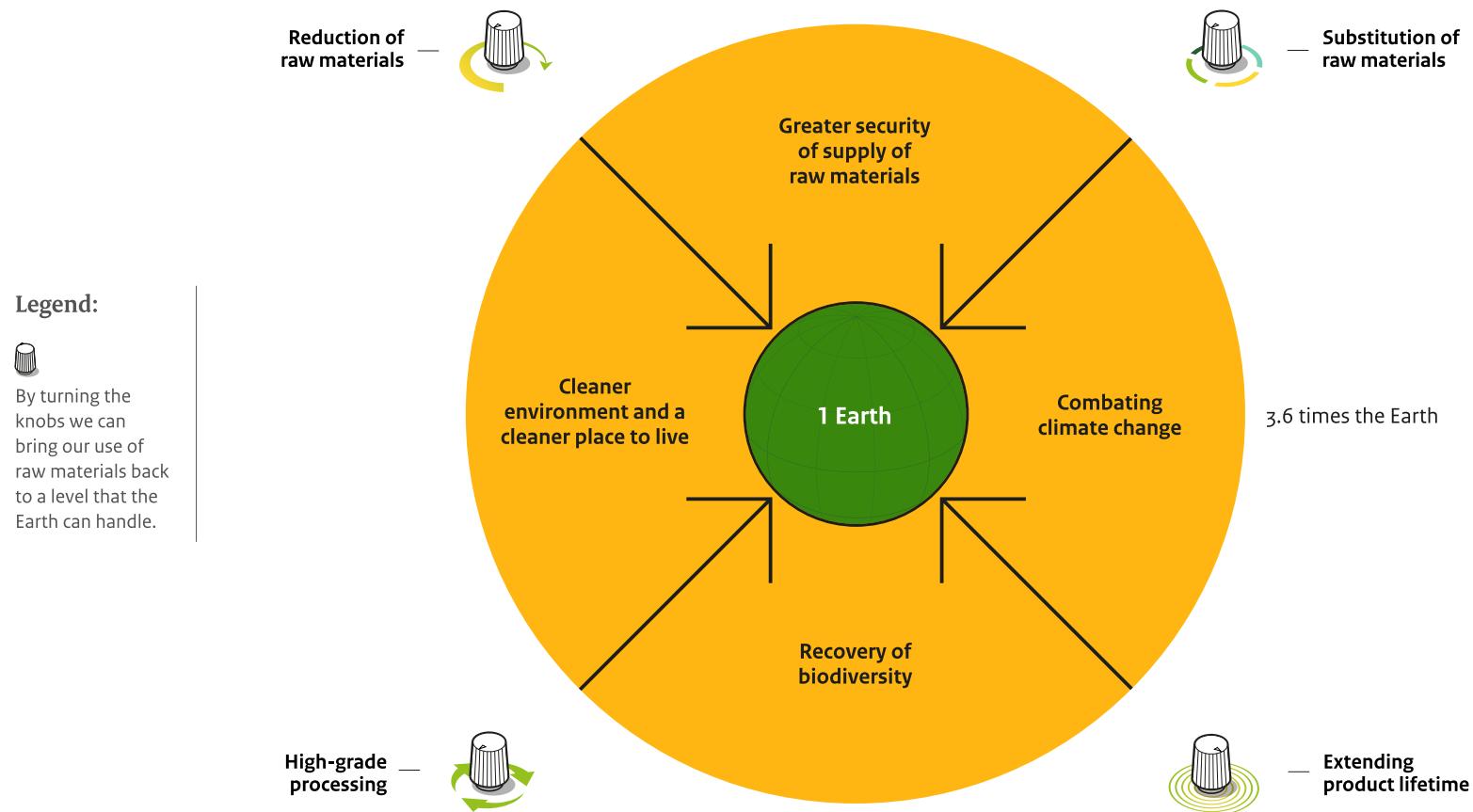
For this reason, we have started elaborating targets at product group level. Via the above framework for targets for a circular economy, targets have now been elaborated for 2030, partly based on the advisory roadmaps²³ of the transition teams (see Chapter 3). These are aimed at the product groups with the greatest impact on the effects mentioned, and allow us to apply focus in our efforts. At the same time, these product groups do not represent the entire economy. It is important to also keep in mind the broader issues and focus on reducing the effects of the use of raw materials as a whole towards 2050, so that the planetary boundaries are no longer crossed. For this we need to give concrete shape to the national objective for 2050 and to what it means for 2030. In addition to the product group targets, therefore, we want to work towards a set of more concrete, overarching targets at national level, both in terms of circularity and in terms of the effects to be achieved (such as less pollution). Because the focus is shifting to the front of the value chain, we also want the targets to be appropriate for this. These targets will replace the existing targets at national level, including the older guiding targets which focused on the back of the value chain. The set of overarching targets still requires some development, however, because we do not have enough knowledge as yet, and the knowledge that we do have is quite fragmented.

²² This concerns two policy briefs published by PBL on targets for a circular economy: *Doelstelling circulaire economie 2030. Operationalisering, concretisering en reflectie* [Objective for a circular economy for 2030. Operationalisation, elaboration and reflection] from 2019 and *Possible objectives for a circular economy 2022* from 2022. These can be consulted at <https://www.rijksoverheid.nl/documenten/kamerstukken/2020/03/27/pbl-policy-brief-en-monitoringsrapportage> and <https://www.pbl.nl/sites/default/files/downloads/pbl-2021-possible-objectives-for-a-circular-economy-4685.pdf>.

²³ <https://www.rijksoverheid.nl/documenten/kamerstukken/2022/07/15/stand-van-zaken-concretisering-doelen-voor-circulaire-economie>



Figure 5: Framework for circular economy targets



Planetary boundaries

We want to bring the environmental impact of our raw material footprint within the planetary boundaries. The concept of ‘planetary boundaries’ has been developed by the Stockholm Resilience Centre. This concept indicates nine boundaries within which we need to navigate to be able to use the Earth’s natural resources in a sustainable manner. If we cross one or more of these boundaries, this may lead to harmful or even irreversible changes. The concept underlines that we need to handle our raw materials in a fundamentally different way: we have already crossed several planetary boundaries, or we are in danger of crossing them. For climate change, biodiversity, land use and flows of biochemicals (phosphorus and nitrogen), the planetary boundaries have already been crossed. In addition, we are having to deal with an entirely new flow of chemicals and plastics which end up in the environment and the effects of which are as yet unknown (so-called ‘new entities’). A recent study²⁴ has shown that this boundary is being crossed as well, because the annual production and the global environmental pollution caused as a result are increasing at a pace that our policy cannot keep up with. So we need to not just reduce the effects of our use of raw materials so that we remain within the planetary boundaries, but also undo the environmental damage which we have already caused.

The planetary boundaries and the ‘safe operating space’ for the Netherlands for the use of raw materials based on them have not yet been determined exactly. At European level, the Netherlands wants to make these elements more concrete, and we want to specify what it means for EU Member States at national level, following the announcement in the Circular Economy Action Plan and the 8th EU Environment Action Programme (EAP) and the ambitions from the EU Green Deal. In parallel to this, we are making a qualitative assessment of what this ‘safe operating space’ may mean for the Dutch use of raw materials: how many raw materials (of what type) can we use for the Netherlands, what does this mean in terms of the environmental burden/impact, and what reduction target fits in with this? Therefore, we are focusing our policy both on producers and on consumers, and we are keeping an eye on the impact which the Dutch import of raw materials and products causes abroad. At the same time, we are taking account of the demand for raw materials resulting from the issues which the Netherlands is faced with, like the energy transition and the construction challenge.

This NPCE describes the current status of the guiding framework for targets at national level. However, we do not have sufficient insight as yet into the possible effects and the feasibility of intermediate targets. We still need to further elaborate this, which is why we cannot lay down the national targets at present. The concrete substantiation will be investigated in 2023 and decision-making in this regard is expected to occur in 2024. Until then, the guiding target of halving the use of primary abiotic raw materials by 2030 remains applicable.

National ambition for 2050

The Netherlands aspires to be climate-neutral, fossil-free and circular in 2050²⁵. Being circular means, at least, that **the use of raw materials for Dutch production and consumption is reduced to such a level that it remains within the planetary boundaries and the ‘safe operating space’ for the Netherlands based on them** (see the explanation in the box above). This way, we are also helping to implement the European Commission’s action programme Towards Zero Pollution for 2050. This ‘safe operating space’ has not yet been established and is still the subject of scientific and political debate, also in the EU.

²⁴ Environment Science & Technology, *Outside the Safe Operating Space of the Planetary Boundary for Novel Entities*, 18 January 2022.

²⁵ <https://www.government.nl/documents/publications/2022/01/10/2021-2025-coalition-agreement>



We are committed to giving this safe operating space a more prominent place on the European agenda and we are pressing to operationalise this further. Our aim is to eventually create a link between the impact targets and the safe operating space. It is important to look at the total use of raw materials caused by our production and consumption in the entire international value chain, and not just the use of raw materials that takes place in Dutch territory. This way, we will show that the Netherlands is responsible for its raw material footprint (use in the entire product chain), from both a production and a consumption perspective.

This ambition is also part of the desired situation in the NMP. The desired situation is to have a healthy, clean and safe living environment in 2050, which is also experienced as such by residents of the Netherlands. The NMP describes the process that is needed for this, and the associated implementation programme.

“Unwittingly, the Netherlands has become a net exporter of environmental effects due to the current import of (fossil) raw materials. In a circular system, we remain in control of materials and we can process them ourselves as raw materials for new applications ... based on our own environmental and sustainability standards (which are higher).”

– Manon Bloemer

Raw material footprint

The raw material footprint expresses the total use of primary raw materials by the entire value chain for the Dutch economy, in Megatons, both from a production and from a consumption perspective. Internationally, the Raw Material Consumption (RMC)²⁶ and Raw Material Input (RMI)²⁷ are used and monitored for this. The RMC indicates the total amount of raw materials that is extracted worldwide for consumption that takes place in the Netherlands. The RMI indicates the total amount of raw materials for the economy of the Netherlands, including the raw materials for Dutch export. A target for the raw material footprint can play a guiding role for the entire value chain.

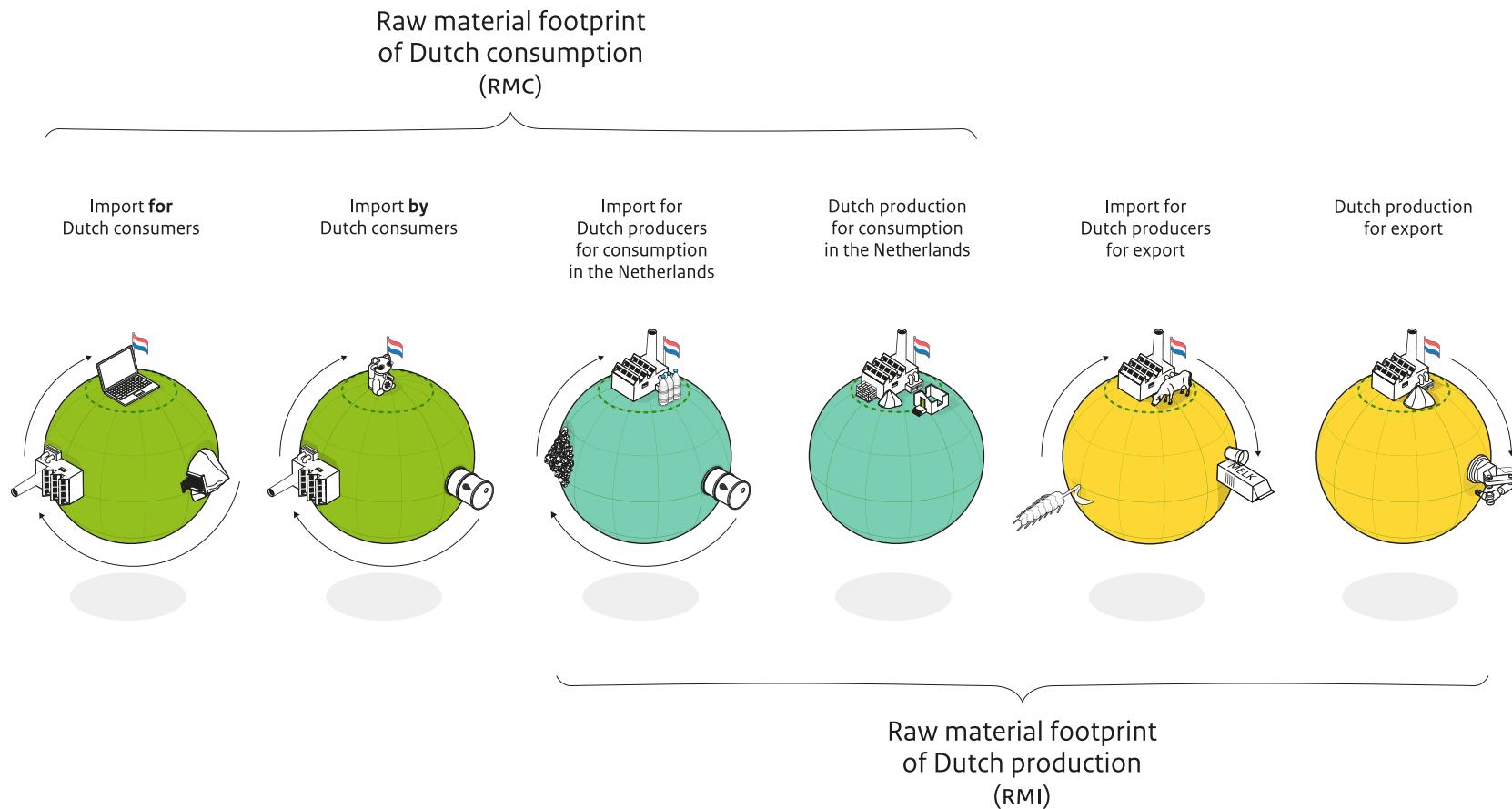
The raw material footprint does not give an indication of the environmental burden caused. In 2023 we will further investigate how this link between raw material footprint (RMI and RMC) and environmental impact can be created. Based on this insight, we can determine at national level later on what reduction of the raw material footprint we should aim for 2030 and 2050, to ultimately reduce the effects of our raw material usage so that we do not cross the planetary boundaries. In this we are taking account of scenario studies yet to be conducted into the need for raw materials for the energy transition, the construction challenge, the ‘greening’ and digitisation of industry, and the possibility or impossibility to approach these in a circular way. Further distribution of the reduction of the raw material footprint across the various sectors and/or product chains seems to be the obvious next step.

²⁶ [https://www.cbs.nl/nl-nl/maatschappij/natuur-en-milieu/groene-groei/grondstoffen-efficientie/indicatoren/grondstofvoetafdruk#:~:text=De%20Nederlandse%20grondstofvoetafdruk%20\(rmc%2C%20raw,daling%20van%20ruim%2027%20procent](https://www.cbs.nl/nl-nl/maatschappij/natuur-en-milieu/groene-groei/grondstoffen-efficientie/indicatoren/grondstofvoetafdruk#:~:text=De%20Nederlandse%20grondstofvoetafdruk%20(rmc%2C%20raw,daling%20van%20ruim%2027%20procent)

²⁷ <https://cemonitor.be/indicator/effecten/materialen/materialenvoetafdruk-van-de-vlaamse-economie-rmi/>



Figure 6: Raw material footprint: production and consumption perspective



National ambitions and targets for 2030

In its recent foresight study²⁸, the Social and Economic Council of the Netherlands (in Dutch: *Sociaal-Economische Raad* or SER) recommends formulating guiding targets for 2030, so that it will be clear to everyone what we are working towards. When the national targets for 2030 are determined in 2024, we will also examine the extent to which the targets for each product group will help us achieve these national targets.

The cohesive set of **circularity targets for 2030** is set out below based on the four ‘knobs’ of page 16.

- Reducing raw material usage: We are aiming for a **reduction of the raw material footprint**, both from a production and from a consumption perspective. For this we will investigate in 2023, based on scenarios, which ambitious intermediate reduction target for the raw material footprint should be set for 2030 with a forward view to 2050, and what reduction of the broad environmental impact this will cause. In these scenarios we are trying to find a way to have the four ‘knobs’ make the best possible contribution to the achievement of the intended effects, taking into account the raw material needed for the construction challenge, the energy transition and the ‘greening’ and digitisation of industry, and the possibility or impossibility to implement these in a circular way. For this we are looking at possibly splitting the target into metals, minerals and fossil fuels. Further improvement of the efficiency of raw materials in production processes to the level of the best available techniques forms part of this. As we currently have insufficient insight into the possible effects and feasibility of an intermediate target, this process really is necessary. A decision on this will made in 2024. We are assessing the extent to which we can link up with the proposed reduction percentages for the raw material footprint within the EU taxonomy of 50% in 2030 and 75% in 2050. Local and regional authorities and other partners will be involved in these scenario studies.

- Substitution: We will aim to **increase the percentage of renewable raw materials used, including both secondary raw materials and sustainably produced bio-based raw materials**²⁹. We will also investigate in 2023 what will be an ambitious but realistic percentage for this, and a decision will be made on this in 2024.
- Extending product lifetime: We will focus on increasing the lifetime of products and components, among other things through reuse, refurbishment and repair. We propose using a qualitative target, striving for a **maximum extension of product lifetime** for 2030 (taking into account specific conditions).
- High-grade processing: In a circular economy, we will recycle materials to a level that equals that of the original material. For this we need to improve clean, well-sorted collection flows and material recovery. For 2030, we are using a target of (at least) **55% recycling of urban waste in 2025 and 60% in 2030**, in line with the EU Waste Framework Directive. (Urban waste means household waste plus waste from offices, shops and the services sector.) In addition, we are investigating **what percentage of material recovery is both ambitious and realistic**. A decision on this will be made in 2024.

²⁸ SER foresight study entitled *Evenwichtig sturen op de grondstoffentransitie en de energietransitie voor brede welvaart* [A balanced focus on the raw material transition and the energy transition for broad prosperity], 16 September 2022.

²⁹ Substitution also includes the use of more generally available raw materials with a lower environmental impact. As management of the use of generally available raw materials needs to occur at material level and at product group level, a national overarching target will not be formulated for this.



On the level of **impact** (see Figure 5, Framework for Targets for a Circular Economy) we want to set a number of targets.

- **Environmental impact:** In 2023 we will explore what targets are useful for 2030 with a forward view to 2050, based on the desired link between reduction of the raw material footprint and reduction of the broad environmental impact. Perhaps the use of other footprints³⁰ may be helpful in this context. For the impact of a circular economy on the **fight against climate change**, on the realisation of a **cleaner environment** and on the **restoration of biodiversity**, it will be further investigated in 2023 which quantitative target is both ambitious and realistic. For this we are looking at footprints for, among other things, greenhouse gases, land use and environmental pollution. Decision-making is expected to occur in 2024.
- **Security of supply:** For security of supply we are formulating a qualitative target³¹: ‘aiming for sufficient security of supply’, paying specific attention to those raw material flows, semi-finished goods and end products which are vital for the Dutch economy and public interests, as is also explained in the National Raw Materials Strategy³².

In early 2023, we will draw up an action plan to be able to give concrete shape to this process in 2023 and 2024 and draw up a schedule for it. The role of local and regional authorities and the other partners in this is apparent.

Table 1: General measures

Continuation and intensification of policy

In early 2023 we will draw up an action plan to arrive at concrete national targets and will discuss this actively with our stakeholders.

We are elaborating useful, concrete targets for environmental impact (climate, environmental pollution, biodiversity) for 2030, with a forward view to 2050. In this regard, we are investigating how we can create a link between environmental impact and raw material footprint. In addition, we are taking account of the extent to which the targets set per product group can help achieve the intended national targets for 2030.

We are elaborating useful, concrete national circularity targets for 2030, with a forward view to 2050.

- Reducing raw material usage: reduction of the raw material footprint.
- Substituting raw materials: increased use of secondary and sustainable bio-based raw materials. We are exploring the establishment of a mandatory percentage of non-fossil carbon for polymer producers as of 2027, which will increase to 55% by 2030.
- Extending product lifetime.
- High-grade processing.

We are committed to giving the elaboration of the safe operating space, i.e. within the planetary boundaries, a more prominent place on the European agenda, and we are pressing to operationalise this further.

We are investigating the extent to which the newly formulated national targets can be allocated to sectors, value chains and/or product groups.

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the exploration and the investigations into possible policy measures will not.

³⁰ Footprint indicators can be used to offer insight into the extent of the environmental burden or impact that occurs in production or consumption value chains.

³¹ No concrete and generally acceptable indicators have been established to measure the security of supply. For this reason, we cannot set a quantitative target for security of supply as yet.

³² <https://www.rijksoverheid.nl/documenten/kamerstukken/2022/12/09/nationale-grondstoffenstrategie>



National Environmental Policy Plan

The National Environmental Policy Plan³³ (NMP) will be published in late 2023. The NMP translates the vision from the National Environmental Policy Framework (in Dutch: *Nationaal Milieubeleidskader* or NMK) of the sustainable development of the Netherlands into comprehensive, unifying and coherent environmental policy. Realising a sustainable, circular economy is one of the challenges set out in the NMP. The other challenges are vital ecosystems and a healthy living environment. It is clear that the three challenges influence each other. For the entire NMP, a coherent and comprehensive implementation programme is being drawn up to achieve the desired situation of having a healthy, clean and safe living environment by 2050. The NMP links up with national and international frameworks and developments. The NMP is aimed at preventing and controlling environmental damage and improving the quality of the environment. Moreover, it reinforces environmental policy by identifying links with social challenges as described in the National Strategy on Spatial Planning and the Environment (in Dutch: *Nationale Omgevingsvisie* or NOVI) in order to arrive at a comprehensive and long-term action programme for environmental policy.

In our current economy, the costs of harmful effects on society associated with production, like carbon emissions, pollution and ecological damage, are hardly factored in at all. This means that these costs will mainly be borne by future generations, instead of by the parties causing them. In a circular economy, producers and consumers will pay a fair price for resources, materials and products. The social costs will be factored into the price paid for products and services, according to the principle of 'the polluter pays'. In addition, in a circular economy the provision of ecosystem services and socio-economic value will be rewarded financially.

Every phase of this kind of transition demands a different way of thinking and acting. To use the right means and in this way realise maximum impact, we therefore need to properly analyse what phase the transition is in. This can actually vary between domains, and therefore requires custom solutions for each product chain. Different sustainable circular solutions are in different phases and therefore require different interventions with different policy instruments and with the involvement of different stakeholders. In the text box below, the transition phases are outlined.

Policy that suits the transition phase

The transition to a circular economy is not a matter of flipping a few switches. We need to transform entire product chains and ultimately entire systems. After all, we want to work towards a whole new way of designing and producing, distributing and consuming. For this we also need to have a level playing field for circular entrepreneurs. At present, circular entrepreneurs are often unable to compete on price with linear producers, because they have to foot the bill for the additional costs of their circular operations. Therefore, we need measures to ensure that operating in a circular manner is the only obvious, fair and financially feasible way of doing business. The government is committed to creating a more level playing field for circular entrepreneurs in the Netherlands, at European level and ultimately globally as well.

³³ House of Representatives, Parliamentary Papers 28663, no. 78, parliamentary year 2021-2022.
[National Environmental Policy Plan](#).



The transition phases

Tangible urgency

Every transition starts with the current situation – the status quo – becoming untenable, and with the palpable urgency of changing this situation. It is only when this urgency and pain are truly felt, in various areas and by various parties, that things will change. Only then will it be clear what the problem is and what sustainable directions for the future need to be explored. This is also how the government-wide programme ‘A Circular Economy in the Netherlands by 2050’ started in 2016, followed by the National Raw Materials Agreement and the transition agendas.

Experimentation and learning phase: bringing parties together based on voluntary agreements

This phase is characterised by small-scale experiments and pilot projects. Policy has been mainly focused on these elements until now, by means of the Implementation Programme which was introduced in 2019. Parties have been brought together based on voluntary agreements, like the Plastic Pact and the Denim Deal. We have conducted many explorations, promoted knowledge development and set up small-scale pilot projects in a broad range of areas. In this phase the main priority is to experiment and learn, with the motto being ‘letting a thousand flowers bloom’. However, pilot projects cannot simply be added up, or do not form a strategy per se. More is needed for this.

Rewarding frontrunners

Based on the previous phase, where learning and experimentation took place, this phase is all about making the frontrunners visible and supporting them. It is important to recognise and acknowledge these frontrunners and to generate further

competition on this basis. This demands a conscious approach; it means that the risks for these frontrunners need to be removed and that their additional costs need to be compensated for. If this does not happen, these frontrunners cannot compete with linear entrepreneurs that incur lower costs thanks to the established scale and that do not need to pay the social costs of their actions (i.e. environmental damage). In this phase it gradually becomes clear which circular solutions might work.

Scaling up

In this phase, the main aim is to scale up circular solutions, with the associated sustainable and circular business models. This demands broader collaboration between parties in value chains, a clear vision of the future with clear targets which these parties can identify with, an understanding of which sustainable circular solutions have a place in that vision of the future, and an outline of the way to get there with clear timelines. In short: an action perspective, so that the parties involved know what needs to be done, even if this may be contrary to current practice. To establish the most appropriate mix of instruments, we need a clear analysis of the obstacles (legal, fiscal, technological or social) that prevent the desired scaling up in the various domains.

Institutionalisation

In the final phase, normalisation of the circular solutions is key. A new balance is achieved that needs to be laid down in standards, laws, regulations and agreements. Adjustments also need to be made with regard to taxes and accounting. This gradually leads to a ‘new normal’ of common practices; the result is a new reality.



More guiding measures needed: the carrot and the stick

So far, circular economy policy has been characterised by its voluntary, non-binding nature. To ensure that we will have switched to a circular economy by 2050, we need to take the next step in the transition. This next phase demands a more concrete elaboration of the situation that we are working towards, including targets, timelines and the roles that different parties play in it. And we need to continue the frontrunner approach to promote innovation, new business models and market differentiation. An integrated perspective and scaling up are also required to realise the necessary acceleration. This demands more intensive policy and more guiding and coercive measures³⁴. For example, we need to promote demand and supply, remove risks, and introduce policy for Socially Responsible Purchasing. Standard setting and normalisation are also necessary, as are tax adjustments (e.g. with regard to primary raw materials) and the use of integrated pricing. In short, the government needs to take action to change the economic, physical and social environment in such a way that it becomes obvious, easy and fair for businesses and citizens to choose sustainable, circular products. Further-reaching collaboration between the government and local and regional authorities is important in this regard to ensure that policy efforts are mutually reinforcing and that we actively make use of the knowledge that is present in the various regions. Innovative circular entrepreneurs must be supported, as must ‘linear’ businesses that wish to make the switch. The extent to which this is possible will depend on further political decision-making on the use of financial resources, among other things in the context of the climate and transition fund. We will ultimately have to say goodbye to businesses that are unable or unwilling to do this. To realise our ambitions, we will be focusing on a combination of:

- **Pricing measures** – think of taxes and levies that charge environmental damage directly to the party causing it. This makes polluting activities more expensive, and it makes sustainable, circular alternatives more attractive;
- **Standard-setting measures** – think of legal standards for all steps in the product chain, like circular design, new types of ownership and product liability, and the introduction of a product passport, to offer insight into activities with a negative social impact, to inhibit them or to ban them, both during production and during consumption;
- **Stimulus measures** – think of subsidies, vouchers or a switch to circular procurement by public authorities and other buyers of circular products and services. This encourages businesses and value chains to opt for a more sustainable and circular business model and in this way stand out in the market (at least initially).

It is vital to create market demand for circular products. This can be done by imposing circularity requirements on procurement, tendering procedures and subsidy provision, or via the establishment of a mandatory percentage of bio-based raw materials, for example. In the ‘frontrunner phase’ and the ‘scaling up phase’, this will often require compensation for the additional costs and facilitation of innovations and their use, by means of subsidies and tax measures. In the early stages, newly designed circular products may be more expensive, because it concerns new techniques that still have to prove themselves, and because no EU standards have been formulated for them yet. In addition, parties in the value chain need to reach agreement on how they will share any financial risks. In the phase after the scaling up, requirements will be imposed which all market parties must meet. Compensating for additional costs is no longer relevant here.

³⁴ In the ICER 2021 this is designated as ‘coercive measures’.



Circular business models as the standard

Business models in a circular economy add value in several ways: financial value (profit for the entrepreneur), value for the ecosystem (by reducing the raw material footprint and therefore the environmental impact), economic value (including security of supply) and social value. For example, this concerns the social value for communities of product sharing, the realisation of inclusive work environments, the creation of employment opportunities (also for people who are distanced from the labour market) and high-quality jobs. Because products are often produced outside of the Netherlands, circular business models also help reduce emissions in other countries.

In a circular economy there are roughly seven different basic types of existing and future circular business models:³⁵

- 1 Raw material models.** The essence of these models is the recovery and reuse of products, components and processed or unprocessed raw materials which are already in circulation and which have reached the end of their lifetime (discarding phase).
- 2 Design models.** The essence of design models is to design products in a way that makes them fit within the principles of circularity. This concerns: design for repair and maintenance, design for recovery and recycling, and design for lifetime extension, as well as the application of sustainable and/or circular materials like recyclate and bio-based materials.
- 3 Lifetime extension models.** The essence of these models is to extend the lifetime of products and components so that they remain functional for as long as possible, whether or not based on refurbishment or reuse of parts and components in another product, without them being processed into a new raw material first.

- 4 Platform or sharing models.** The essence of platform or sharing models is to make better use of the existing capacity of products which are already in circulation. It ensures that parties find each other (online or otherwise) to realise product/service transactions.
- 5 Servitization models.** These models focus on granting users access to a product's function, i.e. rendering the product serviceable. The user no longer automatically becomes the owner of the product.
- 6 Management and control models.** The essence of these models is that producers and importers remain responsible for the collection and the safe and adequate processing of products manufactured or imported by them at the end of the life cycle of these products. The ambition of management and control models is for it to become easier for businesses to trace products, or to retrieve, use, reuse or recycle them, etc.
- 7 Life cycle models.** The essence of these models is that a value chain organisation (which can be one or more parties) can keep track of the status of a product during its entire lifetime, including used and consumed materials and raw materials, wear and tear, necessary maintenance (smart maintenance), and the best moment for it to reach the end of its lifetime.

Business models become concrete when revenue models are added to them. These revenue models show how an organisation, a value chain or a closed loop generates income, what the nature of that income is, and for whom this income is generated. A business can have multiple revenue models; the key is to have a combination that is appropriate for a certain situation³⁶.

³⁵ https://circulairemaakindustrie.nl/app/uploads/2022/02/Whitepaper-Classificatie-Circulaire-Businessmodellen_CTF.pdf

³⁶ The report entitled *Classificatie circulaire businessmodellen, een onderzoek naar bestaande en toekomstige vormen van waardecreatie en -behoud* [Classification of circular business models, an investigation into existing and future forms of value creation and preservation] (Ministry of Economic Affairs and Climate, 2022), provides a further elaboration of how possible circular revenue models can be added to circular business models. It includes a detailed list of revenue models.



Figure 7: Circular revenue models



The focus should be on measures that lead to the best total environmental results. Measures taken at the start of the value chain have an effect on the rest of the value chain as well. That is what we want to focus on more, therefore. In addition, we will keep working on the back of the value chain: by aiming to optimise the collection of well-sorted and clean collection flows, reuse and high-grade recycling.

The Netherlands as a frontrunner in waste processing and raw material efficiency

- The Netherlands is among the global front runners when it comes to waste recycling: our country recycles 80% of its waste. It should be mentioned here that this often concerns low-grade recycling, though. The 2022 Circularity Gap Report states the percentages of secondary material use around the world and in various countries. Globally, this is 8.6%; in the Netherlands it is over 24%. According to the most recent Country Report of the European Commission, the figure for the Netherlands is even as high as 30.9%, compared to an EU average of 12.8%.³⁷
- The use of raw materials for our own purposes is 20% lower in the Netherlands than the EU average, and the Netherlands is also one of the best-performing EU countries when it comes to resource productivity³⁸. At 3%, the amount of landfilled waste lies far below the EU average, moreover. Waste production has been decoupled from economic growth; in the Netherlands we produce around 60 Mtons of waste per year, and that amount is no longer growing along with the gross domestic product.

Besides a generic set of policy measures, specific policy has been developed for the five priority product chains that have the greatest negative impact on the environment: plastics, consumer goods, biomass & food, construction, and manufacturing. This specific policy is aimed at the most impactful product groups within these value chains (see Chapter 3).

³⁷ <https://www.rijksoverheid.nl/documenten/rapporten/2022/11/18/2022260216-1-bijlage-kamerbrief-evaluatie-van-de-uitvoering-van-het-milieubeleid-2022-nederland>

³⁸ <https://www.rijksoverheid.nl/documenten/rapporten/2022/11/18/2022260216-1-bijlage-kamerbrief-evaluatie-van-de-uitvoering-van-het-milieubeleid-2022-nederland>

In addition, we are also taking supporting measures which are necessary to realise the transition to a circular economy. This concerns knowledge, innovation and skills in education and the labour market, as well as behavioural change (see Chapter 4). The right knowledge, skills, values and attitudes are vital if we want the transition to succeed. From the education sector we are receiving clear indications that schools sometimes need support in giving the topic of sustainability a place in their curriculum. It has emerged from the *support base investigation for sustainable schools* (in Dutch: *draagvlakonderzoek Duurzame School*) conducted in primary, secondary and vocational education that there is a need for good practice sharing, qualitative interventions, professional support and an integrated information and advice/knowledge service facilitated by the government. For this reason, the government will explore how we can further provide education parties, on a demand basis, with the knowledge and skills needed for sustainability in a broad sense and for the circular economy in particular. All this will also be coordinated with the schools, education councils, parties involved and other ministries promoting the topic of sustainability in education. In addition, circularity deserves to be covered in short courses for buyers, marketing professionals and CEOs in the business world, for example.

To stress the urgency of the transition, lead the way, and increase the engagement of market parties, civil society organisations and citizens, it is important to keep conveying the vision and targets of the policy, enhance its implementation and continue the dialogue. We want to not just encourage citizens, but also involve them more in our policy. We will examine the added value of public participation in policy processes around specific product groups. By involving citizens early on, the government will gain a better picture of the ideas, needs and concerns that people have, as well as of the issues they come across in practice. The input we receive from citizens can then be actively used to arrive at targeted policy measures which are better aligned to, and can be implemented in, people's daily lives. Prior to a public participation process for a specific product group, we will draw up a participation plan to clarify who will be involved when, about what, and with what intention.

The policy programme for circular textile is the first product group for which we will draw up a participation plan in 2023. The expectation is that the product groups for which public participation is used will gradually increase. We also need concrete process support in sectors and value chains to facilitate innovation, knowledge development and dissemination, and new partnerships. After all, a circular economy can only be realised by means of circular value chain collaborations. This demands that we organise value chains differently. Active collaboration between producers, buyers and suppliers will be



necessary in order to design, produce or organise a product, process, service or business model in a more circular way, so that fewer raw materials will be used and it will have positive effects on the climate and the environment. It has appeared in practice that circular solutions can often only be realised in collaboration with other parties in the value chain, but also that this collaboration faces more obstacles than average in the areas of financing, knowledge, market opportunities and value chain approach. Value chain direction and process support are really necessary, therefore. Finally, it is important to show the progress made in the transition via a transparent monitor that measures developments, market share and impact.

International agenda setting, agreements and relations

In view of the international nature of raw material flows and product chains, international collaboration is vital in order for us to realise our national ambition – a circular economy in the Netherlands by 2050. National circular policy is being developed and implemented in an international context. We will need to carefully examine at which level the measures are appropriate and will have the greatest effect: regionally within the Netherlands, nationally, at European level, or globally. Because of the enormous impact, scope and feasibility of the measures, as well as the importance of having a level playing field, we prefer to operate at European level – especially where it concerns measures in the area of laws and regulations. We are also choosing our partners carefully: other public authorities, businesses, knowledge institutes, financial institutions, NGOs, or a combination thereof.

The circular economy is a priority topic in the EU as well, as part of the European Green Deal, and has been elaborated in the EU Circular Economy Action Plan. It is also very important for us to keep participating in policy development at EU level. For instance, we need European agreements on minimum circularity requirements for products which are placed on the market. By making these requirements ever more stringent, we can keep raising the circularity level of the market. In addition, the European Commission is stimulating the market for secondary raw materials by working on mandatory percentages of recyclate through several general and sector-specific laws and regulations. Plus, efforts are being made to broaden the European state aid frameworks for the circular economy, as this was done previously for the climate. This does not mean that we shouldn't do anything within the Netherlands or outside the EU. We are regulating everything we need to and can do at European level, but we are also assessing proactively what else we can do, either nationally or internationally, besides in an EU context. We are doing this to further broaden our frontrunner position in the area of recycling to also include reuse and repair, and to reap the benefits of this economically.

Another way to get things done in the international transition to the circular economy is to focus on international value chains, like those of textiles, the automotive industry or manufacturing. In those value chains, production often takes place outside Europe. By challenging business that operate internationally (brands, retailers, financiers) to reduce their raw material footprint, extend the lifetime of their products and guarantee better quality for products placed on the market in the Netherlands, with a greater recycled content, we can influence this transition from the Netherlands. These value chains also offer an opportunity to engage with parties on a 'just transition', in the form of a liveable wage and good working conditions at businesses in production countries.

At global conferences and in our contact with foreign partners we are also looking to collaborate and reach agreements. Because of the globalisation of value chains, negative effects of production, like greenhouse gas emissions and harm to nature caused by land use and water consumption, often occur elsewhere rather than in the Netherlands. For example in countries where labour is cheaper or environmental requirements are less stringent. In some developing countries, raw materials are extracted for prosperous countries, or waste from these countries is processed, incinerated or dumped in landfill sites there – often at low prices, under lower environmental standards and poor working conditions. It is important to aim for a just transition. This also applies to the acknowledgement of negative effects of the transition to a circular economy in other parts of the world, like the loss of mining jobs because fewer fossil raw materials are needed in a circular economy. Therefore, international agreements on environmental standards, sustainable jobs (terms of employment) and working conditions in production processes need to be laid down in regulations.



The following targets and implementation aspects are key:

- a National level: In collaboration with the transition teams and governmental policy experts, policy calendars and influencing strategies will be drawn up and implemented for the international parts of the value chains of priority product groups.
- b European level: The Netherlands will contribute to policy development and implementation for the circular economy at EU level, also with a view to our national targets and the European contributions to the circular transition in third countries.
- c Multilateral level: The Netherlands will contribute to the creation of international conditions for a global circular economy based on EU legislation, international dialogue and treaties.
- d Bilateral level: We will engage in diplomacy, including the creation of international opportunities for Dutch businesses and collaboration via private sector development, knowledge transfer and capacity development. In this regard, the ministries involved will focus on the markets and countries which are a priority for them, including developing countries. In this collaboration we will take account of risks and existing local situations that may form barriers to the realisation of the transition by and in the market.
- e International collaboration: Where possible we will minimise any negative consequences of our circular transition for production countries and developing countries, and we will promote fair local transition processes. This includes assurances and commitments in areas relating to the environment, climate, waste processing and socio-economic circumstances, including working conditions.

Integral approach: connections with other transitions and issues

For the realisation of our mission for 2050, we need an integral approach to the significant social issues that we are faced with at the moment. This demands a joint and balanced focus on the climate goals, the energy transition, the transition to a circular economy, the environmental issues, the need for a more sustainable food system, the biodiversity challenge, and climate adaptation. In this context, the digital transition offers important opportunities for the realisation of a sustainable, climate-neutral and circular economy. Digitisation changes the way in which we produce and it enables businesses to develop new business models, share data and further develop and apply digital technologies like artificial intelligence and quantum computing. This creates solutions to all kinds of social issues, as well as opportunities for future revenue models and broad prosperity.

The need for this integral approach also comes across in the SER foresight study and previous studies conducted by the Ministry of Infrastructure and Water Management (in Dutch: *Ministerie van Infrastructuur en Waterstaat* or *IenW*)³⁹. The SER⁴⁰ states that, if we really want to tackle the sustainability issues, we need more balanced management of our efforts for the transitions. By this the SER means that the different transitions should be treated equally, also in terms of the use of instruments and financial resources. Thanks to the close connections between the sustainability transitions, they may be mutually reinforcing. It is important to avoid a situation where we focus too strongly on a single transition or issue, as a result of which we will not make any progress on other issues, or they will become more difficult to resolve. So, circularity also means making sustainable use of the raw materials which are needed for the energy transition, the housing challenge and climate adaptation, for example, and handling these issues in a circular way. In this regard, the independent research organisation TNO⁴¹ indicates that in the board rooms of both public authorities and businesses, the complexity of the issues, trade-offs and fragmented efforts for the different issues have an inhibiting effect on our integral approach to transitions. To be able to make progress on transitions, clear direction by the government is needed, therefore, so that it becomes easier for businesses to make the right choices. Here, too, there is a clear link with the forthcoming NMP in which the desired situation and the targets for the short and the longer term will already be further specified insofar as possible.

Spatial planning for a circular economy also requires an integral approach, where spatial decisions are considered in conjunction with one another. This means that we need to take account of plans like the housing challenge, the National Programme for Rural Areas (in Dutch: *Nationaal Programma Landelijk Gebied* or *NPLG*), the National Water Programme, and water and soil as guiding principles.⁴² In addition, the further development

39 See Letter to the House of Representatives, 32 852, no. 18, [Grondstoffenvoorzieningszekerheid](#) [Raw materials supply security].

40 SER foresight study entitled [Evenwichtig sturen op de grondstoffentransitie en de energietransitie voor brede welvaart](#) [A balanced focus on the raw material transition and the energy transition for broad prosperity], 16 September 2022.

41 TNO, [Literatuuronderzoek integrale benadering van maatschappelijke opgaven en transities](#) [Literature study on an integral approach to social issues and transitions], 30 November 2021.

42 <https://open.overheid.nl/repository/ronl-c35e65eba0903d738ae26dab222462337b0d8de7/1/pdf/water-en-bodem-sturend.pdf>



of the National Strategy on Spatial Planning and the Environment (NOVI) and its implementation offer integrated frameworks in the context of NOVEX programmes. To obtain more scientific knowledge about the future use of space of a circular economy, the Ministry of Infrastructure and Water Management and the Ministry of the Interior and Kingdom Relations (in Dutch: Ministerie van Binnenlandse Zaken en Koninkrijksrelaties or BZK) have joined forces. In 2022 and 2023, a joint study will be conducted, with the aim of developing a better knowledge base and gaining insight into the possible spatial effects of, and preconditions for, a circular economy and the transition to it.

If we tackle these challenges in an integrated manner, the different transitions can reinforce each other and can jointly contribute to the realisation of a future-proof country. An integral approach to these transitions and issues means that we tackle them in conjunction with one another, using instruments aimed at realising several transitions at the same time. The ‘generation assessment’ is one of these instruments. Through the generation assessment, the government can identify possible effects of new legislation or new policy on the living conditions of current and future generations. Using the generation assessment method which has been developed, a number of experiments were conducted in 2021 and 2022, as promised to the House of Representatives⁴³. The results of these experiments were sent to the House on 12 July 2022⁴⁴ and 22 October 2022⁴⁵, respectively. In the context of this NPCE, a generation assessment will be carried out as well (in conjunction with climate policy). We will address this in more detail in Chapter 5.

A role for everyone

A system change is a lengthy, step-by-step process that changes the way in which we collectively think, work and organise things. To be able to realise such a transition, all parties need to be committed: public authorities, businesses, trade unions, civil society organisations, knowledge and education institutes, financial institutions, and citizens. It is essential for everyone to be able to make this sustainable transformation: households and communities, businesses and cooperatives, and villages and cities. This demands a clear vision of what this circular economy will look like in 2050, what types of industry and activity this involves, and what the targets are for 2030 and 2050. We also need a clear strategy for how to achieve those targets, so that even if it becomes difficult, we can keep our joint objective in sight: realising a habitable world for both current and future generations.

This transition asks a lot of our society, but offers a great many opportunities, too. Think of new, circular business model which allow the Netherlands to further improve its international frontrunner position and to capitalise on it (also financially). In addition, a circular economy offers added value in ecological, economic and social areas: we will help the Earth recover, by restoring the balance between humane and economic actions. This sense of doing something meaningful is inspirational and may lead to greater social connectedness between people. Public authorities can help generate a flourishing regional economy by strengthening regional value chains and further promoting innovations. In a circular economy, crafts and trades will be better appreciated again, as will good-quality employees and jobs. Finally, citizens can live in a pleasant and clean environment.

43 See the government's response to the SER foresight study entitled *Hoge Verwachtingen* [High expectations]. Motion tabled by MPs Segers and Jetten on a generation assessment as part of the development of policy, Parliamentary Papers II, 2019-2020, 35 300, no. 24 ([Budget Memorandum | House of Representatives of the States General](#)).

44 Annex to Letter to Parliament dated 12 July 2022, *Stand van Zaken Nationaal Groefonds* [State of affairs of the National Growth Fund], Parliamentary Papers II, 2022-2023, 35925-XIX-14 ([Mogelijke toepassing van de Generatietoets bij NGF-voorstellen](#) [Possible use of the generation assessment for NGF proposals] | Report | [Rijksoverheid.nl](#)).

45 [Memorie van Toelichting Wetsvoorstel Herinvoering Basisbeurs Hoger Onderwijs](#) [Explanatory memorandum to the bill for the reinstatement of the basic grant for higher education], 21 October 2022, Parliamentary Papers II, 36 229.



Green Deal for Circular Festivals

During the conference called ADE Green, held in Amsterdam on 21 October 2022, 23 European festivals decided to join the organisation Green Deal for Circular Festivals, which is the European alliance of frontrunners for a sustainable festival sector. 43 festivals in 14 countries are now working together on their joint objective of becoming fully circular and climate-neutral by 2025. To be able to achieve that ambitious objective, they are working together on five topics: energy, food and drink, travel and transport, resource efficiency, and water. The festivals will share their knowledge and experience in the area of sustainability. This way, not every festival needs to reinvent the wheel, and an ambitious objective can be achieved.

Festivals are not only a cradle of circular ideas and innovations. With their great number of visitors and their defined duration and location, festivals offer the perfect place to test sustainability innovations and to inspire people and sectors. This makes them an important testing ground for the implementation of circular and climate-neutral ways of working. Tried-and-tested ways of working are not only being shared and adopted by other festivals; these concepts are increasingly being used in various cities as well now. In other words, festivals are not just taking responsibility for making their own activities more sustainable. In doing so, they are also playing an important role in the scaling up of circular concepts elsewhere.



Learning process

The fact that we do not have all knowledge yet is inherent to a transition. After all, we are only at the start of the transition to a circular economy. Because of the young and broad policy area, our knowledge on the circular economy is still fully in development. This means that having a learning approach is very important, and that monitoring needs to play a central role. For climate and energy policy, we already have a long tradition of identifying costs and effects of technical measures. For circular measures, the picture is less complete; we still lack a lot of information that is required for us to estimate the effect of policy interventions, and this knowledge still needs to be developed. Therefore, both the set of measures and the targets at product group level must be evaluated periodically and tightened where necessary as the knowledge increases. This way, we will take the necessary steps and intensify our policy efforts, while at the same time learning lessons and guiding policy based on monitoring results. For this reason, we are opting for a two-year policy cycle (also see Chapter 5).

We already have some policy, and there are measures to help frontrunners, but that is not enough to realise the necessary large-scale system change. The present package of policies and measures is a solid base for the phase of the transition that we are in and in view of the resources that are available to us.

We need more than that, however. The present package will not bring the goals of a circular economy for 2050 and 2030 within reach. Therefore, it remains important to supplement and strengthen the package and expand it in the future to include other sectors and product groups, based on monitoring results. By means of monitoring, we will gain insight into the progress we have made and into how actions and instruments can help us realise the targets. New insights are being gained all the time. This is why we will update this policy programme every two years and adjust it based on the Integral Circular Economy Report (ICER) drawn up by PBL once every two years. The ICER gives a good idea of the trends and scope, and offers recommendations for how we can strengthen our policy efforts. It also makes connections with other topics, like climate change, environmental pollution, biodiversity, land use and security of supply. This two-year cycle safeguards the learning process and helps us guide the relatively young circular economy policy in order for us to ultimately realise the desired system change.





Chapter 2

General measures for a circular economy



2.1 From vision to measures

As was described in Chapter 1, in a circular economy we will use as few new primary raw materials as possible, and we will make the most of the raw materials that we do use. Products will be designed in a way that ensures that as few raw materials as possible are needed, that products and raw materials are used for as long as possible, and that they can be processed in a high-grade manner afterwards. All this will be done in a responsible way to protect our environment and health. This way, we will bring our use of raw materials back to a level that the Earth can handle. In the present chapter, we will translate the vision for 2050 into concrete general policy measures for the period up to 2030. These relate to the ‘knobs’ we can turn to make our raw material usage more circular, as mentioned in Chapter 1.

- **Reducing raw material usage** (narrow the loop)
- **Substituting raw materials** (substitute)
- **Extending product lifetime** (slow the loop)
- **High-grade processing** (close the loop)

When drawing up this NPCE, we have followed the main recommendations offered in the ICER from 2021, like the elaboration of targets and the use of pricing, regulation and standard setting, within the means available to us. Some of the measures require more intensive implementation, supervision and enforcement. When elaborating the measures, we are taking the implications for implementation, supervision and enforcement into account.

2.1.1 Reducing raw material usage

The government is working towards further specification of the planetary boundaries and the ‘safe operating space’ for the use of raw materials that follows from it for the Netherlands. By working based on this space and using measures that contribute to this, we can drastically reduce our use of raw materials. This will have consequences for our entire society.

The most obvious thing to do to reduce the use of raw materials is to avoid the production or purchase of goods, because then raw materials will not need to be extracted or produced. The fact that this is obvious does not mean that it is easy, however, for it affects the interests of businesses, which want to sell as many goods as possible, as well as the interests of citizens. So far, the government has not focused on reducing our production and consumption. This is because in the Netherlands we think citizens’ right to choose is very important. People’s buying habits are being influenced indirectly, however, for example by charging excise duties on tobacco products. Interventions aimed at reducing consumption which are not of a tax nature are connected to creating awareness and directing people’s behaviour. Think of something like promoting car sharing (meaning that people do not buy their own car). This is often perceived as a loss of flexibility, while replacement of a product (in this case a car) by a service (driving from A to B) can actually be a valuable way to consume less.

The fact that rather than buying cheap products with a short lifetime we need to opt for better-quality products that last for longer may be a difficult message. Especially for people who do not have a high disposable income. The same applies to measures that make the use of raw materials or environmentally harmful services more expensive.

Still, the government can take measures to get citizens to consume less, without making products or services significantly more expensive. We can ban products because of their environmental impact, or because a reasonable alternative is available. Think of the bans on certain disposable plastic products (like straws) which have already been introduced.



To reduce the use of raw materials, we are focusing on the following generic measures:

Table 2: Measures relating to reducing raw material usage

New measures	Standard-setting	Pricing	Stimulus
We will explore better inclusion of environmental damage into prices (EU-wide approach). Our aim here is to find possibilities, at national and European level, to better factor in environmental pollution, to further factor in primary raw material usage and – in accordance with the waste hierarchy – to factor in activities that obstruct high-value use of raw materials. This is in line with the European ambition to integrate the principle of ‘the polluter pays’ into policy.	■	■	■
Levies for the use of primary fossil raw materials: at national and European level we will explore the possibilities for taxing non-energetic use of primary fossil raw materials in order to stimulate the market for secondary raw materials.	■	■	■
We will conduct an exploration of the possibilities for encouraging citizens to consume less.	■	■	■
Where this is possible and relevant, we will focus on circularity in existing subsidy schemes, based on the results of an exploration conducted by the Ministry of Infrastructure and Water Management and the Ministry of Economic Affairs and Climate (in Dutch: Ministerie van Economische Zaken en Klimaat or EZK).	■	■	■
We will further elaborate the possible target for reducing the raw material footprint coupled with reduction of the environmental impact: based on scenario studies and an exploration of possible alignment with the reduction proposal in the EU taxonomy of 50% in 2030 and 75% in 2050.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

2.1.2 Substituting raw materials

Substitution is all about replacing finite raw materials with secondary (i.e. used) raw materials, bio-based raw materials like wood, flax and sugar beets, or other more generally available primary raw materials with a lower environmental burden⁴⁶. At the moment, the Netherlands is one of the best-performing EU countries when it comes to the use of secondary raw materials⁴⁷, even though we are still only at the start of the circular transition ourselves.

Circular design plays an important role in this process. Over the coming period, we will therefore focus on 1) the development, active unlocking and use of design methodology, applied knowledge and tools, and 2) the creation of incentives (legislative and otherwise) to encourage entrepreneurs to use circular design.

CIRCO programme and CIRCONNECT circular design platform

Without a circular design of products and services, a circular economy cannot be realised. Over 80% of the environmental effects of products are determined during the design phase. By means of the CIRCO programme for circular design, the Ministry of Infrastructure and Water Management has been promoting the use of circular design by businesses since 2015. The development and execution of many hundreds of CIRCO Tracks and CIRCO Classes has resulted in a firm foundation which we can build on over the coming years. In a CIRCO Track, businesses are assisted in the formulation of a concrete circular proposition for their product and value chain. In a CIRCO Class, the principles of circular design are taught to professional designers.

The operational management and execution of CIRCO Tracks has been embedded in a network of local CIRCO Hubs with nationwide coverage. In this area, the Ministry is working together with local and regional authorities, regional development agencies, regional accelerators, knowledge organisations like universities, network organisations, industries and banks, and other co-financiers. Virtually all Dutch provinces now have a CIRCO Hub that performs specific actions based on needs that

46 For readability reasons, we are not using the full list everywhere.

47 <https://www.rijksoverheid.nl/documenten/rapporten/2022/11/18/2022260216-1-bijlage-kamerbrief-evaluatie-van-de-uitvoering-van-het-milieubeleid-2022-nederland>



emerge from the transition and action agendas for circular design. The Hubs also help businesses take their circular operations further.

Parties from the field have built a future-oriented knowledge platform around circular design at their own initiative: the CIRCONNECT circular design platform. It serves as a basis for the further development of circular design in the Netherlands and as a driving force for circular business operations.

CIRCONNECT focuses on:

- Further development of the scientific and applied dimensions and the scope of circular design, with a view to optimisation, dissemination and application.
- Collecting gained experience and knowledge, expertise, lessons learned, scientific data, knowledge questions, monitoring, technological and social innovations and policy developments, and making them widely available.
- The CIRCO Hubs support the operational implementation, through maintenance and by making available the methodology, instruments, tools and associated materials or developments.
- Communication, information and education on circular design from a fast-paced, attractive-looking and easily accessible web environment.

The aim is to develop and maintain the CIRCONNECT knowledge platform based on a multi-stakeholder proposition.

To create and maintain a level playing field, statutory requirements for products (like design requirements) can only be imposed at international level. Under the current European Ecodesign Directive, circular product requirements have already been drawn up for many energy-related products. This Directive is being amended into a new European framework regulation for sustainable products (the Ecodesign for Sustainable Products Regulation (ESPR)), which covers the topic in a broader and more in-depth way: it will become possible to impose broader sustainability requirements on virtually all physical products. Think of recyclability, reusability, lifetime extension, the use of recyclate, and a ban on certain hazardous substances. Prescribing a certain minimum percentage of secondary raw materials or bio-based raw materials for new products will become a possibility as well.

Producers can ensure that hazardous substances are no longer used in products (minimisation and prevention). This is mainly important for the group of SVHCs. (Substances of Very High Concern). These are the substances which are most harmful for people and the environment, and yet they are sometimes added to products or materials because of a certain property or functionality that is required. The Netherlands has specific policy for the minimisation of SVHC emissions. In addition, it is important that the use of SVHCs in products is avoided where possible. The placing on the market of substances, mixtures and products is highly harmonised in the EU. Therefore, the use of measures at EU level is often opted for. In the upcoming European negotiations on the substantiation of the ESPR, attention will be paid to SVHCs. Restrictions may also be imposed on the use of harmful substances in products via the RoHS Directive and REACH.

In the *Duurzaamheidskader biogrondstoffen* [Sustainability framework for bio-based raw materials], it has been determined (except for food, animal feed, textiles and paper) which uses of bio-based raw materials are high-value applications and are therefore suitable for a climate-neutral and circular economy. Sufficient bio-based raw materials need to be available, of course.

The Ministry of Infrastructure and Water Management is currently working on the implementation of sustainability criteria for the production of sustainable bio-based raw materials. The Ministry of Economic Affairs and Climate is developing stimulus instruments for high-value use of bio-based raw materials. The Ministry of Agriculture, Nature and Food Quality (in Dutch: Ministerie van Landbouw, Natuur en Voedselkwaliteit or LNV) is working on increasing the availability of sustainable bio-based raw materials from the Netherlands, in conjunction with measures to promote new revenue models for agriculture. Besides this, this Ministry is working together with several other ministries to promote high-value use of biotic residual flows and sustainable bio-based raw materials, and the government is exploring whether the sustainability framework for bio-based raw materials can be extended to cover all applications (i.e. including food, animal feed, textiles and paper), in line with the SER advisory report '[Biomass in the Balance](#)'. As a result, we can make a comprehensive assessment when choosing between the various uses of sustainable renewable raw materials. At the same time, the government intends to initiate a study to identify how many bio-based raw materials are required for the circular transition and how this relates to the availability of sustainable bio-based raw materials.



Table 3: Measures relating to substituting raw materials

	Standard-setting	Pricing	Stimulus
Continuation and intensification of policy			
We will aim to impose European minimum sustainability requirements on ever more products, including a mandatory percentage of recyclate or sustainable bio-based raw materials. We will do this via the ESPR (to be elaborated for specific product groups, starting with priority product groups), or via sectoral legislation (such as the Packaging Directive).	■	■	■
We will work on the implementation of sustainability criteria for the production of sustainable bio-based raw materials.	■	■	■
We will elaborate the Routekaart Nationale Biogrondstoffen [Roadmap for national bio-based raw materials] to increase the availability of sustainable bio-based raw materials from the Netherlands.	■	■	■
New measures			
We will explore the promotion of sustainable CCU applications (Carbon Capture Utilisation) in products and production processes.	■	■	■
We will examine whether the sustainability framework for bio-based raw materials can be extended to include food, animal feed, textiles and paper.	■	■	■
The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.			

2.1.3 Extending product lifetime

The circular design and the repairability of products affect their longevity. In 2030, circular design must be common practice for industry in the Netherlands. Over the coming period, we will therefore need to focus on 1) the development, active unlocking and use of design methodology, applied knowledge and tools, and 2) the creation of incentives (legislative and otherwise) to encourage entrepreneurs to actually use circular design.

If products are sustainable, it is important that citizens and businesses know about this, so that they can consciously choose to use sustainable products. The enhancement of information on product sustainability (for consumers and other parties) is therefore essential. In addition, it is important that sustainability claims are justified rather than being misleading or unfounded ('greenwashing'). The European Green Claims proposal, which is expected to be published in 2023, will specifically address this matter. Moreover, the Circular Materials Plan (in Dutch: *Circulair Materialenplan* or CMP), which will replace the current National Waste Management Plan (in Dutch: *Landelijk Afvalbeheerplan* or LAP), will contain better information on specific material flows. All relevant information on a specific flow, from design to processing, will be included in a value chain plan.

In the area of lifetime extension, too, creating awareness among citizens is necessary to promote circular behaviour, so that people will have a defective product repaired rather than discarding it, for example. This requires a situation where repair is the most obvious, easy and fair option. The sector has a role to play here as well in terms of circular business models and the sharing economy, so that the consumer will opt for reusable, second-hand or refurbished products and will give products a second life. For citizens and businesses it has to be clear how they can use, maintain and repair their products themselves as well as possible, or where they can go to have this done. This also needs to be more attractive financially than the purchase of a new product.

Give-away shops and second-hand shops offer the possibility to hand down products which have nothing or very little wrong with them. And via platforms like Marktplaats or Vinterd, people can sell or buy a whole range of used products as well. Besides vintage shops we now also have large businesses that make it possible to sometimes buy second-hand ('second-chance') products.



To ensure that we use products for longer, the current policy provides for subsidies to be offered to networks promoting lifetime extension, like circular craft centres and repair cafés. A circular craft centre is a location or network where parties like municipal waste collection facilities (in Dutch: *milieustraten*), second-hand shops, repair specialists, educational institutes and the social domain work together on reducing waste flows and realising high-value reuse of products and materials. This occurs at municipal level but also regionally and nationally. Other networks contribute substantially to product lifetime extension as well. Think of repair cafés, repairer networks, sharing platforms and second-hand selling platforms. For such initiatives, policy is aimed at, among other things, eliminating questions about the waste status of materials by clarifying under what conditions continued use is possible.

At European level, the legislative proposal for the ESPR mentioned previously also includes measures to enable prolonged use of products, for instance by making them more robust and easier to repair. For example, for product groups which are covered by the ESPR, digital product passports will become mandatory, so that repair information (like manuals), information on material use and composition for recycling purposes and the sustainability score can be found in a single place, in digital form. It is also possible to require producers to keep spare components available for a specific number of years. Moreover, the ESPR discourages the destruction of unsold goods: businesses have to report on this. The Netherlands is aiming for a tightening here, where the destruction of unsold goods will be prohibited unless it is the most sustainable solution.

Table 4: Measures relating to extending product lifetime

	Standard-setting	Pricing	Stimulus
Continuation and intensification of policy			
We will argue for an ESPR with extensive possibilities for circular product design to achieve lifetime extension, disassemblability and repairability.	■	■	■
In the Circular Materials Plan we will include value chain plans for various material flows, which will describe all phases of a material in the closed loop: from better design to processing.	■	■	■
We will support circular design with the development and consolidation of the CIRCONNECT platform and CIRCO Hubs in 2023, and will explore the continuation thereof.	■	■	■
We will give subsidies to the public information body Milieu Centraal for the implementation of the Sustainable Consumption framework programme in order to provide independent information to citizens to improve their sustainable and circular action perspective.	■	■	■
We will provide specific payments to municipal authorities for circular craft centres with the aim of realising a network of circular craft centres with nationwide coverage by 2030.	■	■	■
We will draw up a guideline for municipal waste collection facilities so that they can better assess when something concerns continued use of discarded products.	■	■	■
We will provide subsidies for professional support offered to repair volunteers (i.e. in repair cafés).	■	■	■



New measures	Standard-setting	Pricing	Stimulus
Together with the association of technical service providers (Techniek Nederland), we will develop a registry of repairers where consumers can find certified repair technicians.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will aim to impose clear statutory requirements for the justification of sustainability claims via the European Green Claims proposal, so that greenwashing can be restricted.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We will explore the option of requiring retailers to offer an increasing percentage of second-hand products (either at EU level or at national level).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

2.1.4 High-grade processing

If a product or material is disposed of or discarded, it concerns waste. The owner wants to get rid of it. In a circular economy, where we will use products and materials for as long as possible, we will still have some waste: there will always be products and materials which are no longer of use to the owner and which they want to get rid of. In a properly functioning circular economy, this waste can be reused ever more often; it will be kept within the economy. We will try to keep products in their original condition and use them for the same purpose for as long as we can. If this really isn't an option any more, we will process the materials as well as possible, so that they can be used again in a different capacity. We will only incinerate or landfill waste if recycling is no longer an option for technical or economic reasons. The same applies to materials which are not suitable to be used for the production of other materials because of the environmental impact or the impact on people's health. Reusing materials while protecting people and the environment will be our main priority in our waste management. The National Waste Management Plan describes the general way in which waste is managed in the Netherlands. For specific materials it describes what the minimum processing standard is.

Table 5: Measures relating to high-grade processing

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
The government will use circular and climate-neutral procurement criteria in a better and stricter way. Where necessary and where possible, we will ensure the further development of the necessary criteria (also see Section 4.4).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

Waste separation and collection

Good waste management starts with proper separation and collection of discarded products and materials. With the VANG programme, we are working to achieve more and better separation of household waste and waste from the office, shops and services sector. If we separate waste more and better, the quality of the different waste flows will improve. As a result, we can use resources and materials for longer, we can use high-grade recycling, and there will be less residual waste. This will help us prevent the incineration or landfilling of valuable raw materials. In addition, we are trying to reduce the amount of waste via prevention measures. Both citizens and the office, shops and services sector contribute to this by providing waste that has been separated as well as possible. Municipal authorities encourage their residents to separate waste properly, by offering suitable collection methods and by communicating, influencing behaviour and providing financial incentives. Collectors take care of the collection of optimally separated waste flows while causing as little pollution as possible. This maximises the chance of keeping these flows within the economy. Milieu Centraal fulfils a supporting role by providing independent, scientifically backed communication on this to citizens. The European Circular Economy Action Plan states that the Commission will propose to harmonise separate collection systems. Think of the harmonisation of collection methods, education campaigns and harmonised symbols for important types of waste that correspond with product labels.



In 2021, a new deposit system (return & reward system) for plastic bottles was introduced, via which virtually all small bottles can now be returned as well. A similar system is being introduced for cans. Proper waste collection and the use of deposits also help prevent litter and contribute to the realisation of clean separated flows that enable high-grade recycling.

The Ministry of Infrastructure and Water Management is currently conducting research into the composition of waste from the office, shops and services sector, to be able to develop more even targeted policy for this. We are also developing an implementation programme to scale up the approach to waste generated by the office, shops and services sector, which will run up to 2025.

To improve the quality of separated waste flows, we are drawing up uniform lists for what should and what should not end up in separate waste flows. Subsequently, we will ensure that all municipal authorities and waste collectors will use these lists in their communication with residents, businesses, schools, civil society organisations and institutions.

In close collaboration with ProRail and NS, we are working on the realisation of waste-free train stations by 2040. In this process, all relevant parties at and around the stations will be involved to ensure that waste at stations and in trains is collected separately. In addition, we will ensure that as little waste as possible is generated, for example by promoting the use of reusable cups.

We are currently exploring the possibilities and impossibilities of more national standardisation of waste separation and collection. This exploration will be completed in late 2023. We are also investigating whether it is possible to introduce quality requirements for collected vegetable, fruit and garden waste. These results are expected in 2023 as well.

With a 'yes-yes' sticker on their mailbox, residents can actively indicate that they do want to receive unaddressed printed advertising materials. This measure will prevent a lot of paper ending up in the bin unnecessarily. For this reason, we are currently exploring whether nationwide introduction of such a sticker is possible.

Table 6: Measures relating to waste separation and collection

	Standard-setting	Pricing	Stimulus
Continuation and intensification of policy			
We will conduct research into the composition of waste from the office, shops and services sector, to be able to develop even more targeted policy for this.	■	■	■
We will develop an implementation programme aimed at the scaling up of the approach to waste generated by the office, shops and services sector, and will implement this during the period up to 2025.	■	■	■
We will draw up uniform dos & don'ts lists for separate waste flows and we will do our best to have all municipal authorities and waste collectors use these lists in their communication with residents, businesses, schools, civil society organisations and institutions.	■	■	■
Together with ProRail and NS, we will work on the realisation of waste-free train stations by 2040.	■	■	■
New measures			
We will explore the possibilities and impossibilities of more national standardisation of waste separation and collection.	■	■	■
We will look into the possibility to introduce quality requirements for collected vegetable, fruit and garden waste.	■	■	■
We will explore whether nationwide introduction of a 'yes-yes' sticker is possible, to prevent paper wastage.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.



Recycling

In the Netherlands we produce about 60 million tons of waste per year. Some 80% of that is recycled. At the same time, there are still significant challenges in the area of recycling, including the process to increase high-grade recycling and recycling of urban waste (household waste plus waste from the office, shops and services sector). The EU Waste Framework Directive provides that Member States must recycle 55% of their urban waste in 2025, 60% in 2030, and 56% in 2035. In 2020, the Netherlands recycled about 50% of its urban waste. In other words, we are certainly on the right track, but we have not reached the European target yet. We still incinerate a considerable amount of waste that is potentially suitable for recycling, and we would like to have more processing capacity for recycling in Europe.

To ensure that more raw materials remain in the value chain for recycling instead of being incinerated or ending up as litter in the environment, we are making use of the instrument of Extended Producer Responsibility (EPR). With the EPR we are making producers of each product group responsible for the collection and recycling of used products, and the costs thereof. In the EPR scheme, minimum targets for things like collection, recycling and/or reuse can be included as well. A statutory EPR already applies for the product groups of cars, car tyres, packaging, batteries and accumulators, and electrical and electronic equipment. As of 2023, an EPR will also apply for packaging from the office, shops and services sector, for disposable plastics, and for textiles. In addition, we are developing EPRs for nappies and incontinence materials. We are exploring the possibilities for the product groups of furniture, agricultural film and floor coverings. For a number of flows, producers have set up a producer responsibility themselves, without a statutory EPR being applicable, and this producer responsibility has been declared universally binding. (This applies to flat glass, paper and cardboard, as well as mattresses.) Universally binding means that the responsibility applies to all producers of the product group in question. However, the targets included in it by the sector do not have a legal basis and are therefore not enforceable.

Even though the EPR as a policy instrument enjoys broad support, we are increasingly seeing signals that its implementation can be improved. Therefore, we are taking stock of the problems experienced by various stakeholders in relation to the EPR, which means, among other things, that we are looking at the role of municipal authorities and how they can be supported, without removing the responsibility (in full or in part) from producers. In the first half of 2023, the House of Representatives will be informed about the results of this process. In Chapter 3 we will further address the use of the EPR for specific product groups.

An EPR may also encourage producers to look for alternatives to the use of hazardous substances in products, if those substances complicate recycling. After all, this leads to additional costs for producers, or makes it more difficult for them to achieve their targets. This is mainly relevant in the case of SVHCs. As we indicated above, product design is the phase that is especially suitable for ensuring that SVHCs are no longer used in new products (minimisation and prevention). However, we will continue to be faced with a legacy from the past for quite a while; previously, the harmful nature of chemical substances did not receive as much attention and was not as well-known as it is today. SVHCs were generally only recognised as such after they had been processed in products on a vast scale. Over the coming decades these products will continue to end up in the waste phase. Waste flows with these 'legacy substances' must be recycled with the utmost care, removing the SVHCs where possible. If this cannot be done and the materials remain in the closed loop, we cannot allow the presence of the SVHCs to pose more than a negligible risk to people and the environment. To support businesses and competent authorities in this, the National Waste Management Plan (and the supplementary guidance) contains directions for a risk assessment.

There are higher and lower grades of recycling. High-grade recycling leads to high-quality products being placed on the market which can subsequently be processed and applied in a high-value manner as well. In this case the material is largely retained within the value chain. Think of bottles made of collected glass, or plastic waste that can be reused in new glass and plastic bottles. Recycling is of a lower grade if the possibilities for retaining materials for the value chain are not used optimally. Sometimes materials and products are used in such a way that they end up being destroyed quite quickly, sometimes after being used just once. Because of the lack of a better technical solution we are currently making fuel from some discarded materials, for example. With a view to the retention of materials, the difference between the immediate incineration of discarded materials and their use as fuel is minimal. Therefore, we will continue to aim for the highest possible grade of product and material recycling. For example, we prefer recycling of a material after which part of it needs to be landfilled over 100% incineration of that material without any recycling. In the Circular Materials Plan (CMP) we are paying specific attention to the distinction between high-grade and low-grade recycling and the preference for recycling with residual landfilling over full incineration of a material flow. Moreover, we want to increase the minimum standard, as the lower limit for the processing method, sooner for innovations. Guidelines and ministerial regulations which lay down under what conditions a processed material can be used will only be drawn up from now on in case of high-grade recycling. As was mentioned briefly for the collection of waste, proper source separation and proper sorting of waste flows will help us in this regard.



In Europe and internationally, we are also focusing on high-grade processing. With the revision of the European Waste Shipment Regulation, we want to make it possible to aim for all our waste in the EU being processed in the best possible manner. Think of only allowing waste export from the EU if that waste can be demonstrably processed in accordance with EU requirements. For waste transports within the EU, we will focus on high-grade processing of waste based on national minimum standards, to give innovative processing methods a chance. We will also pay attention to minimisation of the administrative burden for businesses and supervisory authorities, and to improving enforcement with regard to waste shipments, among other things via digitisation. In addition, we want to introduce a ban on the destruction of unsold goods via the ESPR.

Table 7: Measures relating to recycling

	Standard-setting	Pricing	Stimulus
Continuation and intensification of policy			
We will strengthen the EPR instrument by exploring how we can focus this instrument more on reuse and repair and improve its implementation.	■	■	■
For the Circular Materials Plan:			
<ul style="list-style-type: none"> We will better distinguish between high-grade and low-grade recycling and will include this in the minimum standards. We will explore the possibilities for choosing recycling with residual landfilling over 100% incineration. We will explore the option of increasing the minimum standard more rapidly so that innovative businesses are supported in their efforts to attract sufficient supply. 	■	■	■
Ministerial regulations or guidelines that clarify whether or not a material is waste will from now on only be drawn up for high-grade recycling initiatives.	■	■	■

Standard-setting	Pricing	Stimulus
Continuation and intensification of policy		
For the revision of the European Waste Shipment Regulation, we will argue for the following points: <ul style="list-style-type: none"> Exporting waste from the EU will only be permitted if that waste can be demonstrably processed according to EU requirements. For waste shipments within the EU, we want to focus on high-grade processing of waste based on national minimum standards, in order to give innovative processing methods a chance. Via digitisation, among other things, we want to minimise the administrative burden for businesses and supervisory authorities as well as improving enforcement with regard to waste shipments. 	■	■
We will see whether further tariff increases in the waste tax that will be introduced in 2027–2029 will make recycling a more rewarding alternative.	■	■



New measures	Standard-setting	Pricing	Stimulus
We will start a stimulus programme for the development and scaling up of recycling and reuse ⁴⁸ .	■	■	■
We will promote the set-up of a circular plastics and textiles hub ⁴⁹ .	■	■	■
We will prevent the incineration or landfilling of recyclable materials by closing a specific material value chain via a targeted set of measures. In this context: <ul style="list-style-type: none"> • We will pay extra attention to plastics and plastic packaging, paper and cardboard, construction and demolition waste⁵⁰, vegetable, fruit and garden waste, and nappies. • For each material we will use a combination of targeted actions in the entire value chain. Measures which will be explored include mandatory source separation, subsequent separation and/or sorting, collection requirements, certification of sorting processes, financial incentives, and mandatory recycling percentages by means of EPRs (or increases thereof). • As a tail piece, we will consider getting ‘an extra lock on the door’ in the form of a material-specific incineration ban. 	■	■	■
We will aim to tighten the ESPR with a ban on the destruction of unsold goods, unless a business can demonstrate that this is the most environmentally friendly way of processing.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

⁴⁸ Also see Section 2.2.2. – Measures that help achieve national climate goals.

⁴⁹ In conjunction with the measure: “Creating a possible levy on plastics, including polymers.”

⁵⁰ On behalf of Rijkswaterstaat, BRBS Recycling has investigated how a sort of construction and demolition waste should operate to recycle more waste and incinerate less. Further research will be aimed at finding out how such an approach can be embedded.

Incineration

In a circular economy, we want to keep materials in the value chain for as long as possible and destroy as few materials as possible via incineration. After all, we do not want raw materials to be lost, but rather for them to stay in the economy for as long as possible. Plus, waste incineration brings with it harmful emissions, and bottom ashes remain.

And yet, in the circular economy some waste incineration will still be necessary. Therefore, waste incineration should be accessible and affordable for materials that we cannot process in another way. Think of hazardous waste, special hospital waste and residues from sewage sludge and recycling. The capacity needed for this will be considerably smaller than the incineration capacity we have at present, though. What’s more, our current ample incineration capacity has an inhibiting effect on the development of higher-grade material processing.

Thanks to our active focus on reducing raw material usage, extending product lifetime, improving collection and conducting more high-grade recycling, as described in the previous sections, we have been able to gradually reduce the amount of materials to be incinerated. Along with this, the required incineration capacity is decreasing as well. We now actually want to accelerate the reduction of our incineration capacity, and for this we are looking at measures we can take at national and at international level. In any case, it should no longer be possible to add more incineration capacity in the Netherlands. We are also looking into the possibilities for gradual reduction of the incineration capacity on a voluntary basis. In addition, we want to see how we can find a balanced way to render the incineration of waste less attractive financially via waste tax, so that better-grade processing will be more rewarding. In this we are keeping an eye on negative effects such as more expensive waste processing without the expected development of a higher-grade type of recycling and a possible increase in environmental crime.

We also want to create a level playing field internationally by requiring all EU countries to charge for waste incineration.

There is a strong link between reducing waste incineration and reducing carbon emissions. In Section 2.2 we will address the contribution of a circular economy, including waste incineration, to the achievement of the climate goal. In this context, the avoidance of lock-in effects is an important element.



Table 8: Measures relating to incineration

New measures	Standard-setting	Pricing	Stimulus
We will explore the possibilities for promoting a reduction of the excess capacity of waste incineration plants ⁵¹ .	■	■	■
We will impose a moratorium on the current incineration capacity, so that the existing capacity at least cannot be further expanded.	■	■	■
We will explore the possibilities for increasing the waste tax for incineration, and the effects thereof, to support higher-grade processing.	■	■	■
In a European context we will strive for an obligation to charge for waste incineration in all EU countries.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

Landfill

Like incineration, we also want to prevent the dumping of waste in landfills as much as possible in a circular economy. However, we expect that landfilling will continue to be necessary for resources and materials that cannot be processed in another way. For example, there are certain materials that we would rather remove from the value chain because of substances used in the past. In addition, after recycling we are often left with a residue that can no longer be used for anything and that may be highly contaminating. If we take these harmful substances from the past or residues out of the closed loop of materials by landfilling it in an environmentally friendly way, without any harmful emissions into the soil, water or air, this will ensure proper protection of people and the environment, and will help realise a clean economy. For this reason, it is important that

landfilling remains available and affordable, although we need to take care that landfilling of materials that can be better processed in another way does not become too attractive. This demands a fine balance.

At the moment we are examining what the development of the landfill capacity in the Netherlands will look like over the coming years. In a work programme, we want to address a number of points for attention that may potentially obstruct the proper functioning of the landfill market. Think of increased recycling that also causes an increase in residues that can only be dumped, easy granting of landfill exemptions, the lack of an acceptance duty for landfill operators, the risk of there being a monopoly of a limited number of landfill operators which may push prices upward, useful application of waste on landfills, the available landfill capacity for emergency situations, and the possible adjustment of technical guidelines for sealing, for example. In Europe, we want to create a level playing field for landfilling in all EU countries by arguing for a financial charge for landfilling in all EU Member States.

Table 9: Measures relating to landfill

New measures	Standard-setting	Pricing	Stimulus
We will draw up a work programme containing concrete measures for the landfill market.	■	■	■
In a European context, we will strive for an obligation to charge for landfilling in all EU countries.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

⁵¹ Also see Section 2.2.2 – Measures that help achieve national climate goals.



2.2 Elaboration of an ambitious climate goal for a circular economy

The transition to a circular economy is vital if we want to tackle the climate and energy challenges in the Netherlands – not just to reduce the emissions associated with the use of raw materials, but also to ensure sustainable use of raw materials which are needed for the energy transition in order to reduce greenhouse gas emissions. By focusing on national and international sustainable, circular value chains and facilitating them, our policy for the circular economy helps us tackle both the global climate challenge and the national climate goals.

2.2.1 Emission reduction in the value chain

Following on from the Paris Agreement, the national climate goal will be determined based on the territorial emissions, or ‘stack emissions’. Due to the focus of our current climate policy on those stock emissions, little attention is paid to the value chain as a whole, even though half of the global greenhouse gas emissions are caused in international value chains, by the extraction and processing of biotic and abiotic raw materials⁵². The transition to a circular economy may result in a strong decrease in emissions in various places in the value chains (which often branch out internationally). Therefore, the government wants to actively encourage businesses to not only reduce their direct emissions, but also the emissions elsewhere in their value chains (*International Climate Strategy*).

The lack of a value chain approach in our current climate policy has various consequences. For one, it leads to a situation where basic industry in the Netherlands is not fully sustainably, and therefore to a delay in the achievement of the national climate goals (see the example below). In addition, the reduction potential of fundamental changes in global product chains is being insufficiently utilised, and the transition to a circular economy is progressing insufficiently as well.

Example: base chemicals

The Netherlands is very active in the base chemicals industry; there are several refineries and naphtha crackers in the country, for example. A characteristic of this industry is that the fossil resources petroleum and natural gas are used both for semi-finished products and for process energy. This process energy leads to stack emissions (scope 1), and the semi-finished products lead to emissions further on in the value chain during waste incineration.

To strongly reduce emissions in the product chain, these businesses will need to make their raw material usage more sustainable. One of the ways to achieve this is by replacing part of the fossil resources with recyclate or sustainable bio-based raw materials (both of which are more expensive).

This results in a limited scope-1 emission reduction, but mainly in a significant emission reduction later on in the value chain. However, at present businesses are in no way awarded for the use of these more sustainable products that lead to a significant scope-3 emission reduction. As a consequence of this, the sustainable development of the raw material usage of the base chemicals industry is stagnating, and this affects the rest of the chemical industry, which in turn uses the products of the base chemical industry as raw materials. In short, recognition of scope-3 emissions would provide an incentive to the chemical industry for improving the sustainability of their raw material usage. This would result in a significant reduction in the value chain (scope 3) as well as in a reduction of the scope-1 emissions in the chemical industry.

Therefore, the government wants to work towards sustainable and circular value chains which help us tackle the national and global climate challenges, by rewarding value chain emission reductions. For this purpose, the government is committed to reducing the Netherlands’ greenhouse gas footprint. The greenhouse gas footprint uses a value chain approach in order to identify which emissions can be reduced by Dutch citizens and businesses. The footprint also offers insight into the emissions in the value chains where Dutch businesses have an action perspective for reduction⁵³.

52 See ICER 2021.

53 https://www.pbl.nl/sites/default/files/downloads/pbl-2021_trends-in-nederlandse-voetafdrukken-een-update_4734.pdf



The first steps are already being taken. For example, the most promising, relevant value chains for the Netherlands which are associated with the most emissions are being examined, and case studies are being done. We are also listing the value chains and cases with the best opportunities for reducing value chain emissions.

With this input, the government is also elaborating the approach to value chain emissions. In this regard, we are examining how value chain emissions can be approached using existing instruments, and we are looking into new concrete policy instruments that focus on raw material usage and therefore on the reduction of value chain emissions. To reduce the greenhouse gas footprint, replacement of primary, abiotic raw materials with secondary raw materials and bio-based raw materials is vital, among other things. For this reason, a target aimed at substitution will also be elaborated as part of the specification of targets for the circular economy (see Chapter 1). The government will use targeted instruments, among other things to promote the production and use of secondary and bio-based raw materials in the carbon chain.

In this context, we are also looking at opportunities and developments in Europe that we can link up with. After all, the Netherlands cannot make value chains more sustainable on its own and has to work within the playing field of European policy. Therefore, the government is putting the importance of having a value chain emission approach on the agenda of the European Commission and regularly consults with the Commission on various developments in this area.

Businesses play an important role in reducing emissions in the value chain. In consultation with them, we are offering as much clarity as possible on the government's responsibility versus that of businesses, including the financial sector, for reducing value chain emissions. Important questions in this regard may be: to what extent can businesses influence emissions in the value chain, and how can businesses be encouraged to reduce their value chain emissions? The National Institute for Public Health and the Environment (in Dutch: Rijksinstituut voor Volksgezondheid en Milieu or RIVM) has conducted an initial exploration in this regard⁵⁴.

One of the problems with value chain emissions is the lack of a standardised, easy-to-use system for establishing the value chain emissions of a business. For this the government is developing two methods: (1) carbon accounting combined with calculation rules or emission factors⁵⁵, and (2) a tool for determining the emissions of innovative technologies in industry.⁵⁶

2.2.2 Measures that help achieve national climate goals

Circular measures also have an effect on value chains in the Netherlands. Nationally, we are seeing that circular measures can contribute significantly to the achievement of the government's target to realise an emission reduction of at least 55% by 2030. A number of measures will probably already result in a structural carbon reduction of at least 2-4 Mtons in the short term.

The measures that can help us achieve the national climate goals in the short term focus on both the front and the back of the value chain, and include accompanying policies aimed at knowledge development, innovation, skills and behaviour. These measures were previously mentioned in the *Coalition Agreement*, the *policy programme of the Ministry of Infrastructure and Water Management* and the *draft climate policy programme*.

The extraction of primary abiotic raw materials and the processing of these raw materials into usable materials often cause a lot of emissions. Measures that help us reduce the amount of primary abiotic raw materials used can therefore also have a considerable climate effect as well. Think of the promotion of reuse and the use of a mandatory percentage of recyclate in construction by the Central Government Procurement Service (in Dutch: Rijksinkoop). The government can play a major role in promoting climate-neutral and circular infrastructure for public contracts in the area of Civil Engineering (in Dutch: Grond-, Weg- en Waterbouw or GWW). A more rapid realisation of circular plastics value chains can make a significant contribution as well. A combination and pricing and stimulus measures ensures that the use of primary fossil plastics is phased out and promotes the development of a healthy market for secondary plastics (recyclate) and bio-based plastics.

54 <https://www.rivm.nl/documenten/minder-uitstoot-broekgasgassen-in-hele-keten-verkenning-voor-beleid-o>

55 [Onderzoek Koolstofboekhouding rekenregels](#) [Study into carbon accounting and calculation rules], by Rebel Group.

56 [Tool voor emissies innovatieve technologieën](#) [Tool for emissions of innovative technologies], by TNO.



At the back of the value chain, it is vital to promote the development and scaling up of recycling. In addition, it is important to phase out the excess capacity of waste incineration plants in order to reduce waste incineration and consequently carbon emissions as well.

To maximise the contribution of circular measures to the fight against climate change, the technological and social knowledge of circular measures needs to be further developed. Knowledge development and innovation need to be facilitated. The subsidy scheme for 'Circular value chain projects' and the budget increase for the MIA/Vamil schemes for innovation will contribute to this, but more money is needed. The government can lead by example in this by promoting knowledge, skills and behaviour that is suitable for a circular economy. See Section 2.1 for a further elaboration of these measures.

Together, these measures may already result in a structural carbon reduction of 2-4 Mtos in the short term. Decision-making on the measures to be implemented in the context of the climate challenge will take place in the spring of 2023.

Table 10: Measures relating to the ambitious climate goal

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We will structurally continue the subsidy scheme for circular value chain projects.	■	■	■
We will increase the budget for the MIA/Vamil schemes.	■	■	■
We will aim to phase out excess capacity for waste incineration at incineration plants.	■	■	■
We will introduce an EPR for nappies and incontinence materials.	■	■	■
We will facilitate knowledge development and innovation.	■	■	■
We will promote circular knowledge, skills and behaviour that is suitable for a circular economy.	■	■	■

New measures	Standard-setting	Pricing	Stimulus
We will initiate a stimulus programme for the development and scaling up of recycling and reuse.	■	■	■
We will promote reuse and the use of recyclate in construction materials together with the Central Government Procurement Service.	■	■	■
We will explore further promotion and standardisation of circular and climate-neutral execution of public Civil Engineering contracts.	■	■	■
We will examine the possibilities for taxing the production of plastics from fossil raw materials, combined with a stimulus measure for the set-up of a circular plastics and textiles hub.	■	■	■

Decision-making on the measures to be implemented in the context of the climate challenge will take place in the spring of 2023.

2.2.3 Strengthening the links between circular economy policy and climate policy

In view of the contribution of a circular economy to our efforts to tackle the climate challenge, the environmental challenge, biodiversity and security of supply, we are adopting an integral approach to the links with these other transitions. As was mentioned in the Coalition Agreement, the government wants to specifically strengthen the links between circularity and climate policy. In this way, the government offers businesses and organisations the option of introducing climate-neutral, circular, future-proof business processes. The basis for this is the focus on the carbon chain (including production, reuse and recycling as well as alternatives to plastics) and on critical raw materials.



Instruments

Various advisory bodies and knowledge institutes, like the SER⁵⁷ and PBL⁵⁸, describe the interaction between the two transitions and indicate points for improvement for a better balance between them. The government is taking these to heart. We are analysing the main bottlenecks and addressing these, and we are examining how the mutually reinforcing effects of the two transitions can be better utilised. A number of bottlenecks have to do with differences in policy focus (energy versus raw materials, direct emissions versus value chain emissions) and the elaboration thereof into market incentives. In other words, where can circularity, including secondary and sustainable bio-based raw materials and value chain emissions, be better included in the climate instruments, and vice versa? As a result of our climate policy, entrepreneurs are now more inclined to opt for transitional techniques, like Carbon Capture & Storage (CCS) and secondary and sustainable bio-based raw materials. They are postponing investments that will structurally improve the sustainability of the entire production process. Among other things, the government wants to strengthen the links by analysing in case of new instruments how both emission reduction and circularity can already be incorporated into the design. Moreover, the government is analysing the possibilities for better cohesion at European level.

Climate sectors

The governance of our climate policy is structured based on five climate sectors (Energy, Industry, the Built Environment, Agriculture and Land Use, and Mobility). The circular efforts made at product group level and in sub-sectors are relevant for the challenges faced by the climate sectors, and the other way around. To make the best possible use of the synergies between circular economy and climate, it is therefore important to also work together with the climate sectors (and other parties) to strengthen the links between the transitions.

57 SER foresight study: *Evenwichtig sturen op de grondstoffentransitie en de energietransitie voor brede welvaart* [A balanced focus on the raw material transition and the energy transition for broad prosperity].

58 PBL report: *Hoe kan circulaire-economiebeleid bijdragen aan de klimaatdoelstelling?* [How can circular economy policy contribute to the achievement of the climate goals?].

Energy transition

For the energy transition it is essential to shape solutions in a circular way in connection with the security of supply of critical metals and other essential resources, and to ensure that they do not end up in waste incinerators or abroad. There is an important link with the National Raw Materials Strategy here. One of the design principles of the National Energy System Plan (in Dutch: *Nationaal Plan Energiesysteem*) is therefore that conditions are to be imposed on circular and sustainable use of raw materials in the future energy system. For example, this demands a commitment to high-grade recyclability and recovery of raw materials from wind turbines and solar panels. The availability risks will also diminish if we extend the lifetime and useful application of products and if we promote the search for alternatives to critical metals. The introduction of product passports, which is currently being planned in the EU, may be a good tool as well.

Mobility

For mobility, too, security of supply is very important. If we promote reuse and high-grade recycling of accumulators and if we have a second-hand market for electrical and other vehicles, this will help reduce the use of primary abiotic raw materials, like critical metals. Particularly in urban logistics, there is a lot of ground to be gained. In addition, an important question in relation to mobility is how we can use modes of transport (which consume energy) more efficiently, for instance through shared use.

Industry

To make industry more sustainable, it is important to reduce the use of primary abiotic raw materials. This will lead to fewer carbon emissions in the entire value chain, both within and outside the Netherlands. The creation of sustainable, circular growth and end markets for the use of recyclate and sustainable bio-based alternatives is therefore essential – to replace fossil raw materials, but also to keep scarce raw materials and critical metals in the closed loop. Therefore, it is vital to focus on possibilities for reducing raw material usage and waste generation, to promote high-grade recycling and to extend the lifetime of products in the design process.

Agriculture

In the transition towards circular agriculture, agriculture and the circular economy intersect. Among other things, the Ministry of Agriculture, Nature and Food Quality is working on increased use of residual flows in order to depend less on external inputs, and on reducing emissions into water, soil and air. In addition, the Ministry endeavours to increase the supply of sustainable bio-based raw materials from the Netherlands and,



in collaboration with other ministries, promoting high-value applications. For example, the Ministry is aiming for a greater production of fibre plants in Dutch agriculture which can then be used in construction. Moreover, it remains important to aim to reduce food wastage and to promote self-sufficiency for plant-based proteins in the Netherlands as well as the consumption of these proteins. Furthermore, it is important to make agricultural practices, like the use of agricultural and horticultural film, sustainable. This will be further explained in Chapter 3.

Built environment

In the built environment, the use of insulation and construction materials based on circular and sustainable bio-based raw materials is good practice. It increases the security of supply of raw materials and reduces value chain emissions.

2.3 Regional efforts

Now that we are entering the next phase of the circular transition, the government and local and regional authorities really need each other to learn together, develop together, and test policy in practice. Several studies have shown that regional activities contribute strongly to the achievement of CE targets in general, and that this potential can be further extended.⁵⁹ After all, all national CE policy must be implemented at regional or local level as well in the end, and the regional scale allows us to better penetrate all levels of the economy, the labour market and policy. Activities of the Circular Netherlands Accelerator! and knowledge development by the environmental agencies (in Dutch: Omgevingsdiensten) contribute to this, among other things.

In addition, there are plenty of examples which demonstrate that the regions are actively working on the realisation of a circular economy. For instance, the IPO ‘Power Map’ for the circular economy (in Dutch: IPO Krachtenkaart CE) and provincial opportunity maps address, among other things, circular procurement and tendering, circular consolidation of the National Strategy on Spatial Planning and the Environment (NOVI) and the implementation practice regarding permits, supervision and enforcement, and support for regional businesses in the circular transition.

59 <https://www.pbl.nl/publicaties/integrale-circulaire-economie-rapportage-2021> and <https://www.pbl.nl/publicaties/samen-leren-in-de-regio>.

Another example is the circular legal platform called CircuLaw⁶⁰, where best practices and guidelines are shared for the application of legal instruments, so that regional and local authorities can learn from each other. Moreover, the Association of Provinces of the Netherlands (in Dutch: Interprovinciaal Overleg or IPO) is working together with other parties to create an action agenda to accelerate the circular transition of small and medium-sized enterprises in the regions. In addition, regional parties are taking initiatives themselves to make production and consumption processes in their regions more sustainable. Together they have enormous purchasing power, especially when it is combined with that of the government.

These initiatives can be reinforced and scaled up when parties in the region will start working together more intensively. For this the government and local and regional authorities (IPO, VNG en UvW) will collaborate more closely on the streamlining of the circular economy in the regions, together with front-running municipal, provincial and water authorities. In 2023, they will present a joint action plan, including agreed roles, tasks and efforts of local and regional authorities, and they will explore whether an entity like the Circular Netherlands Accelerator! is needed for local and regional authorities. In this context, a parallel can be drawn with the offer determined by the regions in their Regional Energy Strategies (in Dutch: Regionale Energiestrategieën or RES). Like with the drawing up and implementation of the RES, it makes sense to work together at local level with, for example, regional development agencies and environmental agencies, civil society organisations, businesses and business associations, trade unions, recycling and waste processing companies, and others. Collaboration with the regional business sectors and research institutes is also essential if we want to accelerate the transition, as is collaboration between the different regions. For ‘smart’ learning and to draw lessons from previous inter-governmental collaborations like RES and the Inter-governmental Programme (in Dutch: Interbestuurlijk Programma or IBP), we are asking PBL to identify these for the circular transition.

60 Made by: Amsterdam Municipal Authority, Dark Matter Laboratories, EIT Climate KIC, the Provinces of Noord-Holland and Flevoland, the Netherlands Enterprise Agency (in Dutch: Rijksdienst voor Ondernemend Nederland or RVO), Amsterdam Metropolitan Area (AMA), the Dutch Tax Administration, TU Delft, University of Amsterdam, Erasmus School of Law, VU Amsterdam, Wageningen University, NEN (Royal Netherlands Standardization Institute) (<https://www.circulaw.nl/>).



For this we are building on, for example, the IPO ‘Power Map’ for the circular economy, the provincial opportunity maps, the Network of Regional Accelerators, and the ‘Action Agenda – All Small and Medium-Sized Enterprises Circular’ which is being developed, among others, by IPO, the Ministry of Economic Affairs and Climate, the Confederation of Netherlands Industry and Employers (VNO-NCW), the entrepreneurs’ organisation MKB-Nederland and the Association of Netherlands Municipalities (in Dutch: *Vereniging Nederlandse Gemeenten* or VNG). During the coming period we will examine, based on the substance, what the contribution of the regions might be exactly and how we can best reach agreement on this. Subsequently, we will lay down the arrangements made.

Learning and knowledge sharing are already taking place in regional networks. Knowledge sharing helps promote the scaling up and acceleration of the transition.⁶¹ For this we can build on, among other things, the knowledge network *De Verschilmakers* and examples mentioned previously. In addition, knowledge sharing between the government and the regions is vital. Think of a joint knowledge agenda, monitoring and ensuring that the available knowledge is shared and rendered accessible.

61 <https://www.pbl.nl/sites/default/files/downloads/pbl-2021-samen-leren-in-de-regio-q666.pdf>





Chapter 3

Measures for priority product value chains

In the government-wide programme ‘A Circular Economy in the Netherlands by 2050’, which dates from 2016, the focus was on five priority sectors and raw material value chains: biomass & food, plastics, manufacturing, construction, and consumer goods. These value chains were chosen for multiple reasons: because of their importance for the Dutch economy, because of their significant environmental burden, because in these sectors there was already a lot of social energy for the transition to a circular economy, and because they were in line with the priorities of the European Commission.

In the run-up to this NPCE, transition teams in these priority value chains selected the product groups with the strongest effects in the areas of climate change, environmental pollution, loss of biodiversity and supply risks.⁶² For these priority product groups they elaborated advisory roadmaps that include targets for each product group and routes for the achievement of these targets. Thanks to the focus on a number of product groups, it is expected that more impact can be made more quickly and that the sectors can be guided towards a circular economy more clearly.

In this NPCE, these product groups from the advisory roadmaps have been largely adopted. Only the product group of ‘chemical products’ in the product chain of ‘consumer goods’ has not yet been adopted, because here further elaboration is still needed for us to be able to set concrete targets (as is mentioned in the advisory roadmap as well).

The selection of product groups has been substantiated in several different ways in the priority value chains⁶³, because of differences in the demarcation of the product groups. The substantiation in Table 11 is based on the advisory roadmaps⁶⁴, using the most complete and recent data for each product group. As the knowledge on the environmental impact of these groups is still being developed, quite a few assumptions are underlying these data. This needs to be taken into account when these results are used. In addition, the various results cannot be compared or added up, because different data sources have been used and different types of assumptions have been made.

62 This approach is in line with the [advice from PBL](#) (see Chapter 1).

63 For example, for construction, construction works have been taken as the point of departure, which brings many different materials and structures together, and for plastics it concerns a large group of different types of plastics with many different applications.

64 [Advisory roadmap for plastics](#).
[Advisory roadmap for consumer goods](#).
[Advisory roadmap for construction](#).
[Advisory roadmap for manufacturing](#).



Table 11: Overview and justification of priority product groups

Transition agenda	Product group	Justification	Transition agenda	Product group	Justification
Plastics	Plastic packaging	30% of total volume of plastics in the market	Construction	Civil engineering works (starting with viaducts)	76 kttons of CO ₂ -eq on a total of 15,600 kttons of CO ₂ -eq in 2030
	Plastic and plastic waste in construction	28% of total volume of plastics in the market		Roads (starting with asphalt)	1,601 kttons of CO ₂ -eq on a total of 15,600 kttons of CO ₂ -eq in 2030
	Agricultural film	6% of total volume of plastics in the market, well-defined product group with a high collection/recycling potential, seasonal, generating microplastics		Housing	2,846 kttons of CO ₂ -eq on a total of 15,600 kttons of CO ₂ -eq in 2030
Consumer goods ⁶⁵	Electrical and electronic equipment	Potential for reduction by 5.52 Mtons of CO ₂ -eq on a total of 13.89 Mtons of CO ₂ -eq		Business premises / offices	1,277 kttons of CO ₂ -eq on a total of 15,600 kttons of CO ₂ -eq in 2030
	Textiles (including clothing)	Potential for reduction by 3.30 Mtons of CO ₂ -eq on a total of 7.15 Mtons of CO ₂ -eq	Manufacturing	Capital Equipment	Focusing on the full breadth of the manufacturing industry
	Furniture	Potential for reduction by 470 kttons of CO ₂ -eq on a total of 1.76 Mtons of CO ₂ -eq		Wind farms	<ul style="list-style-type: none"> Essential for the energy transition Concerns about sufficient availability of hardware and raw materials for realising the energy ambitions Security of supply for the energy transition receives insufficient attention elsewhere
	Packaging and disposable products	Potential for reduction by 1.01 Mtons of CO ₂ -eq on a total of 2.76 Mtons of CO ₂ -eq		PV power stations	
Manufacturing and Construction	Climate control systems (the generation, distribution and release of heat and cold in buildings including the control thereof)	Systems represent an ever greater share (up to 50%) of the environmental impact of a (new) building			

⁶⁵ The Consumer Goods Transition Team has made an estimation for each product group based on ambition (and not based on feasibility) of what CO₂-eq emission reduction could be realised in the entire value chain with 100% circular design, lifetime extension, and reuse or a ban on incineration plus improved recycling. In this estimation, the energy consumption during the lifetime of products has also been taken into account. Trends in consumption have not been considered.



In the sections below, the product groups are further elaborated and the measures taken by the government are listed. As a follow-up step, it would be good if local and regional authorities, businesses, trade unions, knowledge institutes, civil society organisations and financial institutions determined which contribution they want to make to the circular economy. This way, further acceleration can be organised in the achievement of the targets set. As was explained in Chapter 1, we need to conclude international as well as national agreements. To be able to determine what international actions are effective for achieving the targets of the product groups listed below, it will be established for each product group (based on the value chain in question) where the Netherlands needs to act internationally. These actions may be relevant for several product groups.

The measures may increase the intensity of the implementation, supervision and enforcement efforts. That is why we will involve the competent authorities in the further elaboration of the measures.

3.1 Consumer goods

Vision of the future for 2050 and 2030

The government is aiming for the realisation of a fully circular economy by 2050. For consumer goods this means that products will last for a long time because they can be reused, repaired and refurbished. Products will meet the most stringent circularity requirements, will be made of secondary and sustainable bio-based raw materials, and will contain no or only a minimum of SVHCs. Sharing economies and circular business models will be the standard and consumers will buy sustainable or second-hand products, use products for a long time and give them a second life. At the end of their lifetime, products will be collected for high-grade recycling, so that materials (especially critical ones) remain in the material cycle. By 2030 we should have taken a big step in that direction, with the greatest possible improvements in circular design, lifetime extension, reuse, repair, collection and high-grade recycling. For producers, the switch to circular revenue models will be an ever more obvious and economically viable choice, also for consumer goods, so that it will become easier for consumers to make a sustainable choice.

Challenges and opportunities relating to consumer goods

With regard to consumer goods, we often have international value chains, where production generally takes place outside the Netherlands, sales occur across borders, and the impact on the climate and the environment does not stay within one country either. Circular design, better longevity and high-grade recycling will help reduce emissions in the entire value chain and are an important precondition for having circular consumer goods. In addition, economic mechanisms (especially behavioural ones) play an important role: whether consumers actually opt for reuse, second-hand and repair and whether there is no circular rebound effect where consumers actually buy more products because they have been produced in a sustainable manner, for example.⁶⁶ A system change where circular business models and sharing economies become the standard make it easier for consumers to make a sustainable choice. To set in motion the switch to circular revenue models, producers and retailers have an important role to play. We are also examining how we can promote this process and what lessons we can learn from the growing market for mobility sharing.

Selection of product groups

The Consumer Goods Transition Team (Dutch acronym: TTC) has had an impact analysis performed for the selection of product groups, for different product groups and the associated product clusters. This led to five product groups being designated as relevant in connection with their environmental impact: electrical and electronic equipment, packaging and disposable products, textiles, furniture, and chemical products. For chemical products, no advisory roadmap has been drawn up, because more time is needed to investigate which circular sustainability options are necessary and feasible here. This will be further addressed in 2023. To gain insight into the impact of the product groups, use has been made of the Environmental Analysis Program (EAP) database and software, where impacts throughout the value chain (production, usage and waste phases) have been included⁶⁷.

⁶⁶ Adıgüzel et. al, 2020: https://link.springer.com/chapter/10.1007/978-3-030-38532-3_1.

⁶⁷ For more information on the calculations of the environmental impact of the various product groups, please consult the document [Adviesroute naar een circulaire economie voor consumptiegoederen](#) [Advice for the road towards a circular economy for consumer goods].



In order to set targets for the reduction of environmental effects, the Consumer Goods Transition Team has taken the government's targets for the circular economy as its points of departure and converted them for the product groups. These targets were in turn converted into actions to make products more circular and reduce their environmental impact. It concerns guiding targets: they are not legally binding but rather serve as dots on the horizon which can be worked towards. Below we will address the guiding targets which the government wants to achieve for each product group, as well as the associated policy measures.

3.1.1 Electrical and electronic equipment

Vision of the future for 2050

Electrical and electronic equipment which is placed on the market in 2050 will have a circular design, will last for a long time, will use little energy, will be reusable, can be repaired, will contain a large percentage of recyclate, and will contain no or only a minimum of SVHCs. Discarded electrical and electronic equipment will be collected and its lifetime will be extended where this is desirable from an environmental point of view. If not, it will be recycled in a high-grade manner and as much material as possible will be recovered, including critical metals. Businesses will be transparent about the production process and the impact of the electrical equipment, and a product passport will provide clarity on the design and the materials used, among other things. Circular business models and the sharing economy will be the standard, so that consumers will opt for second-hand and refurbished products. Production will take place under good social and ecological conditions. The export of discarded products will be well-regulated and will not cause environmental problems elsewhere in the world.

Challenges

In recent years, the number of 'smart' systems has increased, as has the number of electrical devices and appliances in households. The amount of electrical equipment placed on the market and used is still increasing. At present, only a small share of electrical and electronic equipment has a circular design. This limits the lifetime of these products, because they cannot be repaired or refurbished, or not properly. Moreover, electrical and electronic equipment is not always collected separately and recycled, so that critical (and valuable) materials are wasted and recyclate is only available to a limited degree. Many of the materials (including critical ones) which are needed for electrical equipment are extracted in countries where there is a high risk of poor working conditions and other social malpractices.

Relatively little production of electrical and electronic equipment occurs in the Netherlands, but we do see a lot of sale and consumption of equipment produced elsewhere. As a result, policy for product improvement focuses on the EU market. Within the Netherlands, the greatest opportunities for extending product lifetime lie in prolonged circulation, a switch to other business models and behavioural change.

Targets and results

Target 1: In 2030, the standard for electrical and electronic equipment which is placed on the market will be that it is suitable for use in a circular economy

This means that electrical and electronic equipment will have a circular design:

- It will have a long lifetime, partly because it is easy to repair.
- It can be refurbished for reuse.
- After it has been discarded, components and materials can be easily reused and recycled.

Result 1: Product-specific design requirements have been tightened within the Ecodesign Directive

Product requirements for circular design must be imposed at EU level, because of the internal market and the international value chain of these products. Therefore, we are aiming for an ambitious tightening of the European product-specific design requirements in the Ecodesign Directive. When existing measures for electrical equipment are revised, we will aim for a tightening, particularly with regard to circularity aspects like product lifetime, repairability, use of recyclate, and recyclability. We will also focus on the development of ecodesign measures for products for which no measures have as yet been developed.

The Ecodesign Directive is currently being replaced with the Ecodesign for Sustainable Products Regulation (ESPR), as a result of which it will become possible to ban the destruction of unsold goods and to tackle the use of SVHCs in products as well. Also, a digital product passport will be introduced. In addition, the new European legislation will help strengthen circular procurement by public authorities and in the business world. Nationally, the latter is largely a continuation of existing policy, especially where it concerns procurement by public authorities.



Target 2: In 2030, the circular potential of electrical and electronic equipment will be used to the full

If products have been designed in a circular manner in line with target 1, the potential thereof should be fully utilised as well. This imposes certain requirements in terms of the available services (such as repair, collection and recycling) and current market strategies.

Result 2.1: Repair options will have been professionalised and strengthened

To ensure that electrical and electronic equipment can be reused as much as possible, the Netherlands is arguing for maximum lifetime extension in the EU. This requires better reusability and repairability as well.

With a view to reusability, it must be possible to refurbish equipment, for instance via software updates. It must also be easy to permanently remove any personal data.

Repairs are being promoted in various ways. At EU level, a proposal for a ‘Right to Repair’ will be published in the short term. This may cover an extension of the statutory warranty period for product repair, among other things. In the Netherlands, we are working together with the industry association Techniek Nederland on a national registry of repairers that should make it easier for people to find a reliable technician to repair their equipment. In addition, there are annual subsidies (specific grants to municipal authorities) for circular craft centres. Repair forms a structural part of this, with attention being paid to social aspects for people who are distanced from the labour market. And we are collaborating with education institutes to integrate repair into the curriculum of vocational programmes. We are working to establish a network of circular craft centres with nationwide coverage.

Result 2.2: The EPR system will have been modernised and extended to include repair and reuse

To increase and strengthen the possibilities for repair, the Ministry of Infrastructure and Water Management and the producer organisation Stichting OPEN (Organisation for Producer Responsibility for E-waste Netherlands) are investigating – as a first step in the development of a dedicated Dutch approach to repair, reuse and refurbishment – what the nature and scope of the current repair landscape are and which measures are effective if we want to scale things up further. For the sector, the commitment described under Target 1 is important here, to realise the widely ranging product-specific properties which allow lifetime extension. In the approach to be used to further promote and scale up repair, reuse and refurbishment, account also needs to be taken of international standards for environmental protection and safety, especially the standard CENELEC NEN-EN 50614 containing requirements for the ‘preparing for reuse’ of waste electrical

and electronic equipment. Stichting OPEN intends to set up an incentive scheme for entrepreneurs who want to obtain the CENELEC NEN-EN 50614 certificate that is now mandatory in the Netherlands. In addition, we will provide clarity, together with Stichting OPEN and the Human Environment and Transport Inspectorate (in Dutch: *Inspectie Leefomgeving en Transport* or ILT), on the interpretation of the rules and the possible latitude given to entrepreneurs. For this purpose, a further guideline will be elaborated in relation to the category of electrical and electronic equipment, in conjunction with the guideline for municipal waste collection facilities on continued use of discarded products (see Section 2.1.3), with a view to the implementation practice for extending product lifetime.

To promote more reuse of products and raw materials, we will examine what incentives can be embedded in the EPR instrument. Challenges in this regard include the collection of electrical and electronic equipment, making it easier to measure reuse, and setting realistic but ambitious targets. Targets for reuse and the promotion of repair also need to be addressed when the Waste Electrical and Electronic Equipment Directive (WEEE Directive) is revised (see below). Any targets laid down at EU level can subsequently have an effect on the EPR system.

Result 2.3: Circular activities, circular business models and a sharing economy will be commonplace

Circular behaviour, like reuse and repair, must become the standard (again) much more than it is in the current linear practice. This also imposes requirements on the marketing strategies and business models of the sector. Circular revenue models and a sharing economy need to get past the pilot phase and start representing a substantial market share. The sustainable choice must become the most obvious, the easiest and the fairest choice for consumers.

We will set up pilot projects in which we can experiment with the normalisation of fair, circular business models, and the sale of second-hand, repaired and refurbished products. A development towards new circular revenue models can make it easier for consumers to opt for repair or for second-hand products. The sector has already taken the first step for household appliances.⁶⁸ Based on this it can be assessed what measures can be taken to further normalise circular revenue models.

68 Turntoo has drawn up a circular plan for household appliances on behalf of the sector. See: [Transitieplan Elektrisch Huishoudelijke Apparatuur \(circulaireconsumptiegoederen.nl\) \[Transition plan for electrical household equipment\].](http://Transitieplan Elektrisch Huishoudelijke Apparatuur (circulaireconsumptiegoederen.nl) [Transition plan for electrical household equipment].)



Target 3: From 2030, all discarded electrical and electronic equipment which has been collected will be recycled in a high-grade manner, with as much material as possible being recovered, particularly critical metals

Result 3.1: Requirements for collection, reuse and high-grade recycling, including recovery of critical materials, will have been tightened in the EU WEEE Directive

The current requirements for collection and processing are included in the European WEEE Directive. In the opinion of the government, the Directive needs to be revised soon with a focus on aligning collection, reuse and recycling targets with the targets of the circular economy. In this regard, specific targets need to be set for the recovery of critical materials as well. This also provides an incentive for the further development of the necessary recycling technology.

Result 3.2: Product-specific ecodesign requirements will promote the use of recyclate

The revised Ecodesign framework mentioned under Target 1 offers the possibility to include a mandatory percentage of recycled materials in product-specific regulations. This will help improve the availability of recyclate for new products. The government wants to make full use of these options.

Table 12: Measures relating to electrical and electronic equipment

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We will promote circular procurement by businesses.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will aim for ambitious tightening of the European product-specific design requirements in the Ecodesign Directive.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We will focus on the further roll-out of ecodesign measures for products for which no measures have as yet been developed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We will aim for the longest possible lifetime extension at European level.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We will offer specific benefits to municipal authorities for circular craft centres with the aim of realising a network of circular craft centres with nationwide coverage by 2030.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We will aim for a revision of the WEEE Directive to include collection, reuse and recycling targets which are in line with circular economy targets and specific targets for the recovery of critical metals.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We will aim for the inclusion of an obligation to use certain percentages of recycled materials in the Ecodesign Directive.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New measures	Standard-setting	Pricing	Stimulus
We will explore the establishment of a national registry of repairers.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will investigate which options there are to create financial incentives for lifetime extension.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will investigate the nature and scope of the Dutch repair landscape and effective measures to scale it up.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We will investigate which incentives for reuse and repair can be embedded in the EPR instrument.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
We will investigate the possibility to set up pilot projects in which we can experiment with the normalisation of fair, circular business models and the sale of second-hand, repaired and refurbished products.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We will investigate which measures can be taken to further normalise circular revenue models.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.



3.1.2 Furniture

Vision of the future for 2050

Furniture will meet the maximum attainable circular product requirements, including for recyclability, disassemblability and the use of recyclate. The lifetime of furniture will have been extended as far as possible. Furniture will be reused, repaired and refurbished, and at the end of its long lifetime, materials will be recycled so that they can be used as secondary raw materials.

Fair, circular business models will be the standard, and fast furniture will be a thing of the past. The sustainable choice will be the most obvious, the easiest and the fairest choice for consumers.

Challenges

Furniture is characterised by its great variety of materials and quality. Often, components are interconnected in all kinds of ways. This makes it more difficult to disassemble and repair furniture, which forms a barrier to reuse and recycling. Moreover, furniture is becoming more susceptible to trends, which may lead to it being replaced sooner or, in other words, to 'fast furniture'.

Target 1: In 2030, all new furniture that is placed on the market will meet the maximum attainable circular product requirements

Result 1.1: Circular design requirements will apply to furniture (under the system of Ecodesign)

The proposed Ecodesign Framework Directive is expected to make it possible to impose EU design requirements on furniture in the medium term. Furniture producers must adhere to these sustainable design requirements. Product passports for furniture can be developed then, too. At EU level, the Netherlands will argue for having the product group of furniture fall under the system of the Ecodesign Regulation. This should promote reuse, repair and recycling, among other things because furniture will last for longer, can be repaired and disassembled better and will contain fewer materials (or combinations thereof) that prevent recycling.

Target 2: In 2030, the lifetime of furniture will have been extended for as long as possible

Result 2.1: Furniture will be used for longer

The efforts to realise EU ecodesign measures for furniture mentioned above will help ensure that furniture lasts for longer. To really extend product lifetime, we also need to examine the usage phase. After all, a product may be suitable for a longer lifetime, repair and reuse, but in practice consumers do still have to act accordingly.

A national registry of repairers can promote lifetime extension by means of repair. Such a registry will help consumers find technicians and will support those technicians. In addition, there will be annual subsidies (specific grants for municipal authorities) for circular craft centres, to promote reuse and repair. We are working to establish a network of circular craft centres with nationwide coverage. Plus, the government will make available resources via various generic and other financial instruments, like the stimulus programme (which is being set up) for the development and scaling up of recycling and reuse from the Coalition Agreement, for which repair infrastructure is eligible.

Result 2.2: Circular business models

Circular behaviour, like reuse and repair, must become the standard (or again) much more than it is in the current linear practice. This also imposes requirements on the marketing strategies and business models of the sector. Circular revenue models and a sharing economy need to get past the pilot phase and start representing a substantial market share. The sustainable choice must become the most obvious, the easiest and the fairest choice for consumers.

We will set up pilot projects in which we can experiment with the normalisation of fair, circular business models, and the sale of second-hand, repaired and refurbished products. A development towards new circular revenue models can make it easier for consumers to opt for repair or for second-hand products.

Result 2.3: In 2030, there will be an EPR for furniture

Similar to the EPR for textiles, an EPR for furniture will be developed as well. This should help ensure that furniture can be better collected, reused, refurbished, repaired and recycled. To realise a properly functioning system, we are working together with players in the value chain (producers, retailers, collectors and recyclers).



Target 3: In 2030, the collection and recycling of furniture will have been maximally improved

Result 3.1: Reuse and high-grade recycling of residual flows will be the standard

With funding from the Ministry of Infrastructure and Water Management, the industry association for furniture (CBM) has set up Woodloop⁶⁹, a system where wood waste that is generated during the production process of furniture is collected and processed into wood chips, which can then be used to make new chipboards. This is a high-grade type of product-to-product recycling. In the pilot project, specific attention was also paid to return logistics. The sector is aiming for better collection and high-value use of residual flows (of wood).

These initiatives form the starting point for realising a situation where the supply and demand of residual flows are aligned to such a degree that they nearly always find a place in product chains and therefore do not become waste. By means of the transition agenda it will be explored which steps need to be taken by the parties involved (sector, public authorities, logistics) to create the necessary preconditions for this. The subsidy scheme for the promotion and scaling up of recycling also offers opportunities for increasing the recycling capacity for furniture.

Result 3.2: Discarded furniture will be better collected and disassembled

At the moment, the recycling of furniture is often complicated by products and materials being collected in a way that is not conducive to high-grade recycling. Better sorting of furniture and materials may help realise better recycling. Thanks to the transition agenda it will be explored which improvement steps are possible in this regard and which value chain partners can contribute to it. We will also explore whether furniture can be integrated into the approach for better sorting of construction and demolition waste. In the process to set up the aforementioned EPR, the lessons from these explorations can be used. In turn, the EPR will also help realise better furniture collection.

Table 13: Measures relating to furniture

Standard-setting	Pricing	Stimulus
Continuation and intensification of policy		
We will initiate a stimulus programme for the development and scaling up of recycling.	<input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>
We will aim for design requirements for the product group of furniture under the Ecodesign Framework Directive.	<input checked="" type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
New measures		
Together with the association of technical service providers called Techniek Nederland, we will develop a registry of repairers where consumers can find certified repair technicians.	<input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>
We will offer specific benefits to municipal authorities for circular craft centres with the aim of realising a network of circular craft centres with nationwide coverage by 2030.	<input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>
We will assess whether circular craft centres can play a role in promoting repair/refurbishment/reuse.	<input type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>
We will set up pilot projects for new business models and the sale of second-hand, repaired and refurbished products.	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
We will introduce an EPR for furniture.	<input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
We will explore the integration of furniture into the approach for better sorting of construction and demolition waste.	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

69 <https://www.cbm.nl/dienstverlening/innovatie/wood-loop/>



3.1.3 Textiles

Vision of the future for 2050

The government has had policies and targets for the textile industry since 2020, which are contained in the policy programme for circular textile. The vision for a circular textile value chain in 2050 is ambitious: circular business models will form the standard, with clothing, textiles and fibres being used for a long time and being reused in high-value applications. All products will contain recycled materials and will consist of sustainable materials, so that they can be used for a long time and can subsequently be recycled. In 2050, the working conditions will be in order in the entire textile value chain, pollution during the production process will have been reduced to a minimum, and businesses will be transparent about the production process and the textile product. Consumers will have their torn items of clothing repaired because they want to take good care of their clothes and buy fewer new items. Clothing that consumers buy will be second-hand or sustainable. Textile waste will have been reduced to a minimum, because materials from discarded textiles will be used again in new products.

We will work on the realisation of this vision step by step. For this purpose, the following targets have been set in the policy programme for circular textile.

Year	Target
2025	<ul style="list-style-type: none">The share of recycled (post-consumer) / sustainable materials in textile products will be 25%.30% of resources, materials and products placed on the Dutch textile market will be recycled after collection – if direct reuse is no longer possible.10% of the textile products placed on the market in the Netherlands will be reused in the Netherlands after collection.

Year	Target
2030	<p>In 2030, we will be at the half-way point in the transition to the circular economy, which means that:</p> <ul style="list-style-type: none">In all textile products placed on the market in the Netherlands, 50% sustainable materials will have been used. Of that 50% at least 30% will be recyclable and 20% will be sustainable textiles.50% of resources, materials and products placed on the Dutch textile market will be recycled after collection – if direct reuse is no longer possible.15% of the textile products placed on the market in the Netherlands will be reused in the Netherlands after collection.
2035	The aim is to halve the ecological footprint of the textile industry with regard to emissions, water usage, chemicals and microplastics.
2050	Fully circular economy

The policy programme for circular textile concerns three phases in the textile value chain: the design and production phase, the purchase and usage phase, and the discarding phase. The targets from the policy programme are shown in the table above and belong to one of the three phases in the textile value chain. The current policy programme runs until 2025 and a follow-up programme will probably be drawn up.

Current state of affairs in the textile industry

The ecological footprint of the textile industry is significant. The enormous – and exponentially increasing – use of land, water, energy and chemicals makes the textile industry one of the more polluting industries around the world. The total emissions of greenhouse gases from the textile industry amount to 2.1 billion tons of CO₂ per year.⁷⁰ Working conditions in production countries are often poor as well. The strong increase in production and consumption, the fact that people discard things sooner and the decreasing reuse of textiles result in a growing amount of textile waste that partly ends up in Asia, Africa and South-America.

⁷⁰ <https://www.milieacentraal.nl/bewust-winkelen/kleding/zo-schaadt-kleding-het-milieu/>



We are working on the policy goals intended to make the textile industry more sustainable and more circular, and we are doing this in all kinds of ways – via regulations, collaboration with market parties and communication with consumers. In the Denim Deal, businesses from the entire denim value chain have committed to using more recyclate in newly produced denim clothing, particularly jeans. In addition, the Netherlands has repeatedly argued for ambitious European textile policy. In March 2022, the European Textiles Strategy was published, which announced various legislative proposals at European level, among other things in relation to the production, design and composition of textile products. Environment-friendliness and circularity are the points of departure for these proposals, as is the prevention of environmental pollution by microplastics originating from textiles.

With a public campaign in different locations in the Netherlands supported by the government, awareness about second-hand clothing can be raised among consumers, so that they will be encouraged to buy less new clothing. And with the introduction of the Extended Producer Responsibility (EPR) for textiles in 2023, businesses will become obliged to prepare their textile products for reuse and recycling. The House of Representatives is being informed regularly about developments regarding circular textile policy, among other things by means of annual progress reports.

The Consumer Goods Transition Team has proposed the following new targets for textiles for the period up to 2030.

	Impact targets (2030)	Circularity targets (2030)
Textiles	55% less impact on climate change 55% less indirect land use 50% less impact on eutrophication and acidification	1 - New textiles placed on the market will have a circular design 2 - Textiles will be used twice as long by consumers compared to 2023 3 - 100% of the textiles where lifetime extension is not possible will be collected and recycled

In the current policy programme for circular textile, impact targets and circularity targets have been formulated which will apply until 2030 or 2035. Many targets proposed by the Transition Team largely correspond with the activities to achieve the targets from the current policy programme for textiles, and therefore they can provide useful support for the policy programme implemented. The targets from the policy programme offer security and perspective to the textile industry. Regular consultations are taking place to discuss how the textile industry is working to achieve the targets, for instance through the EPR for textiles which is being introduced. Moreover, the achievement of the targets is being actively monitored. To see whether the measures actually have effect, data must be monitored over several years.

When drawing up a new policy programme as of 2025, we will examine whether the measures and targets need to be supplemented or tightened. The new targets for textiles proposed by the Transition Team will be used as input for this.

Obstacles

Several factors obstruct the achievement of the targets of the textile policy. With the exception of the COVID year 2020, more clothing is being produced, sold and discarded year on year. This phenomenon is referred to as 'fast fashion'. Aspects that promote fast fashion are the strongly competitive market, the high degree of consumerism, the rapidly changing fashion trends, the long product chains, the ever lower production costs and the rise of e-commerce. The rapidly changing fashion trends in fast fashion also lead to ever more clothing being produced in ever shorter time periods, while the quality of the textiles decreases, so that reuse is not possible or hardly possible at all. Insufficient investments are made in high-grade recycling and innovation. In addition, unsold clothing becomes waste without being worn. For the coming years, the focus will therefore be on prevention of production and consumption.

Many people do not have the purchase of second-hand clothing instead of new items on the radar yet. Consumers discard clothing easily and often do not dispose of it in the right way. As a result, around half of all discarded clothing ends up in incinerators via residual waste.⁷¹ Therefore, a large share of the textiles cannot be reused and/or recycled

⁷¹ Dutch residual waste contains about 169 kttons of textiles per year, which is 55.4% of all discarded textiles. (<https://vang-hha.nl/handboeken-o/regie-textielketen/1-kennis-textielketen/1-1-waarom-belangrijk-sturen-textielketen/>).



at present. In 2020, the percentage of sustainable material or recyclate used in new textile items was 13%.⁷² The EPR for textiles (introduced in 2023) will act as an incentive for collecting more clothing for reuse and recycling, so that the targets can be met. The EPR promotes the use of sustainable materials and/or recyclate and improvement of the quality of clothing in new textile products. The ‘Denim Deal’ concluded in 2020 will also contribute to this, and in the *VANG programme for household waste* we are working on more and better collection of textiles as well. The public campaign referred to encourages consumers to buy second-hand clothing.

Look ahead

Over the coming years, we will keep our strong focus on circular textiles. The EPR for textiles will become applicable in 2023. In accordance with the principle of ‘the polluter pays’, producers of textiles will then become responsible for the preparing for reuse and recycling of textiles. Above all, this means that producers will pay the costs of the sector’s waste management. This provides a financial incentive for producing higher-quality clothing, which can be better recycled and reused. To adhere to the EPR, producers must ensure that more textiles are collected. To get consumers to collect more clothing, it should be made easy for them; they should know what can and cannot be deposited in clothing containers and they need to feel that separate collection is useful.

Figure 8: Fair distribution of costs and benefits in the transition to a circular economy

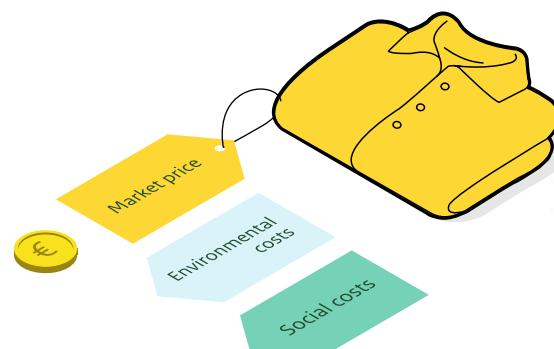
Legend:

 Environmental costs
Carbon emissions,
pollution, health effects

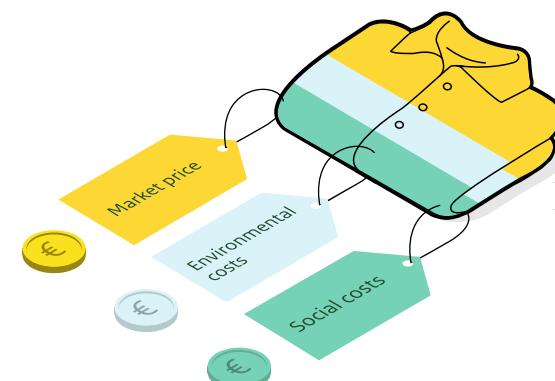
 Social costs
Safety at work, fair pay,
social benefits

 Shifting of social costs
Passing on costs to others,
e.g. citizens, the environment
or future generations

Product where social costs are shifted



Product where social costs are factored into the price



⁷² <https://www.rijksoverheid.nl/documenten/rapporten/2022/04/22/bijlage-2-rapportage-monitoring-textiel-peiljaar-2020>



At the moment, the agreements between producers and other partners in the textile value chain, like municipal authorities, collectors and sorters, are being shaped. The producers bear primary responsibility for this. Textile producers who will be subject to the EPR must register with the government in 2023. In the subsequent period it will become clear how the market will handle the implementation of the EPR – such as the collection system – and how the producer organisation will be set up. For instance, arrangements can be made about tariff differentiation and an innovation fund.

Moreover, it will be possible to gain a good understanding, within five years' time, of whether producers will meet the targets under the EPR, and how. The targets will apply as of 2025, with the percentages being gradually increased afterwards. The first evaluation of the EPR for textiles is to take place within five years after its entry into force, so that the EPR can be improved and tightened where possible.

Collaboration at European level remains important as well. The European Textiles Strategy contains many points which the Netherlands has argued for. This encourages us to remain highly active on the European stage to ensure that the proposals will be implemented in an ambitious way.

Inspired by the success of the Denim Deal, we will explore how the international collaboration in the value chain for denim textiles can be scaled up further after 2023. The point of departure is to make concrete arrangements on high-quality closure of the textile loop with and between businesses in consumption countries and production countries.

Behavioural change remains a focus point. We will evaluate the campaign for second-hand textiles in 2021 and 2022. After that, we will examine what the best way is to reach people and encourage them to give second-hand clothing a chance.

In the first half of 2023, the European Commission is expected to present a broad policy package to reduce and avoid microplastics pollution in the environment. When evaluating and elaborating this European set of measures, the Netherlands will mainly argue for ambitious measures to tackle microplastics fibres from textiles.

Nationally, the Ministry of Infrastructure and Water Management is investing in knowledge development on microplastics fibres from textiles in water. In addition, we are investing in public campaigns to create awareness among consumers. Another possible option is the promotion of different behaviour, like encouraging people to wash clothes less often.

The ambition is to introduce a follow-up to the first policy programme for circular textile in 2025. As evidenced by [research conducted by CE Delft](#), for the current impact targets in the policy programme for circular textile, significant gains can be made by aiming more strongly for more reuse and less consumption. An important new focus for the next policy programme will therefore be prevention of production and consumption. The Transition Team has proposed the performance of pilot projects aimed at sustainable behaviour with impact among consumers. In these pilot projects, the focus will be on countering fast fashion. This proposal is being taken to heart and will be investigated over the coming period. Finally, in the run-up to the new policy programme, a public participation process will be conducted for textiles. This will ensure that the ideas, needs and concerns of citizens can be taken into account from an early stage.

At the same time, it is important to get clarity on which factors cause the production and purchase of this many items of clothing. The government will examine this in 2023. This study links up with the [Circular Economy Progress Report 2022](#) (in Dutch: *Voortgangsbericht Circulaire Economie 2022*) published by PBL, in which 'narrow the loop' (with higher R strategies like 'refuse' and 'reduce') is mentioned as one of the four ways to use raw materials more efficiently. Besides using products and components for longer and more intensively by means of reuse and repair ('slow the loop') and closing the loop by means of recycling, substitution with renewable raw materials is mentioned as well. To be able to achieve the targets of the policy programme, the focus on prevention of consumerism will be increased ('narrow the loop'). In addition, European measures in the areas of production and design of textile products will contribute strongly to the realisation of more sustainable production and consumption.

Table 14: Measures relating to textiles

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We will implement the Denim Deal to use more recyclate in newly produced denim items of clothing.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will aim for ambitious European product requirements.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will use public campaigns for second-hand clothing.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We will introduce an EPR for textiles.	■	■	■
We will actively work to achieve an ambitious elaboration of the European set of measures to reduce environmental pollution by microplastics from textiles.	■	■	■
We will perform an evaluation of the campaign for second-hand clothing and will base our further behaviour-related efforts on this.	■	■	■
We will invest in knowledge development on microplastics fibres from textiles in water.	■	■	■
New measures	Standard-setting	Pricing	Stimulus
We will aim to achieve an ambitious elaboration of the European set of measures to reduce environmental pollution by microplastics from textiles.	■	■	■
We will conduct a follow-up to the policy programme for circular textile.	■	■	■
We will investigate the underlying reasons for overproduction and overconsumption.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

3.1.4 Packaging and disposable products

This section is about packaging in general and about all types of packaging materials. In the advisory roadmap of the Plastics Transition Team, plastic packaging in particular features prominently in the circular plastics value chain, because 40% of all plastics placed on the market are used in plastic packaging. This topic will therefore be addressed in more detail in Section 3.2.1 of this NPCE.

Vision of the future for 2050

In 2050, significantly fewer primary raw materials will be used for packaging. Reusable packaging will be the standard, and a lot less excessive packaging will occur; also, packaging will no longer be made from primary raw materials, but rather from secondary raw materials (unless this is not possible). Use will be made of recyclable raw materials (or generally available raw materials with a low environmental burden) and sustainable bio-based raw materials in high-value applications. For food packaging and food contact materials, the most stringent food safety requirements will apply, and harmful substances and additives will have been phased out from all packaging. All packaging will be suitable for end-of-life high-grade recycling, and the infrastructure for high-grade recycling will be of such a scale that no export to countries outside the EU is needed.

It will be made easy for citizens to separate their waste, by means of clear information on packaging about the material flow to which it belongs. What's more, the sorting technology will have been developed to such a degree that no materials will go to waste unnecessarily during the sorting process. For consumers and businesses there will be plenty of good-quality reusable packaging options, including refillable and returnable packaging, for supermarkets, general retail and on-the-go retail, hospitality, e-commerce transport packaging and B2B packaging. There will be a mature infrastructure for the washing and distribution of reusable packaging, with smart use being made of the logistical expertise in the Netherlands and of the further digitisation of services. Thanks to properly functioning return systems, packaging will no longer end up as litter.

In 2050, no more primary fossil raw materials will be used for disposable products, and the use of disposable products will have been considerably reduced. This means that single use will occur as little as possible. Consumers will be accustomed to reuse. For disposable products, stringent product requirements will apply; for instance, no microplastics, other plastics or harmful substances may be added to personal care products, cigarette filters or chewing gum.



Challenges

A challenge for this product group is the fact that the composition of packaging and disposable products varies. A large share of these products are currently unrecyclable. As a result, insufficient high-quality recyclate can as yet be produced for use in new products. In addition, there is packaging on the market which is not strictly needed, or which is larger in volume than is necessary for the packaged product. In the current economy, primary raw materials are often cheaper than secondary raw materials. Moreover, reuse is only common for glass and, to a limited extent, for plastics at the moment. Consumers have become used to the convenience of disposable packaging and the low cost of packaging in general. Also, recyclable packaging is being incinerated, because insufficient separation is taking place, source-separated waste flows become contaminated, recyclable materials end up in residual waste, and subsequent separation, sorting and recycling have not yet been optimised or are not yet cost-effective. This applies both to household waste and to commercial waste. This negatively affects carbon emissions, material retention in the value chain, and citizens' motivation to separate waste.

Targets and results

Target 1: All packaging placed on the European market from 2030 will be suitable for use in a circular economy and will meet circular product requirements

Result 1.1: The essential requirements of the EU Packaging Directive will have been maximally tightened

Product requirements for circular design must be imposed at EU level, because of the internal market and the international nature of the value chain. Non-functional packaging and excessive packaging can be best addressed in a European context as well. Rules for packaging (such as non-functional packaging) including the essential requirements which packaging must meet are part of the 'EU Packaging Directive' which is being revised. The Netherlands is aiming for considerable tightening of this legislation to ensure that all packaging can be recycled in 2030, a significant share of the packaging will be reusable (including the associated refill/return systems with standards for quality and food safety), and there will be product requirements for the use of recyclate and, if necessary, for the use of recyclable bio-based plastics. The Netherlands wants to aim for the use of at least 40% recyclate and/or bio-based plastics in all packaging in 2030, and will push hard for this during negotiations on the revision of the Packaging Directive. For the other material flows, the Netherlands is also aiming for the imposition of realistic and ambitious European standards for the use of recyclate.

The essential European requirements will ensure that excessive packaging will be effectively prevented and that packaging will be reusable and suitable for return/refill systems. Packing will be suitable for high-grade recycling and will consist of a certain percentage of recyclate or sustainable bio-based raw materials (set at European level).

Target 2: From 2030 the potential of reusable packaging will be used to the full

Result 2.1: Reuse will be strongly promoted via European and Dutch initiatives and the infrastructure for reusable packaging will be both functional and of the right scale

Increasing reuse is one of the focal points for the revision of the EU Packaging Directive. The Netherlands is arguing for ambitious reuse targets at European level. Besides the European agreements, we are assessing whether and how the available policy instruments (including laws and regulations and the EPR) should be used to make the best possible use of reusable packaging. If necessary, we will look into additional national efforts within the EPR instrument for prevention and reuse. Moreover, European standards will be adopted for the number of rotations and hygiene requirements, and consumers will get used to reuse models.

Nationally, the government will strongly promote reusable packaging in various sectors, like supermarkets and retail, hospitality and home delivery, e-commerce and B2B. This will be done along two tracks: sector-wide arrangements and collaboration, and (where necessary) statutory obligations. At national level, we need sector-wide collaboration to realise the transition to reusable solutions at system level and to guide citizens step by step through the transition. The government is funding independent research into, among other things, models for reusable packaging in supermarkets and into the necessary infrastructure for large-scale cleaning of reusable packaging in the Netherlands. We will also help entrepreneurs on the way to circular product design and circular revenue models.

Result 2.2: Ambitious reuse targets will have been agreed in the revision of the Packaging Directive for on-the-go / takeaway hospitality products and e-commerce

In the context of the new SUP legislation, the hospitality sector has been invited to set up sectoral collaboration in the Moonshot project called 'Evernew'. If so desired, the government can formalise the collaboration in a Green Deal. For home delivery and catering, we are exploring a similar sectoral approach, while also paying attention to collaboration between sectors.



To reduce the use of disposable plastic cups and food packaging that fall within the scope of the SUP Directive, we are aiming for a 40% reduction in 2026 compared to 2022. The Netherlands is also aiming for an ambitious European target for reusable on-the-go / takeaway packaging for 2030.

For the e-commerce sector, too, the Netherlands is arguing for ambitious targets for reusable transport packaging. The volume of transport packaging used will also be reduced by imposing requirements for smarter product design and a standard for wasted space in packaging. In addition, transport packaging will be 100% recyclable, and consumers will know what material flow it belongs to.

Result 2.3: At national level, we will use the potential for reusable packaging by also facilitating sector-wide collaboration in the convenience sector (supermarkets and retail), B2B and festivals

In parallel to the revision of the Packaging Directive, supermarkets and producers will be invited to set up a sector-wide approach for the introduction of reusable packaging. The aim of this is to significantly reduce raw material usage for packaging via reusable packaging solutions.

Research has shown that in principle both consumers and supermarkets hold a positive view of reusable packaging. Supermarkets appreciate it if sector-wide arrangements are made, so that risks are shared, or if the government makes changes mandatory. The sector will also welcome the introduction of reusable packaging by premium brands. This will be a good starting point for shaping a sector-wide approach and supplementing it with statutory provisions if necessary.

In B2B packaging, wrapping film, big bags and cardboard are used on a large scale. In some industries, reusable crates are already commonly used, like for fruit and vegetables or fish. Here, too, a sector-wide assessment will be made of the quick wins in order to replace disposable packaging with reusable alternatives.

The festival and events sector is continuing the 'Green Deal for Festivals' and expanding the circular cups system to include circular food packaging. The goal is to have waste-free festivals and events by 2030. This will require an intricate system of collection and processing for high-grade recycling and a suitably scaled system for washing and reuse of cups and food packaging. This demands value chain collaboration, among other things.

Target 3: From 2030, packaging will be optimally collected for recycling. After recycling, packaging materials will be used as recyclate

Result 3.1: Recyclable packaging will actually be collected, sorted and recycled, the capacity for high-grade recycling will have been increased, and it will be easier for citizens to separate packaging into the right material flow

With the VANG programme, we are working on improving collection. Moreover, the EPR instrument will contribute to this as well (see Chapter 2).

Thanks to the targets for high-grade recycling and the use of recyclate in packaging of all material flows, material value chains can become closed loop systems. High-grade recycling of packaging will be the standard and the recyclate will in turn be reused as well. In the negotiations for the EU Packaging Regulation, the Netherlands is calling for a tightening of the European requirements for packaging recycling. Where necessary, the European targets will be laid down in the EPR. The packaging EPR will be strengthened and extended.

Target 4: The number of disposable products will have been reduced and high-impact disposable products will be fully recyclable and will have a suitable waste collection structure

This product group concerns disposable products with a short lifetime which are discarded after single use. Among other things, it includes personal care and hygiene products like nappies, incontinence materials, wet wipes and hygiene items. Tobacco products and chewing gum belong to this category as well.

Result 4.1: An EPR will apply to nappies and incontinence materials, and there will be European requirements for their design

Of the 400 million kilograms of nappies and incontinence materials disposed of annually in household waste and at institutions in the Netherlands, only 15 million kilograms are recycled. The rest is incinerated. Large-scale recycling is not getting off the ground to a sufficient degree.



For this reason, an EPR is being prepared to organise large-scale collection and recycling of this waste flow. This means that producers will become responsible for the collection and recycling of these products. This EPR is expected to apply as of 2026. The Netherlands is also arguing for European design requirements for nappies and incontinence materials to ensure that they are made of more sustainable materials and can be better recycled. In addition, we are promoting the use of washable nappies. For example, the use of washable nappies is being investigated in pilot products conducted in collaboration with childcare centres.

Result 4.2: There will be a consumer-focused approach to realise a shift from disposable to reusable

We will develop a consumer-focused approach for which we have examined the potential among specific target groups for replacing disposable products with reusable alternatives. Think of party goods and cosmetics, personal care and hygiene products. In 2020, a study into behavioural segmentation was conducted for the category of products that fall under the EU rules for single-use plastics. This study will be repeated every three years for the purpose of target group-focused interventions.

Target 5: In 2030, the amount of litter will have been reduced to a minimum

To reduce disposable products as well as packaging that is liable to become litter, we already have policy in place: the national litter approach. Part of this is the prevention (by means of proper collection) and removal of litter and the monitoring of individual litter products, by the Ministry of Infrastructure and Water Management. It is up to local and regional authorities to determine what they will do to tackle litter, and the Ministry supports them with knowledge and expertise for an area-based approach; we also consult with area managers and producers on the integral approach to litter and the responsibilities of the parties in this context.

Result 5.1: The EPR for litter will have been extended

For drinking cups, food packaging and plastic bags, an EPR for litter will apply as of 2023, so that producers will help pay for the costs of the removal and processing of litter. In the context of this EPR, producers will also set up campaigns to create awareness among citizens and entrepreneurs of the value of packaging materials in a circular economy and of how we can all contribute by opting for reusable alternatives to disposable packaging. This EPR will not need to be limited to plastic products and can be extended in the future to include packaging of other types of materials.

Result 5.2: The litter approach will lead to product-specific measures for the most common litter items

The government is exploring which plastic or other disposable products can also be reduced, in addition to the products that fall within the scope of the SUP Directive. Proposals will be made for measures (European or national ones) to permanently reduce disposable products which are liable to become litter. In this exploration, which will be concluded before the summer of 2023, we will look at policy measures for cigarette filters and chewing gum, among other things.

Table 15: Measures relating to packaging and disposable products

	Standard-setting	Pricing	Stimulus
Continuation and intensification of policy			
We will increase the budget for the MIA/Vamil schemes.	■	■	■
We will support circular business operations via the Green Projects Scheme (in Dutch: <i>Regeling Groenprojecten</i>).	■	■	■
We will make use of the stimulus instruments DEI+, NIKI.	■	■	■
We will explore policy measures for cigarette filters.	■	■	■
We will implement the SUP Directive.	■	■	■
We will tighten the legislation for product requirements for circular design at European level.	■	■	■
We will promote mechanical and chemical recycling.	■	■	■
We will investigate the potential for specific target groups for the replacement of disposable products with reusable alternatives.	■	■	■
We will explore which plastic products that fall outside the scope of the SUP Directive can be reduced.	■	■	■



New measures	Standard-setting	Pricing	Stimulus
We will invest in mechanical and chemical recycling.	■	■	■
We will introduce an EPR for nappies and incontinence materials in 2026.	■	■	■
We will introduce an EPR for disposable plastics.	■	■	■
We will investigate whether, and if so, how, more incentives for prevention and reuse can be embedded in the EPR instrument.	■	■	■
We will initiate a stimulus programme for the development and scaling up of recycling and reuse.	■	■	■
We will develop the International Green Deal for Reuse & Refill Systems.	■	■	■
We will promote the use of reusable packaging in the convenience sector with sector-wide agreements and (if necessary) statutory obligations.	■	■	■
We will supervise the Moonshot project called 'Evernew'.	■	■	■
We will implement the Green Deal for Circular Festivals.	■	■	■
We will fund independent research into models for reusable packaging in supermarkets as well as infrastructure for large-scale cleaning of reusable packaging.	■	■	■
We will promote the CIRCO tracks.	■	■	■
We will assess whether and, if so, how we can integrate more incentives for reuse in the EPR instruments.	■	■	■
We will aim for European design requirements for recyclable nappies made of sustainable materials.	■	■	■
We will promote the use of washable nappies.	■	■	■

New measures	Standard-setting	Pricing	Stimulus
We will consult with area managers and producers on the integral approach to litter and the responsibilities of all parties in this context.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

3.2 Plastics

Vision of the future for 2050 and 2030

In 2050 fewer plastics will be used – where this leads to environmental gains. In addition, plastics will no longer be made from fossil raw materials, but rather from recycled raw materials, supplemented with secondary and sustainable bio-based raw materials and – over time – from carbon-based raw materials. Unnecessary material use will be a thing of the past. Microplastics which are intentionally added to products will no longer exist. Emissions of microplastics (secondary or otherwise) into the environment will have been reduced by at least 70%, moreover.

The ambition to close the plastic loop in 2050 and no longer produce plastics from primary fossil raw materials is an important dot on the horizon. To be able to realise this ambition, an important interim target is to halve the use of fossil raw materials for plastics by 2030 (compared to 2016). This demands firm measures, which are described below.

Selection of priority product groups

As part of the targets process, the Plastics Transition Team has elaborated three product groups: plastic packaging (in collaboration with the Consumer Goods Transition Team), plastics in construction, and agricultural plastics. Plastic packaging forms the largest share in the European demand for plastic end products (40%), followed by plastics in construction (20%). A relatively small share of the plastics on the market are used in



agriculture and horticulture. However, agriculture and horticulture plastics are a product group with a significant potential for reduction, collection, sorting and recycling, and for that reason they have been further explored by the Plastics Transition Team as an interesting test case, also where it concerns the use of plastics based on secondary and sustainable bio-based raw materials.

The advice from the Plastics Transition Team on the targets to be used and the measures to be taken has been taken into account in our policy development.

Circular target for 2030: Halving the use of primary fossil raw materials

In 2030, the use of fossil raw materials for plastics will have been halved thanks to efficiency improvements and the use of mechanical recyclate, chemical recyclate and plastics based on sustainable bio-based raw materials. The release of microplastics into the environment will have been reduced by at least 30%.

Results

In order to halve the use of fossil raw materials for plastics by 2030, the government is supporting and arguing for ambitious European statutory requirements. This leads to the following results:

- 1 In 2030, both the recyclability of plastics (and other materials) and the actual use of secondary and sustainable bio-based raw materials will have been broadly enshrined in EU legislation for packaging and products (Revised Packaging Directive, Ecodesign for Sustainable Products Regulation, Revised End-of-Life Vehicles Directive, Revised Construction Products Regulation, SUP Directive, Revised Public Procurement Directive).
- 2 In 2026, the use of plastic disposable drinking cups and food packaging will have been reduced by at least 40% compared to 2022. In 2030, all disposable packaging will have been reduced by 50%; this concerns more than just food packaging, therefore.

Points of departure for policy

Plastics are versatile, lightweight, strong, affordable and long-lasting. Because of these properties, plastics are used in many products. This has resulted in excessive amounts of plastics, however. Plastics lead to litter and an accumulation of microplastics and macroplastics in the environment. The production and incineration of plastics cause substantial greenhouse gas emissions. Due to the ways in which plastics are currently being designed, produced, consumed and discarded, the planetary boundaries are being crossed. Therefore, it is necessary to make the entire life cycle of plastics more sustainable.

We can do this by using as few plastics as possible ('narrow the loop'), by using and reusing plastics for as long as we can ('slow the loop'), and by reusing plastics or recycling them in a high-grade manner at the end of their life ('close the loop'). Plastics are really not always necessary for all applications for which they are being used at present. In addition to making plastics more sustainable, our policy is therefore also aimed at eliminating plastics where we can. In other words, the policy efforts for plastics for 2050 will run along two tracks: 1) reducing plastics where we can, and 2) using plastics sustainably where we have to.

Obstacles to the achievement of the targets for 2030

Sections 3.2.1, 3.2.2 and 3.2.3 describe dedicated measures for the three product groups of plastic packaging (shared with the Consumer Goods Transition Team), agricultural and horticultural plastics, and plastics in construction⁷³.

The policy for circular plastics goes beyond these product groups; it is aimed at making the entire plastics value chain circular and not having any new fossil input by 2050. Below we will describe four overarching challenges for the realisation of a circular plastics value chain towards 2030. Policy for the period up to 2030 and the associated measures will mainly focus on resolving these challenges, in the product groups mentioned, but also in other sectors, like the automotive industry and healthcare. Therefore, we will first briefly address these two sectors.

The automotive industry generates one of the three main plastics flows, representing a share of about 10% of the European market for end use of plastics. For the revision of the End-of-Life Vehicles Directive (ELV Directive) and the associated Directive on reusability, recyclability and recoverability, the government is aiming for a mandatory percentage of recyclate and/or bio-based plastics.

In healthcare, particularly hospitals, use is made of materials made from plastics or materials with a high plastics content. Think of personal protective equipment, medical supplies and packaging materials. The amounts used are a thorn in the side of many healthcare professionals. Parties in the sector are taking plenty of initiatives to address this problem and make healthcare more sustainable. In the new Green Deal entitled *Samen werken aan duurzame zorg* [Working together on sustainable healthcare], the

⁷³ [Advisory roadmap for plastics](#)



healthcare sector and the government have reached agreement on how to make the sector more sustainable, including the promotion of circularity and economical use of raw materials. In addition, in early 2023 the government will respond to the advisory report from the Health Council (in Dutch: *Gezondheidsraad*) on making devices in healthcare more sustainable⁷⁴. With this NPCE the government wants to strengthen developments and initiatives to promote circular ways of working in healthcare.

1 Recyclability – Circular product design requirements

At the front of the value chain, little or no account is taken of the rest of a product's lifetime or of the stage when the manufactured product will be discarded. The many different chemical compositions of plastics and certain additives, as well as certain thicknesses of plastics, make recycling (or specifically high-grade recycling) more difficult, and as a result it becomes impossible to close the loop.

To solve this problem, regulations for plastic products and plastic components in products must require that products placed on the market will be suitable for a circular economy. For 2030, we want to lay down proper product requirements for recyclability, reusability and repairability in European law, like in the new Ecodesign for Sustainable Products Regulation (ESPR), the Packaging Directive (PPWD), the ELV Directive, the Construction Products Regulation, and the elaboration of the European Textiles Strategy. To promote the implementation of that European product legislation, standards may also be developed for recyclate and sustainable, recyclable bio-based plastics, as long as these support the legislation's ambition.

2 Market for recyclate and bio-based plastics – Supply & demand

Secondly, the quantity, quality and affordability of recyclate and plastics based on bio-based raw materials are vital aspects if we want to close the plastic loop. Recyclate and bio-based plastics are often unable to compete properly with primary fossil plastics in the current market, both for pricing and for quality reasons. As long as this imbalance in the market continues to exist, we will be faced with market failure in the transition to a circular economy. The development and scaling up of the use of recyclate will help us achieve circularity and climate neutrality in 2050. To develop both the supply of and the demand for recyclate and bio-based plastics, we will need policy.

74 <https://www.gezondheidsraad.nl/onderwerpen/zorg/alle-adviezen-over-zorg/verduurzaming-van-hulpmiddelen-in-de-zorg>

To drive the demand for recyclate, we want to lay down a minimum percentage for the use of recyclate and/or bio-based plastics in European product legislation, as has been described above. Nationally, a levy on primary fossil plastics (demand) and the introduction of a plastics recycling hub (supply) will be explored. Decision-making on this will take place in the spring of 2023, in the context of the climate goals.

To improve access to the input for recyclate (feedstock), we will aim for (1) the possibility to facilitate waste transport for high-grade processing within the EU, and (2) tightening of the preconditions for waste export outside the EU, when the European rules on shipments of waste are revised. In addition, it will be explored whether any additional measures may play a role in this and, if so, which ones.

To drive the supply of recyclate, the first thing we want is to have investments in advanced sorting and scaling up of high-grade mechanical recycling. This will cause a much smaller ecological footprint than chemical recycling in the current situation. Where the quality of mechanical recyclate is insufficient, chemical recyclate will be needed. This also demands that we promote the scaling up of chemical recyclate. Via the *Versnellingstafel Chemische Recycling* [Acceleration platform for chemical recycling], market parties and the government are working on this as well. Because it will not be possible to fully close the plastic loop in the short term, even with future technologies, the use of secondary and bio-based and recyclable plastics will also be necessary.

However, at the moment the market for bio-based plastics is still small, and price is often a major obstacle. The Sustainability Framework for Bio-based Raw Materials includes requirements which assure the sustainable production of bio-based raw materials. The aim is to utilise the EU policy framework on bio-based, biodegradable and compostable plastics, which appeared on 30 November 2022, to lay down the requirements from the Sustainability Framework for Bio-based Materials in law. Furthermore, significant investments will be needed to develop and scale up recyclable and sustainably produced bio-based plastics and – once the technology has been further advanced – of carbon-based plastics. With regard to this scaling up, attention will also need to be paid to end-of-life options; the aim is to recycle the bio-based plastics.

Over the coming years, both public and private investments in recyclate and bio-based plastics will be promoted by means of incentives. Think of the stimulus instruments for high-value use that the Ministry of Economic Affairs and Climate is working on (DEI+, NGF, NIKI). What's more, a proposal for circular plastics has been selected for funding from the



National Growth Fund (in Dutch: *Nationaal Groefonds*) in 2022. Over an eight-year period, EUR 500 million will be invested – EUR 220 million of which by the government and the rest by the private sector. In addition, from 2023 at least EUR 7 million will be reserved per year for a stimulus programme for the development and scaling up of recycling and reuse. In this regard, the Circular Netherlands Accelerator! will support businesses that want to work together in the product chains on the targets set in the present chapter.

3 Circular Plastics Infrastructure – Collection and sorting for recycling and infrastructure for reuse

Thirdly, important work has been done to realise infrastructure for a closed plastic loop, but this has not yet been sufficiently developed to achieve the targets for 2030. At the moment, too many plastics are being inadequately collected and sorted for recycling or reuse and therefore end up in the environment, are incinerated or are exported without any transparency as to their actual processing. Like in the energy transition, we need adequate infrastructure to be able to realise the transition to a circular plastics value chain and to ensure that recyclable plastics will no longer be incinerated. For this infrastructure, we need proper collaboration by all parties in the value chain. A point for attention in this regard is the infrastructure for the recycling of bio-based plastics.

How we can realise more, better and more efficient collection and sorting and/or cleaning for reuse will depend on the sector and the product group. Those parties will have to reach agreement on this.

4 Microplastics – Reduction & prevention

A fourth challenge is to combat environmental pollution by microplastics – in addition to the approach for tackling litter. This challenge is of a specific nature, because only closing the plastic loop for microplastics pollution based on the current use of plastics is not a complete solution. Microplastics are minuscule particles that end up in the environment due to the wear and tear of plastic products or because they are intentionally added to products. They end up in water, soil and air, as well as in human and animal bodies. As long as plastics exist and are not fully degradable in nature, new microplastics will end up in the environment. This means that to solve the microplastics problem, we need to do more than just close the plastic loop. For uses of plastics where leakage into the environment is a reality that cannot be prevented, plastics must not only become circular but also biodegradable and harmless to nature. This requires a lot more fundamental research, but this does not make it any less urgent. That is why the Ministry of

Infrastructure and Water Management has provided subsidies for three different studies on this topic (worth EUR 1,742 million in total for the next four years).

Even though it is as yet uncertain what the effects of microplastics on people and the ecosystem are, there are indications of risks for human health and the environment. Therefore, the government is taking measures based on the precautionary principle. For this reason, the Netherlands is also supporting the European microplastics reduction target of 30% for 2030, and we have asked the European Commission to further substantiate and elaborate this target. Moreover, the Netherlands wants to have a restriction under the REACH Regulation to ban the addition of microplastics to products in the most ambitious way possible. Policy to prevent microplastics where possible and reduce it where it cannot be eliminated focuses on:

- 1 Ambitious European legislation to prevent and limit the occurrence of microplastics in the environment;
- 2 Knowledge development on microplastics in the ecosystem and in the human body;
- 3 National measures to address sources of microplastics;
- 4 Promotion of developments of next-generation recyclable plastics which are degraded when they end up in the environment.

Pollution by microplastics is a cross-border problem. Therefore, the Netherlands is calling for European legislation to reduce the occurrence of microplastics in the environment. In addition, the Netherlands is in favour of taking binding measures as part of a firm global approach to plastic pollution in the High Ambition Coalition for the UN Treaty to end plastics and microplastics pollution. Furthermore, the Netherlands is working to reduce and prevent microplastics via the implementation of the OSPAR Regional Action Plan on Marine Litter and the implementation of the IMO Action Plan to combat marine plastic pollution by ships. The implementation of other EU directives, such as the Marine Strategy Framework Directive, will help us address microplastics pollution as well. The European Commission will soon release a broad policy package to tackle microplastics pollution. The Netherlands previously responded in a public consultation round of the Commission on this policy package and asked the Commission in a cover letter to present an ambitious policy package⁷⁵.

75 [Response to the Consultation and cover letter \(Parliamentary Papers 21501-08-866\).](#)



3.2.1 Plastic packaging

The packaging product group also features as a product group in the Transition Agenda for Consumer Goods (see Section 3.1.4). This concerns all packaging (including plastic packaging). The present section addresses plastic packaging in more detail.

Plastic packaging forms the largest share of the European demand for plastics (at 40%). Therefore, a significant part of the policy efforts directed at circular plastics focuses on this product group. Below we will explain the specific policy efforts for circular plastic packaging along the two generic policy tracks: reduction where possible and sustainable use where necessary.

Track 1: Reduction where possible

Plastic packaging often has a smaller ecological footprint than alternative materials, and is therefore often the best choice. At the same time, there is a lot of potential for prevention. To promote steps towards a circular packaging value chain and combat excessive packaging, we are aiming for an ambitious revision of the Packaging Directive. With the implementation of the SUP Directive, we reached a milestone in the process to reduce disposable plastics. Besides the reduction of single-use plastics, our intention is to also further lay down reuse of packaging in European legislation, through the revision of the Packaging Directive. In this context, we are arguing for measures to ensure that no more packaging materials are used than are strictly necessary. At national level it has been laid down in the Packaging Management Decree (in Dutch: Besluit Beheer Verpakkingen) that in 2030 a weight percentage of 55% of all plastic packaging must be reused or recycled.⁷⁶ In practice, reuse of plastic packaging currently only occurs on a limited scale. Therefore, for the implementation of the Revised Packaging Directive we are also looking into a revision of the target for circular plastic packaging in the aforementioned Decree. The ‘circular target’ addresses the interrelated targets for prevention, reuse, recycling and the use of recyclate. In a stakeholder process to be conducted in 2023, the government will explore a new system for circular packaging targets.

⁷⁶ Packaging Management Decree: a weight percentage of 55% of all plastic packaging must be reused or recycled (aimed at producers or importers); SUP (national implementation in ministerial regulation): collection target for high-grade recycling of 90% in 2030 for drinking cups and food packaging (aimed at producers and recyclers).

In 2021 a [survey](#) was conducted with regard to the different possibilities which are available to supermarkets to promote reuse. These options are based on the four reuse models of the Ellen MacArthur Foundation: refill on the go, refill at home, return from home, and return on the go. The consumer survey shows that there is a lot of potential for all four reuse models.⁷⁷ To realise a 50% reduction of disposable packaging in 2030 compared to 2022, we need to aim fully for the promotion of reusable packaging in the convenience sector (supermarkets, on-the-go hospitality and home delivery). This is being done via sector-wide arrangements and, where necessary, statutory obligations. It also requires a change in consumer behaviour (see more on this in Chapter 2 of this NPCE).

After all, plastic packaging is still too often discarded when it can be easily reused. To limit the growing use of plastic disposable packaging, reuse became the new standard for plastic disposable cups and plastic food packaging when the SUP Directive was implemented. To realise the switch from disposable to reusable solutions for food packaging, we also need investments in scalable washing facilities, refill facilities and smart return logistics for reusable packaging. The Ministry of Infrastructure and Water Management funds research into ways in which washing facilities and return logistics for reuse can be made to pay off both economically and ecologically.

Together with other Member States, the Netherlands is aiming for an ambitious revision of the Packaging Directive. This Directive is to include clear and firm requirements for the design and composition of packaging, so that it is reusable and can be recycled in a high-grade manner. To implement these requirements properly, we need standards, for instance to prevent a proliferation of reusable packaging with the associated investment inefficiency and possible adverse environmental effects. It is initially the sectors themselves that will need to take action, via European and national standardisation institutes.

⁷⁷ The group that is open to each of the reuse models is large, while there are relatively few opponents or sceptics. In general, a large share of the Dutch population think it is important to pay attention to reducing disposable packaging and they are open to replacing these with reusable alternatives. In principle, supermarkets hold a positive view of the introduction of reusable packaging. They appreciate it if sector-wide arrangements are made, so that risks are shared, or if the government makes changes mandatory. The industry would also really welcome the introduction of reusable packaging by premium brands.



In parallel to the national and European activities to promote reuse, producers and retailers are also encouraged internationally to introduce packaging reuse as standard.

Track 2: Sustainable use where necessary

For the Revision of the European Packaging Directive, which was published on 30 November 2022, the government focused strongly on having a mandatory minimum percentage of recyclate and/or bio-based plastics. By setting a European standard for recyclate and/or bio-based plastics, demand will be boosted significantly. The flexibility in the standard between recyclate and/or bio-based plastics ensures that the standard can be applied to various different uses. This means that an average of at least 40% for all packaging can also be differentiated into non-food and food packaging, as long as the average still adds up to 40%. The imposition of this standard plays a central role in the policy for closure of the plastic loop, because its implementation also demands actions elsewhere in the value chain.

For example, it will be necessary to also boost the supply of recyclate and bio-based plastics, in addition to the demand. For packaging this can be realised, among other things, by imposing requirements for plastic packaging in the design phase. This will lead to more products being recyclable and to an increase in products supplied for recycling. When the Packaging Directive is revised, we will therefore also focus on the recyclability of plastics. To assure this, it is important to aim to, among other things: 1) reduce the great variety of chemical compositions of plastics; 2) limit the use of certain additives that may obstruct recycling; 3) minimise and prevent the use of SVHCs which may obstruct recycling; and 4) have clear standards for recyclate and/or bio-based plastics. With the European REACH Regulation, we are working to reduce the use of certain substances in products that may be harmful for people and the environment. The Commission recently presented a restriction for the use of microplastics under the REACH Regulation as well. The aim of this restriction is to have the greatest possible ambition within the bandwidth of the scientific advice given. At the same time, the development and scaling up of high-grade recyclate and bio-based plastics is being promoted through the incentives mentioned above.

To ensure that the standards for product design, etc., pay off, packaging must be collected and sorted properly. Without an adequate collection and sorting infrastructure, the carefully designed packaging will still end up in the environment and in incinerators, without it being offered for recycling first. This requires constant efforts from the Packaging Waste Fund (in Dutch: Afvalfonds), Nedvang, the Association of Netherlands

Municipalities, the Royal Dutch association for waste management and cleaning (NVRD), the sorting and recycling sector, and businesses to make proper arrangements to optimise the value chain collaboration. A milestone is the EPR for litter under which producers must help pay for the costs of the removal of litter.

In response to the motion tabled by MP Hagen (D66)⁷⁸ we are investigating whether, in addition to volume, the required quality of plastic recyclate can also be laid down in the EPR for packaging, the Circular Materials Plan or another instrument. Under the EPR for packaging, producers will receive a discount as of 2023 on their waste management fee if they use easily recyclable, non-deformable plastic packaging. The Ministry will keep working on policy incentives to further improve value chain collaboration in the infrastructure for circular plastics. Finally, we will take measures to prevent recyclable plastic waste from being incinerated. (More about this can be found in Section 2.1 of this NPCE.)

Table 16: Measures for plastic packaging

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We will implement the SUP Directive.	■	■	■
We will finance circular plastics via the National Growth Fund and the proposal for Circular Plastics.	■	■	■
We will implement the Plastic Pact NL to ensure that more recyclate is used in newly produced single-use plastic products and packaging, to make it easier to recycle these in full, and where possible to aim for reuse.	■	■	■

78 Parliamentary Papers II 2021/22, 32 852, no. 181.



New measures	Standard-setting	Pricing	Stimulus
We will fund research into ways in which washing facilities and return logistics for reuse can be made to pay off.	■	■	■
We will aim for an ambitious revision of the Packaging Directive: minimisation and prevention of composite plastics, certain additives and SVHCs; standards for recyclate and/or bio-based plastics.	■	■	■
We will introduce an EPR for disposable plastics.	■	■	■
We will investigate the options for laying down the required quality of plastic recyclate in government policy.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

3.2.2 Agriculture and horticulture plastics

A relatively small share of the plastics on the market are used in agriculture and horticulture. However, agriculture and horticulture plastics are a product group with significant potential for reduction, collection, sorting and recycling, and for that reason they have been further explored by the Plastics Transition Team as an interesting test case. For example because the use of recyclate and plastics based on sustainable bio-based raw materials is generally quite possible in this area, and because the collection and sorting of agricultural and horticultural plastics has not yet been organised systematically. In the context of the buyer group for circular plastics, MVO Nederland ('the movement for entrepreneurs in the New Economy') and the Ministry of Infrastructure and Water Management are exploring together with various parties in the value chain whether the percentage of mechanical recyclate in horticultural film can be increased. The current knowledge on agricultural and horticultural plastics gives sufficient cause for the performance of a feasibility study into an EPR for agricultural and horticultural plastics to be introduced in 2025.

In the period leading up to 2025, we will further investigate how a possible EPR can be set up. First, we need to acquire more knowledge on the value chain and the current state of affairs to find out whether an EPR is the most suitable instrument and to be able to formulate clearer and more measurable targets when relevant. In the exploration, attention will at least be paid to: 1) value chain analysis; 2) a mandatory percentage of recyclate and/or bio-based plastics; 3) a collection obligation, and 4) an EPR.

Table 17: Measures relating to agriculture and horticulture plastics

New measures	Standard-setting	Pricing	Stimulus
We will conduct a feasibility study into the introduction of an EPR for agricultural and horticultural plastics in 2025.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

3.2.3 Plastics in construction

For plastics in construction we are also exploring the introduction of an EPR as of 2025, which will be complementary to the rules in the Building Decree (in Dutch: Bouwbesluit) and other relevant legislation. The Ministry of Infrastructure and Water Management and the Ministry of the Interior and Kingdom Relations are already exploring possibilities for value chain optimisation for construction and demolition waste. In the exploration regarding an EPR, attention will at least be paid to a mandatory percentage of recyclate and/or bio-based plastics. Additionally, we will aim for a mandatory percentage of recyclate and/or bio-based plastics in plastic construction products via the revision of the European Construction Products Regulation.



Table 18: Measures relating to plastics in construction

	Standard-setting	Pricing	Stimulus
Continuation and intensification of policy			
We will explore the possibilities for value chain optimisation for construction and demolition waste.	■	■	■

	Standard-setting	Pricing	Stimulus
New measures			
We will conduct a feasibility study into the introduction of an EPR for plastics in construction in 2025.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

3.3 Construction

Vision of the future for 2050 and 2030

Having a fully circular construction economy in 2050 means meeting the socio-economic need for housing and infrastructure without exceeding the carrying capacity of the Earth. This means that effects will not be shifted to later periods or to other countries, and there will be no loss of socio-economic values, such as the well-being of employees and supply risks, either. Circular construction is a means to achieve this goal. In this context, ‘construction’ refers both to Commercial and Non-residential Building (in Dutch: *Burgeren Utiliteitsbouw* or B&U) and to Civil Engineering.

To realise the vision of the future for 2050, the *Circular Construction Economy Transition Team* has provided advice on which targets need to be achieved in 2030, and via which measures.

The point of departure for construction is the development, use and reuse of construction works, areas and infrastructure, without unnecessarily depleting natural resources, polluting the environment or negatively affecting ecosystems. This means using materials or products with the lowest possible environmental impact across the entire life cycle of production, application, the usage phase including maintenance, and the waste phase and reuse.

The government agrees with this vision of the future as described in the advisory roadmaps⁷⁹ and the chosen product groups. All the different circular strategies need to be deployed for this purpose: with regard to the materials and with regard to the use of those materials in the construction work.

Essentially, the following solution strategies can be used:

- Building more efficiently and using fewer primary materials for each construction work ('narrow the loop', at the level of the construction work);
- Maintaining construction works in a way that ensures that they will last for longer, and designing and constructing them to ensure that their lifetime will or can be extended, so that fewer new materials are needed ('slow the loop');
- Adaptive construction, so that the construction work can be adapted to suit the needs of users ('slow the loop');
- Reuse of freed-up objects and components ('slow the loop') and, where this is not possible, recycling them in a high-grade manner ('close the loop');
- Circular design of construction works so that objects and components can be reused in the future, for instance by making them detachable ('slow the loop'), and so that materials can be recycled in a high-grade manner in the future ('close the loop');
- Developing and using alternative materials with a lower environmental impact, such as environmentally-friendly, secondary and renewable materials (substitution).

These measures have not been listed in any order of preference. The choice will be determined by the environmental burden to be reduced via the set of measures.

⁷⁹ For this chapter, use was made of the SER foresight study '[Evenwichtig sturen op de grondstoffen-transitie en de energietransitie voor brede welvaart](#) [A balanced focus on the raw material transition and the energy transition for broad prosperity] and the study entitled [Materiaalstromen in de bouw en infra](#) [Material flows in construction and infrastructure].



Selection of product groups

The Circular Construction Economy Transition Team has focused on the product groups of housing, offices and industrial buildings, concrete viaducts and bridges (as part of ‘civil engineering works’), and road surfaces. They have opted for this focus because these product groups have a high environmental impact and involve significant risks for the security of supply.⁸⁰ In this they have mainly looked at the construction work to identify the total integrated impact. By examining things at the level of the construction work, rather than at the level of a raw material or material flow, we can gain insight into – and focus on – the solutions that result in the lowest possible raw material usage and in the lowest possible environmental effects across the entire lifetime, in the entire product chain. The government can easily follow these choices and in this NPCE lists a number of targets and measures for these product groups, therefore, also in a generic sense, with a view to the realisation of a circular construction economy.

The environmental performance of construction works is expressed as a score calculated using the so-called Environmental Performance Assessment Method for Construction Works (in Dutch: *Bepalingsmethode Milieuprestatie Bouwwerken*). The Assessment Method charts a large share of the intended environmental effects (like carbon emissions, raw material depletion, environmental pollution linked to the specific material, land use, and consequently also biodiversity effects). This makes it possible to comprehensively investigate the environmental effects at the level of the construction work. The environmental effects are calculated across the entire lifetime of the materials and products in the construction work in all phases: the extraction of raw materials, transport, manufacturing of the building materials and products, the construction process itself, maintenance during use of the construction work, and ultimately its demolition. The Assessment Method is widely accepted within the construction industry; to promote circular building in the Commercial and Non-residential Building sector, an environmental performance requirement has been included in the building regulations. In the Civil Engineering sector, the environmental performance (Environmental Cost Indicator, or ECI) is mainly used as an instrument for promoting sustainable procurement for infrastructural projects.

⁸⁰ See the *advisory roadmap* of the Circular Construction Economy Transition Team for a more detailed justification of the selected product groups.

Policy aimed at a circular construction economy

Commercial and Non-residential Building sector

In the process to make the built environment more sustainable, attention has been focused mainly on reducing the use of fossil energy in the usage phase – among other things by promoting energy saving, building insulation and sustainable alternatives for heating. The ambition for the coming years is to also strongly reduce the climate and environmental impact of the construction process itself. For this, the market for sustainable building materials with a low environmental burden will need to grow further over the coming years. Building with wood and bio-based materials, like we used to do in the Netherlands for centuries, now only occurs on a small scale. We do see an increase in prefab and industrialised and modular building methods, but the market share of these methods is currently too small to have the desired climate and environmental effect. In addition, the longevity of construction works, construction products and construction materials will need to be improved. This can be done by building more adaptively and flexibly, to give construction works a longer life. But reuse can substantially extend the lifetime of construction products and materials as well. And other methods to produce and use traditional building materials can also help us realise a lower climate and environmental impact. A good example of this is the use of sustainable concrete with a low environmental burden, in a reusable manner. Here, too, however, the scale and applicability are as yet insufficient.

In the acceleration of the development towards more circular construction, both clients and contractors have an important role to play. Clients can formulate firm criteria for the environmental performance of new buildings to be constructed and subsequently also monitor, test and check the fulfilment of these requirements or criteria in the realisation phase. Plus, builders can develop new construction concepts and production methods, making better use of the innovations that already exist. In addition, more stringent statutory requirements can play an important role⁸¹, as well as the promotion of industrial construction where this leads to a lower ECI and increased reusability.⁸² The advice provided by the Circular Construction Economy Transition Team in the advisory roadmaps corresponds with this.

⁸¹ Letter to Parliament from MINVRO dated 12 April 2022, House of Representatives, 2021–2022, 32757, no. 186.

⁸² <https://www.rijksoverheid.nl/documenten/rapporten/2022/03/11/programma-woningbouw>



The Civil Engineering sector and the Strategy for Climate-Neutral and Circular Infrastructure

For the Civil Engineering sector, the majority of our government policy in terms of concrete targets and actions has been previously determined and shared with the House of Representatives, in the form of the Strategy for Climate-neutral and Circular Infrastructure⁸³ (in Dutch: *Strategie Klimaatneutrale en Circulaire Infrastructuur* or KCI). In other words, the government is already working towards fully climate-neutral and circular infrastructure. The advice provided by the Circular Construction Economy Transition Team in the advisory roadmaps corresponds with this. It appears from the advice that the existing and intended policy aimed at the investigated product groups will indeed contribute to the achievement of the intended impact targets, but that additional actions are possible. In this chapter we will indicate for the Civil Engineering product groups which targets and actions are already included in the KCI Strategy, which ones will be further elaborated in the context of the KCI Strategy, and which additional actions will be initiated outside of the KCI Strategy. For the further process, monitoring of and accountability for progress on the circular targets and actions that fall within the scope of the KCI Strategy will occur or will continue to occur in that context.

The Civil Engineering sector is characterised by the fact that a relatively limited group of public clients manage virtually all infrastructure and that the public sector can potentially exert an enormous influence on the market. This concerns both the national government and other public authorities (water authorities, provincial authorities, municipal authorities). In the opinion of the government it is very important that all clients can achieve the circular targets, and we will keep consulting with local and regional authorities about this.⁸⁴

The impact targets described later on in this chapter are based on the tightening of the Environmental Performance of Buildings (expressed as EPB) and the reduction of the environmental burden (expressed by means of the ECI) of Civil Engineering works.

⁸³ Letter to Parliament on strategy: <https://www.rijksoverheid.nl/documenten/rapporten/2020/06/15/bijlage-1-strategie-naar-klimaatneutrale-en-circulaire-rijksinfraprojecten>.

⁸⁴ In October 2022, the provincial authorities adopted their *Ambitiebepaling voor KCI* [ACTIONS set for the KCI strategy]. The Association of Water Authorities previously adopted their strategy for sustainable commissioning entitled *Opdrachtgeven met ambitie, inkopen met impact* [Commissioning with ambition, procuring with impact].

This makes it necessary for the system to function optimally and for it to be further developed properly. We will also need to investigate which circular indicators still need to be added to the ECI to be able to focus on circularity as well as possible.

Challenges

The government has taken stock of the challenges and obstacles⁸⁵ that need to be addressed in order to realise a successful transition. In this NPCE, the government is aiming to eliminate these obstacles insofar as possible to keep the targets listed in the next section within reach.

- With the budget that is currently available, only some of the targets and measures are feasible. For example, we currently lack resources for supporting measures that would help us to initiate and promote innovation and scaling up of the market, as well as to phase out polluting and linear activities over time. Think of the budget for the placement on the market of more environmentally friendly building materials, but also for the transition of the raw materials processing industry to innovative, more sustainable building materials, and for promotion of and support for the supply of more bio-based materials (the alternative revenue model for farmers with sufficient guaranteed income). An obstacle that is partly connected to the inadequate available budget is that public clients currently are making insufficient use of their position as a buyer to focus on circularity.⁸⁶

⁸⁵ Among other things, we are making use of the MIS analysis for the Civil Engineering sector in this regard. Bours, S.A.M.J.V., Swartjes, J. & Hekkert, M.P. (2022). *Transitie naar een circulaire grond-, weg- en waterbouw in Nederland. Een missie-gedreven innovatie systeem analyse* [Transition to a circular Civil Engineering sector in the Netherlands. A mission-driven innovation system analysis]. Copernicus Institute of Sustainable Development, Utrecht University.

⁸⁶ The fact that in our current system the external costs of materials are not factored into the price also plays a role here. A shift in the tax system so that the environmental cost is actually factored into the price may provide a structural incentive in this context (see, among others, Copper8, “*Circulair bouwen: hoe reken je het rond? Kan een lastenverschuiving van arbeid naar grondstoffen helpen in de transitie naar een circulaire bouweconomie?*” [Circular Construction: how to get the calculations in order? Can an expenses shift from labour to raw materials support the transition to a circular construction economy?] (2022).



- Over time we are expecting a shortage in the supply of environmentally friendly primary, secondary and/or renewable raw materials. The shortage in the Dutch labour market may also affect the transition to circular construction.
- In general, as a client, the public sector is not sufficiently paying attention to, or managing, the circular strategies of reduce, rethink and redesign. This applies both to the total construction challenge (and the reduction thereof) and at the level of the construction work. Vested interests can stand in the way of necessary changes. The separate budgets for construction on the one hand and maintenance & management on the other also obstruct circular solutions and the interaction between solution strategies. However, it partly also concerns a cultural problem in the construction world. There is room to strengthen these circular design principles in particular in all layers of the sector.
- Planning issues in the built environment are insufficiently regarded from an integral perspective. This applies both to the Commercial and Non-residential Building sector and to our infrastructure, as well as to the dialogue between the two sub-sectors. For instance, think of a joint assessment of the demand for infrastructure that follows the choice of a new construction project.
- Data in the construction industry are incomplete, not reliable enough or insufficiently available. We lack a strategic approach that connects data from the Commercial and Non-residential Building sector with data from the Civil Engineering sector and ensures these data can be found and searched, for instance by setting up circular construction hubs.
- The development, sharing and securing of knowledge is as yet insufficient and too fragmented, among other things due to the project-specific approach that characterises the construction industry (source: MIS analysis for Civil Engineering). We are assessing how knowledge and insights can be brought together in a smart way, for instance via a network platform. This way, the learning approach can be further enhanced at the big market players.
- For the Commercial and Non-residential Building sector, requirements are currently focused on new construction projects, and there are no requirements as yet for renovation, for example related to sustainability.

Preconditions

The advisory document drawn up by the Circular Construction Economy Transition Team also includes an advisory roadmap with lines of action and performance targets which are essential for the transition, and which are relevant for and applicable to all product groups. In connection with this advice, the government is embracing the following strategic focus points:

- Focusing more on reduction of the environmental impact in the Civil Engineering sector by means of the ECI⁸⁷;
- Setting up a substantive improvement process for the system of the Environmental Cost Indicator that leads to a transparent and unambiguous ECI for tendering, commissioning, realisation, and supervision & enforcement;
- Formulation and implementation of a data strategy for the circular construction economy;
- Obtaining insight into how circularity and spatial planning are interconnected⁸⁸;
- Contributing to a properly functioning market in 2030 (aligning supply and demand) for high-value reuse; contributing to the development of materials designed and produced for 100% reuse or high-grade recycling.

The elaboration of this will be further described in the section on Measures.

Targets per product group

Below we will describe for all selected product groups what impact targets, circularity targets and associated measures the government has arrived at based on the advisory roadmaps of the Circular Construction Economy Transition Team. The selected product groups are:

- housing;
- offices;
- other uses, including industrial buildings;
- viaducts and bridges;
- road surfaces.

⁸⁷ The Environmental Cost Indicator (ECI) is the indicator which is used to express the environmental burden of Civil Engineering works. For more information about this, see www.milieudatabase.nl.

⁸⁸ The influence of the Environment and Planning Act (in Dutch: Omgevingswet) on the circular construction transition will be involved here as well.



3.3.1 Housing

As an impact target, the government aims to halve the environmental performance of new homes, step by step, by 2030 at the latest.⁸⁹ The government is currently examining whether the pace of this halving can be increased so that it will be achieved by 2025.⁹⁰

A tightened environmental performance requirement will force parties to build with a lower environmental burden. This can be achieved by means of circular measures. Because the environmental performance requirement has been laid down in the construction regulations as a generic performance requirement, the client, the designer and the builder are free to choose which concrete measures they will take. By tightening the environmental performance requirement we will promote the taking of circular measures, like the use of recycled and bio-based materials⁹¹. When it comes to the implementation, the government realises that the energy performance requirements, other requirements from the building regulations and the environmental performance requirements may have an effect on each other, and we will monitor the interconnections.

For the implementation, the government is opting for a number of specific strategies for proper coupling of the reduction of the environmental burden of construction with the policy priorities for the construction challenge.

As circularity target (1), the government wants industrial construction and renovation via a digitised process to be the standard in all situations which are suitable for this. The aim is to serve half of the total market in this way by 2030. This offers opportunities for redesigning products and sub-processes, resulting in higher quality (including environmental quality) and lower costs, and therefore a more sustainable revenue model. In addition, the development and scaling up of new bio-based and circular building materials can be linked directly to this industrialisation and digitisation exercise.

In the context of the construction challenge, circularity target (2) is the aim to deliver 15,000 homes per year by transforming shopping areas and offices. At the moment,

about 10,000 homes are being realised by transforming shopping areas and offices, and we want to increase this to 15,000 per year. The actual realisation will partly depend on the tightness of the labour market, buildings costs and material increases, economic developments, objection procedures and spatial considerations related to other spatial functions.

In the context of the construction challenge, circularity target (3) is the aim to deliver 15,000 flexible homes per year. This will be supported by financial resources made available under the Coalition Agreement to be able to cover the unprofitable peaks and safeguard accessibility. Flexible or temporary homes can be realised quickly and can also be erected in locations which will only be available for residential purposes temporarily. This way, this type of home can help reduce the urgent need for housing. Moreover, there are ever more innovations in the area of flexible and small-scale compaction, like working with fewer or lighter materials such as wood, so that the environmental impact of the construction process and the construction work is reduced. We are also seeing innovations that lead to more possibilities for reuse of materials and construction elements.

Circularity target (4) is to better utilise the existing housing supply, like by exploring the use of the instrument of home splitting and by promoting home sharing⁹².

Table 19: Measures for the product group of housing

Standard-setting	Pricing	Stimulus
Continuation and intensification of policy		
Measurement and coercion: <ul style="list-style-type: none">We will further develop the Assessment Method designated in the regulations and will conduct research into further tightening of the environmental performance requirement for newly constructed buildings or civil engineering components.		

⁸⁹ House of Representatives, parliamentary year 2019–2020, 32 852 / 32 847, no. 94.

⁹⁰ *Parliamentary Papers II, parliamentary year 2022/23, 32852, no. 223.*

⁹¹ In this we will also involve the promise made by the Minister of the Interior and Kingdom Relations in relation to the appreciation of carbon storage in bio-based materials; House of Representatives, parliamentary year 2020–2021, Appendix to the Proceedings, 1737.

⁹² <https://open.overheid.nl/repository/ronl-dfe59a4dce3367fe84d95284838a8b69af70d4d/1/pdf/programma-een-thuis-voor-iedereen.pdf>



Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
<p>Measurement and monitoring:</p> <ul style="list-style-type: none"> We will also use the Assessment Method in case of renovation and transformation, and we will monitor the results. Special attention will be paid here to the right use for energy renovations. 	■	■	■
New measures	Standard-setting	Pricing	Stimulus
Good market conditions (supply and demand):			
<ul style="list-style-type: none"> We will ensure that the data are in order and we will use standards for data exchange. 	■	■	■
<ul style="list-style-type: none"> We will support knowledge transfer on procurement and tendering towards local and regional authorities, among other things via buyer groups. 	■	■	■
<ul style="list-style-type: none"> We will support knowledge transfer on circular construction and renovation towards housing corporations. 	■	■	■
<ul style="list-style-type: none"> We will make better use of the existing housing supply, like by exploring the use of the instrument of home splitting and by promoting home sharing. 	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

3.3.2 Offices

As an impact target, the government will aim for an environmental performance for new offices of 0.7 or less (compared to 1.0 in 2021). Circularity target (1) set by the government will promote the progress of circular procurement and tendering by the Central Government Real Estate Agency (in Dutch: Rijksvastgoedbedrijf or RVB). This will lead to a carbon emission reduction in the construction, management and demolition of offices, as a consequence of reuse of secondary materials, among other things⁹³. By promoting the construction of demountable buildings and using bio-based and reused materials we can reduce the production and use of primary (fossil) raw materials, so that less waste will be generated and the environmental burden will decrease.

Circularity target (2) is to have as much transformation and renovation or sustainability improvement instead of new construction. The realisation of additional homes by transforming real estate will also help improve the vitality of areas, cities and villages. We can see this, for example, in areas where many buildings are unoccupied. By adding the residential function, and using a proper balance between functions as an important point of departure, we can improve the vitality of the area and put a stop to the downward socio-economic spiral caused by high vacancy rates. Transformation is mainly opted for vacant office buildings, social properties, business premises and shopping areas with high vacancy rates.

Other usage functions

The government is aiming to extend the use of the environmental performance requirement for new construction to include other usage functions, like education, healthcare, sport, shops, hospitality and industrial buildings. In the elaboration thereof, the government will follow the advice of the Circular Construction Economy Transition Team with regard to industrial buildings.

⁹³ Originating from previous use or from waste and intended to replace primary raw materials.
See: <https://milieudatabase.nl/en/faq/glossary/>.



The advice of the Circular Construction Economy Transition Team is to ensure that an environmental performance for industrial buildings will be easily usable by adjusting the Assessment Method to make it suitable for buildings for this usage function. As a target for this, the Transition Team proposes an environmental performance requirement for industrial buildings, just like for housing and offices.

In addition, the Transition Team recommends exploring what assessment framework can be created for industrial buildings in collaboration with local and regional authorities: the framework is intended to focus on an assessment of whether the new building is actually needed and whether the existing building can be reused, also for a different function than an industrial one.

Table 20: Measures for the product group of offices

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
Measurement and coercion: • We will further develop the assessment methods designated in the regulations and will further tighten the environmental performance requirement for buildings.	■	□	□
New measures We will create a roadmap for circularity, biodiversity, energy and climate adaptation, among other things to ensure high-value reuse of existing buildings and maintenance.	□	□	□

Standard-setting	Pricing	Stimulus
New measures		
<p>Promotion of market demand:</p> <ul style="list-style-type: none"> We will promote circular procurement and tendering (in accordance with the measure from the Coalition Agreement) by regulating reuse and percentages of recyclate in construction materials via the Central Government Procurement Service.⁹⁴ This measure involves the ‘promotion of reuse and recyclate in construction materials’ via the tendering procedures of government departments. This will provide an incentive to the market via the exemplary role and purchasing power of the government through circular procurement and tendering. 		

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

3.3.3 Viaducts and bridges

As an impact target, the government aims to realise a 50% reduction of the environmental burden by 2030 compared to the environmental burden in 2019.

A lot is needed for us to achieve this. Firstly, we want to realise all new construction works in a circular manner. This demands an integrated, strategic circularity assessment at the front of projects, from as early on as possible, so that circularity can be taken into account and is given as much weight as possible.

Circularity target (1) linked to this is that by 2030 an integral circularity assessment will take place at the level of the construction work in every new construction or replacement assignment, and that the aim is to reduce the environmental burden as much as possible (ECI). The focus here will be on the circular strategy, design principles and measures that

⁹⁴ Resources for this have been allocated to the Central Government Real Estate Agency (RVB), Rijkswaterstaat (RWS) and ProRail in the Coalition Agreement.



cause the greatest sustainability improvement (reduction of the ECI) at system level. A so-called frontrunner/peloton approach will ensure that when projects are tendered for, a constant ECI reduction will occur. In frontrunner projects, a high ECI reduction will be rewarded for frontrunners in the market. In addition, minimum requirements will be formulated and will be subsequently tightened step by step for the tendering of Civil Engineering works: the ‘peloton’. This is a prerequisite for the realisation of a circular Civil Engineering sector, and as such it is part of the approach in the context of the KCI Strategy. From 2025, all new bridges and viaducts and all replacement bridges and viaducts will have a circular design. This relates to all stages of the construction work, including realisation, management and maintenance, end of life and any subsequent life cycles of the object, components or materials. The sector will focus on further development, synchronisation and implementation of circular design principles. Rijkswaterstaat is currently developing an assessment framework for bridges and viaducts, in which the design will be linked to the intended functional use, the context and the future developments to be expected. The government wants to build on this and also draw up an assessment framework of this kind in collaboration with, and for the benefit of, local and regional authorities.

As circularity target (2), the government wants existing viaducts to achieve their intended technical lifetime from 2030. This is because in practice we are seeing that civil engineering works often do not achieve the longevity for which they were designed (technical lifetime), because they are affected by technical or other defects due to design decisions, execution methods and/or inadequate maintenance and management practices. This is why we need to maintain existing civil engineering works adequately and in a circular manner. Preventive, predictive maintenance will become the standard approach and will be integrated into the asset management process. For this it is essential to have proper insight into the technical condition of existing bridges and viaducts. In addition, from 2030 maintenance must at least lead to the achievement and, where relevant, an extension of the technical lifetime expected at the time of design. To realise this, we will focus on the further development of lifetime-extending measures and circular asset management. This way, we can focus on value preservation in the sector. The actions for this target are being performed via the KCI strategy. In addition, the government expects to be able to combat accelerated degradation by conducting enforcement on overloading.

As circularity target (3), the government wants the technical lifetime of new bridges and viaducts to be aligned to their functional lifetime from 2030. Because requirements imposed on civil engineering works in terms of their use often change over time (for instance due to more traffic or heavier vehicles), many civil engineering works which are still functioning properly in a technical sense need to be demolished and replaced prematurely. With this target we want to prevent this. This demands that in 2025 new civil engineering works have a future-proof design. In other words, they have to be adaptive, flexible and/or robust, so that they can be adjusted when functional changes occur. This requires further development and implementation of a strategy and approach for future-proof viaducts and bridges. These actions will also be further elaborated and implemented via the KCI strategy.

As circularity target (4), the government is aiming for high-value reuse for all elements of existing bridges and viaducts which are released from 2030. For this, a reuse scan will be performed for each construction work. Of the materials which are not reused, at least 80% will be recycled in a high-grade manner. In 2030, all concrete bridges and viaducts that need to be dismantled will therefore be demolished in a circular way, the elements that become available as a result will be reused in a high-value manner, and the remaining materials will be processed via high-grade recycling. This is not yet an explicit part of the KCI strategy, and the government is investigating how and when this target can be included in it.

As circularity target (5), the government will focus on the use of alternative materials (i.e. secondary or renewable ones) for all new bridges and viaducts to be built. If new concrete is used, a gradually increasing minimum percentage of secondary raw materials must be used; the percentage for 2030 has yet to be determined. These percentages will be determined soon.

It should be noted here that the product group of bridges and viaducts is a selection from the larger group of ‘civil engineering works’. However, many of the targets and measures mentioned are also relevant and important for the larger group of civil engineering works and therefore also linked in a broader sense to the approach aimed at climate-neutral and circular civil engineering works as set out in the KCI strategy.



3.3.4 Road surfaces

For the product group of road surfaces, slightly similar targets apply as for the product group of viaducts and bridges. As an impact target, the government aims to realise a 50% reduction of the environmental burden by 2030 compared to the environmental burden in 2019.

Optimisation of the ECI reduction of the full road system including construction and maintenance also applies as circularity target (1) for this product group. For this we need to have new roads, road surfaces and asphalt layers designed in a circular manner in relation to the road system (meaning the entire road including foundations, road ‘furniture’, road surfaces, shoulders, lines, etc.). This can be done by frontrunners from 2025, and by all parties from 2030. It can be achieved by means of further development/synchronisation and implementation of circular design principles and strategies relating to road systems, and by aiming for circular design of the optimal road system related to functional road use, context and future scenarios (including alternative road surfaces). The government is investigating how this can become part of the KCI strategy.

As circularity target (2), the government also aims to reduce the construction challenge for roads and material use compared to the current prognoses. For this purpose, the Ministry of Infrastructure and Water Management will request advice from the Circular Construction Economy Transition Team in 2023 on a strategy for the carbon budgets and prioritisation of roads including civil engineering works. In addition, a circular development vision for construction and spatial planning will be released in 2025, in which we will explore how the construction challenge for roads can be reduced. This will naturally also include the civil engineering works and will therefore have a positive effect on the entire sector. Elements that may be part of this are: circular area development / integral approach to spatial planning issues at regional level (choice: Where to build? How to meet mobility needs?), research and strategy relating to alternative road surfaces, and aiming for measures focusing on more efficient use of roads (such as: narrower lanes, behavioural measures like the promotion of alternative transport, less transport on roads, in-car systems and other sustainable and smart, (possibly) integrated options, etc.). From a circular perspective, much can be gained on the infrastructure side (infrastructure that does not need to be realised – and subsequently maintained), and on the vehicle side (lower vehicle possession rates and therefore fewer raw materials, and lighter design).

As circularity target (3), the government wants asphalt layers to have a useful life that is at least two years longer in 2030. In concrete terms, this means that in 2026 circular management and maintenance of asphalt roads must be fully implemented. Other sub-targets linked to this: in 2030 a strategy will be available for traffic measures aimed at retention, and asphalt mixtures with a longer lifespan can be generally applied. Actions that contribute to this: preventive, predictive maintenance and lifetime-extending maintenance will be standard approaches and will have been integrated into the asset management process, optimisation of and focus on realisation protocols in relation to sustainability, further development of lifetime-extending measures (available, usable and scalable), and the development and validation of mixtures with a greater longevity. These actions will be performed as part of the KCI strategy. In addition to this, the government wants to investigate how the following actions can be initiated: focus on reduction of road wear by means of traffic measures, development of an assessment framework for lifetime in relation to circular performance, and development of lifetime predictions for asphalt (as part of Rijkswaterstaat’s asphalt impulse). In this context, we are also looking at the possibilities for optimisation of regulations which currently lead to road surfaces being replaced prematurely, so that their technical lifetime is not achieved.

As circularity target (4), the government aims to ensure that by 2030 at least 95% of the freed-up asphalt will be recycled in a high-grade manner. This means that the asphalt from layers that become available must be reused at least in equivalent layers, that the outflow of asphalt granulate to lower-value applications will no longer occur, and that for new asphalt layers the minimum percentage of asphalt granulate for all applicable mixtures will be included in the regulations. This will be further elaborated as part of the KCI strategy.

A circularity target (5), the government wants at least 10% of binding agents and at least 20% of the other raw materials used (excluding asphalt granulate and binding agents) to be of alternative origin, such as secondary and/or renewable (including bio-based) raw materials, by 2030. For this, we will focus on the use of secondary and renewable materials as of 2025 and alternative materials for road surfaces from 2028, if these lead to a lower ECI of the road system (within the applicable performance requirements). Actions that will contribute to this are the development and validation of alternative raw materials for asphalt and the innovation and (further) development of alternative road surfaces (think of alternative materials, modular road paving, adaptive/flexible road paving, etc.). This will be further elaborated as part of the KCI strategy.



Table 21: Measures for the product groups of viaducts, concrete bridges and road surfaces

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus	New measures	Standard-setting	Pricing	Stimulus
We will investigate an approach to focus on optimal ECI reduction by means of circular design and an integral assessment of the entire road system / civil engineering work, where necessary with partners.	■	■	■	Measures from the Coalition Agreement: We will regulate reuse and percentages of recyclate in construction materials via the Central Government Procurement Service. This measure will involve the 'promotion of reuse and recyclate in construction materials' via the tendering procedures of government departments. This will provide an incentive to the market via the exemplary role and purchasing power of the government through circular procurement and tendering.	■	■	■
We will develop (or further develop) an assessment framework for circular design of roads and civil engineering works, based on an overarching strategy for reuse and for bio-based.	■	■	■	We will investigate how we can give substance to the government's intention to make more use of the ECI to be able to make the Civil Engineering sector more sustainable more quickly. We will involve local and regional authorities in this, among others. The point of departure is the clear advice from the Circular Construction Economy Transition Team, in which experts from both the private sector and local and regional authorities are active, to improve the sustainability and circularity of the Civil Engineering sector in an accelerated manner via more transparency and management based on the ECI. The government has taken note, with a positive basic attitude, of this advice, which is in line with the signal given off by the Concrete Agreement (in Dutch: Betonakkoord) in 2021.	■	■	■
We will focus on the further development of the ECI by investigating – in the context of the consultations with Stichting NMD (the Foundation for the National Environmental Database, in Dutch: <i>Stichting Nationale Milieudatabase</i>), among others – how indicators focused on circularity (such as primary versus secondary materials, lifetime, detachability, but also the effect on biodiversity, etc.) can be strengthened. We will structurally support Stichting NMD to help achieve good-quality implementation of the indicators.	■	■	■	We will develop a vision and the associated policy interventions for narrowing of the loop, such as efforts to reduce transport on roads, different designs for modalities, smart mobility, narrower lanes, traffic measures to combat overloading, and weighing up reduced nuisance against space for reuse.	■	■	■
We will improve the level of quality of the cycling network and this will manifest itself in the construction and management of this network. This concerns a quality level for road safety, comfort, social safety and sustainable construction/management in the Civil Engineering sector.	■	■	■				



New measures	Standard-setting	Pricing	Stimulus
<p>We will investigate which traffic measures can contribute to the maintenance and reduction of the wear of construction works in the Civil Engineering sector, with a view to extending their lifetime. For this, we will weigh up the following aspects, among other things: stronger enforcement with regard to overloading, restoration of Weight-in-Motion (WiM) systems, enforcement of the speed limits, protocols for road repair works.</p>	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

Measures and required resources

In addition to and for the implementation of the policy described above, the government will incorporate the advice from the advisory roadmaps into its further policy development where possible, including the KCI Strategy, the mobility vision, the National Strategy on Spatial Planning and the Environment (NOVI), sustainability improvement and the construction challenge in the built environment. We can see that the advice builds on and links up with that which has already been set in motion in terms of policy and implementation. So we will continue with this. This also applies to the work programme of the Circular Construction Economy Transition Team. In view of the early stage of the transition that we are in, the focus on circular construction will be further updated over the coming years, without allowing this to slow down the implementation of ongoing circular projects and programmes. The overview below lists the measures that the government wants to use across the sector and per product group, as well as a description of the necessary resources.

Table 22: Measures relating to construction in general

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
<p>We want to gain more insight into and focus more on knowledge development, and we want to pay more attention to making the developed knowledge available centrally in an accessible way, preferably via existing platforms like the Circular Construction Economy Transition Team, Platform CB'23, Duurzaam GWW [Sustainable Civil Engineering] and Cirkelstad [Circular City].</p>	■	■	■
New measures	Standard-setting	Pricing	Stimulus
<p>We will investigate how an area-based approach to the integral spatial challenges can help realise circularity in construction, including room for circular building hubs and circular business zones.</p>	■	■	■
<p>We will develop a Data Strategy for CE in construction for both the Commercial and Non-residential Building sector and the Civil Engineering sector.</p>	■	■	■
<p>We will explore whether circularity targets for new product groups in construction, like schools, hospitals, dikes and road surfaces, need to be elaborated by local and regional authorities and, if so, which ones. For this we will request advice from the Circular Construction Economy Transition Team.</p>	■	■	■



New measures	Standard-setting	Pricing	Stimulus
We will support the set-up of the TKI (Top consortium for Knowledge and Innovation) for Construction & Technology and we will ensure that knowledge and innovation efforts by the design, construction and engineering sector are incorporated into policy via new multi-year mission-driven innovation programmes (MMIPs). Two new MMIPs are directly linked to the challenges in this NPCE and concern (1) lifetime extension and (2) circular construction and infrastructure.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

3.4 Manufacturing

The authors of the advisory roadmap for manufacturing have set targets for the road towards a more circular economy and the lines of action which are to contribute to that. The advisory roadmap primarily focuses on industry including the suppliers in the clusters of materials (metals, plastics, chemicals for surface treatments), consumables, building and construction products, high-tech and Capital Equipment industry, and consumer products.

The production of end products and discrete products (the product of an Original Equipment Manufacturer (OEM)) will take centre stage, whereas the other sectors will play a vital role as suppliers of these OEMs. In addition to this focus on production businesses in the entire value chain, installation, repair and recycling activities expressly feature in the advisory roadmap.



Table 23: Economic interest, material use and carbon emissions in manufacturing and the consequences of circular measures

	Jobs	Material usage	Added value + impact of roadmap for UPCM	Impact of roadmap for UPCM	Current carbon impact	Autonomous reduction due to Climate Agreement	Additional contribution of roadmap for UPCM	Total reduction thanks to Climate Agreement and roadmap for UPCM
	1,000	ktons	MEUR/y	MEUR/y	ktons/y	ktons/y	ktons/y	ktons/y
20 Chemical industry (only SBl3 sectors 203 and 205 which are particularly important for manufacturing)	16	11,752	3,381	135	6,096	2,537	304	2,841
22 Rubber and plastic product industry	40	6,349	3,102	248	321	76	31	107
23 Building material industry	28	32,541	2,122	106	1,774	154	117	271
24 Basic metal industry	24	23,049	2,298	92	6,966	1,538	480	2,018
25 Metal product industry	116	6,771	7,302	584	478	111	46	157
26 Electrical engineering industry	32	1,110	4,325	87	88	19	5	24
27 Electrical equipment industry	25	2,717	3,039	91	172	35	7	42
28 Machine industry	106	8,012	12,387	743	274	65	25	90
29 Motor vehicle and trailer industry	35	4,066	3,132	31	146	35	18	53
30 Other transport equipment industry	25	117,512	1,639	82	100	21	10	31
32 Other industry	82	3,387	3,788	152	305	71	26	97
33 Repair and installation of machinery	56	0	3,610	686	100	24	15	39
38 Waste processing and recycling	25	60,100	1,000	120	7,350	870	1,103	1,973
Total	610	277,366	47,744	3,157	24,170	5,556	2,181	7,743



The manufacturing industry accounts for over 600,000 jobs in the Netherlands, with an added value of EUR 47 billion. Every year, 277 billion ktons of materials are used in manufacturing. The carbon emissions caused by the activities of the manufacturing industry amount to 24 Mtons (scopes 1 and 2). The implementation of circular strategies in this business sector may lead to an emission reduction of about 2.2 Mtons of CO₂ per year⁹⁵. The base metal industry, the metal product industry and waste processing in particular can contribute strongly to this reduction.

The greatest system efficiency potential will be achieved through the introduction of digitisation and smart industry solutions. Manufacturing is a global industry with complex value chain relations. A lot of production in the Dutch manufacturing industry concerns the processing of raw materials and semi-finished products and/or the assembly of components like sheeting, electronics, mechanical components for end products like hybrid central heating systems. As we have already indicated, reduction of CO₂ emissions and of the environmental burden will occur as a consequence of a combination of innovations related to design (including digital twinning), maintenance and repair (and therefore equipment lifetime), more intensive use of equipment (via sharing platforms), improved design and return logistics (due to business models which are aimed more at servitization⁹⁶) and increased recycling of a higher grade. Many of these innovations will be increasingly usable as a consequence of the introduction of digital technology in manufacturing (Smart Industry, Industry 4.0). All these activities can make a contribution – which has yet to be further elaborated – to improvement of the security of supply (of materials, semi-finished products and components) of the sector, because they lead to better insight into the availability and location of assets placed on the market and business model changes that make use of this. This security of supply⁹⁷ has been under considerable pressure in the past few years, among other things due to an overheated world economy, the COVID crisis and several geopolitical conflicts. Finally, the circular

manufacturing industry has a potential of EUR 3.2 billion⁹⁸ in extra added value for the Dutch economy.

Vision of the future for 2050

In 2050 the manufacturing industry will still be an important pillar of our resilient economy and will continue to contribute to broad prosperity in the Netherlands. To make this possible, the Dutch manufacturing industry must be able to compete on the global market. The digitisation of manufacturing will play a crucial role in this respect.

The further development to a circular economy will lead to job retention and an improvement of the quality of employment. Social inclusiveness is the point of departure here. This way, manufacturing will make a strong contribution to economic and social value preservation.

The manufacturing industry is also aiming for ecological value preservation. Both the products and the production processes in the manufacturing industry will help create a world with a smaller footprint and a level of greenhouse gas emissions that meets the Paris Climate Agreement. Not only because the production processes will require minimal use of energy and raw materials and because more intensive and longer use of materials and products has become common sense, but also because products from the manufacturing industry themselves will help realise technological solutions that benefit the climate and the living environment (think of energy transition technologies that feature prominently in this advisory roadmap, partly for this reason).

In 2050, ample policy initiatives will have been taken and implemented at European level: the manufacturing industry will have been able to develop a whole range of circular measures in conformity with the market and put them into practice.

⁹⁵ By making use of current emissions in Dutch territory that adhere to the UNFCCC guidelines, reductions are being achieved which fit in with the climate policy. This does not concern scope-3 emissions, therefore. Previous research conducted by means of global EE-IOA models has shown that the emission reduction including scope 3 is about 40% greater than the reduction of scopes 1 and 2.

⁹⁶ See Chapter 1 for circular business models.

⁹⁷ Expressed via an indicator like the Procurement Managers Index (PMI).

⁹⁸ https://circulairemaakindustrie.nl/app/uploads/2020/12/Feiten_Cijfers_CirculaireMaakindustrie.pdf



Actions up to 2030

To realise the vision for the future, the manufacturing industry must work on the following:

- 1 Increasing the security of supply of the value chain: besides a raw material processing country, the Netherlands is mainly an assembly country that adds value to products particularly in the later stages of the product chain. That is why improving the security of supply of materials, components and products which are critical for the economy is a necessary precondition for the industry's viability.
- 2 Reducing the environmental burden of the products from the manufacturing industry: material efficiency in all aspects (longer use, more intensive use and more active reuse of materials, components and end products, production closer to home) takes central stage in this aim.
- 3 Value creation and value preservation: partly based on digitisation strategies, other business models which focus more on service provision will be implemented, which will add value and will help reduce the aforementioned environmental burden.

Selection of product groups

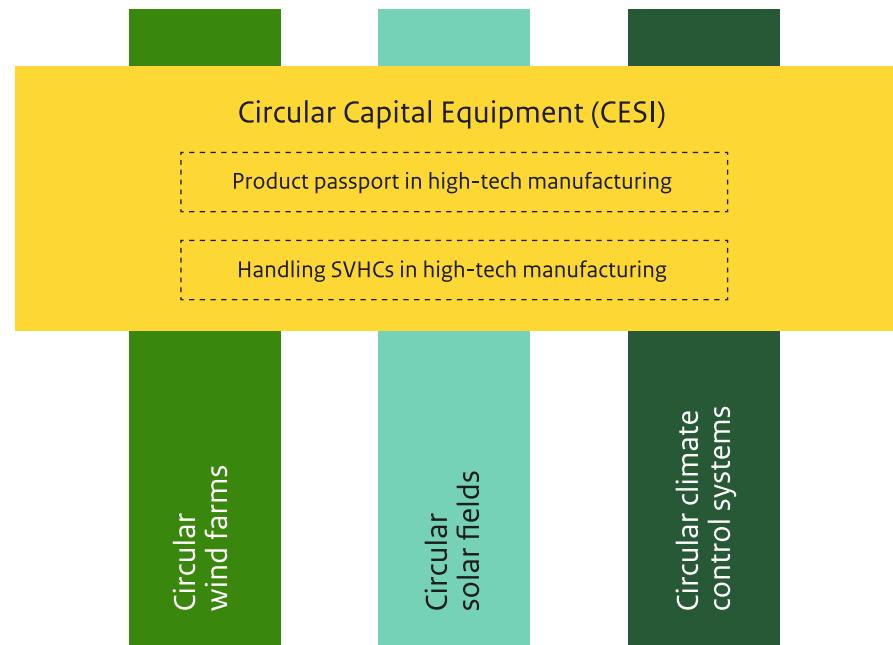
The product groups proposed by the Circular Manufacturing Industry Transition Team in the advisory roadmap are the product groups of Capital Equipment, wind farms, solar PV systems and climate control systems⁹⁹. The product groups vary in nature and scope (Figure 9). For this, use will be made of the fingerprint method developed by TNO. It is partly for this reason that the product group of Capital Equipment includes activities aimed at the full breadth of the manufacturing industry.

Even though the 'breadth' has already been addressed, therefore, we will also focus on three more specific 'product groups' here, namely: wind farms, solar PV systems and climate control systems. The interconnection between the product groups is shown schematically in Figure 9. On the one hand, the three specific product groups have been added because they provide significant examples in a more concrete sense than the broadening approach regarding circular Capital Equipment (Table 24). Some of the lessons learned will therefore apply to the entire manufacturing industry. On the

⁹⁹ In the determination of the environmental impact, use has been made of the fact that detailed statements for some products (and the associated innovations) in the manufacturing industry can be extrapolated to a much broader scale of products based on typical characteristics of these products.

other hand, these product groups represent various technologies which are essential for the energy transition. Circular strategies can help improve the availability of these technologies in the longer term. For these specific product groups, an impact target has only been included for solar PV systems, at the initiative of the sector itself.

Figure 9: Nature and scope of the product groups



Challenges and obstacles

In 2020, a broad, mission-driven innovation system analysis was performed to chart the systemic obstacles in the broader manufacturing industry¹⁰⁰. The assessment resulted in the conclusion that the directionality in manufacturing, the provision of legitimacy and the coordination of activities are the greatest obstacles that need to be overcome to

¹⁰⁰ <https://circulairemaakindustrie.nl/documenten/transitioning-towards-a-circular-manufacturing-industry-eng/>



realise the mission of creating a more circular economy in the manufacturing industry. Moreover, it has become clear that many innovations which can be designated as circular are unintentional results of innovations of a different nature.

An important conclusion was that ‘pull’ policy is probably more effective than supply-driven routes. Market building is an important aspect here. The government, but the private sector as well, can play a stronger promotional role by acting as a launching customer, or else by coming up with policy to work on market-appropriate instruments and by clearly planning the desired route.

Preconditions yet to be specified

The selected circularity targets and performance targets and the associated sets of measures below are aimed at eliminating the identified obstacles. The targets will need to be made SMART in collaboration with relevant stakeholders. The availability of resources is an important precondition for the implementation of the proposed sets of measures.

3.4.1 Capital Equipment

The product group of Capital Equipment concerns the production of tools, machines and equipment for various end markets, like (but not limited to) the food industry, medical care and textiles, and the components included in them, like (but not limited to) electronic engines, computers, communication equipment and measuring equipment. The suppliers of materials, components and sub-assemblies are expressly involved in this ecosystem. The focus here will be on products or components where we can actually make a difference from within the Netherlands.

The impact target for this product group is identical to the impact target of the entire manufacturing industry, meaning a contribution to 2.2 Mtons of CO₂ reduction (scopes 1 and 2) and a contribution to improvement of the security of supply of the manufacturing industry.

The circularity targets are closely connected to the main developments in manufacturing:

- 1 Reducing the use of materials by introducing new process technology
- 2 Requirements regarding proper repairability and long-term availability of components
- 3 Increased modularity of Capital Equipment with a view to lifetime extension and digital renewal
- 4 Use of a minimum percentage of recycled critical materials/components by 2030

Manufacturing holds a unique position where it concerns the development of circularity. Because of the production of capital and material-intensive goods, the sector has always been focused on efficient use of materials, intensive maintenance programmes and design choices aimed at longevity and repairability. The target for this product group is to make businesses (both equipment and end product manufacturers and their suppliers) aware of their role in promoting circularity, to give them guidelines for how to take action in the areas of sustainability and circularity, and to support them in the implementation. The targets and measures for this product group are aimed at supporting organisations (also those with a regional focus) in the development of instruments that will reach businesses, setting up regional collaboration, being able to translate findings to policy changes, and renewing instruments.

These circularity targets are linked to the following aims:

1. Ensuring that Capital Equipment is designated as a priority topic in the new Ecodesign Directive

To make circular business models cost-efficient more quickly and to achieve our circularity targets, it is very important that we create a level playing field and a circular growth market at EU level. This is expected to become applicable in two years’ time, when a first set of product groups will be selected to draw up requirements relating to product composition and transparency. To achieve this, the government aims to have Capital Equipment designated as a priority product group in the new Ecodesign Directive.

2. Realising 100% traceability of materials in value chains by 2030

If we want to make sustainable circular business models possible, information on product composition and origin is very important. New EU legislation and the Dutch ambitions in the areas of value chain transparency and international Corporate Social Responsibility demand a proactive attitude from businesses and support from the government.

To support businesses in this, we intend to keep using the Raw Material Scanner (in Dutch: Grondstoffenscanner)¹⁰¹. This is a self-assessment tool which entrepreneurs can use to assess which risks they run with regard to specific raw materials, and what their perspectives for action are.

¹⁰¹ <http://www.grondstoffenscanner.nl/>



In addition, it is important to develop and introduce circular product passports, also in the manufacturing industry. Here we can build on the inventory made by the Ministry of Economic Affairs and Climate of the state of affairs with regard to circular product passports. Depending on the available resources, we want to make a start on circular product passports in manufacturing.

3. In 2030, at least 25% of businesses in the target group will have implemented circular innovations in their operations based on far-reaching digitisation (like predictive and preventive maintenance and servitization business models)

The existing Smart Industry programme works together closely with businesses, knowledge institutes and public authorities, in regional hubs for the implementation of digitisation in business operations. The new European digital innovation hubs help businesses implement advanced digital technology, and the progress of businesses in the digitisation process is followed by means of the digital maturity assessment. This also covers green digitisation including circularity. We will explore whether and how circularity can play a more prominent role in the service provision of the European digital innovation hubs.

In addition, specific support is needed to be able to address upcoming knowledge and innovation issues, both technically and socially. In collaboration with the transition teams, the current questions in the Knowledge and Innovation Agenda for the Circular Economy (KIA CE) will be updated and will focus more on the priority product groups including circular Capital Equipment. Important topics are new process technology, smart maintenance, servitization, and closure of the loop. The new knowledge questions will serve as input for the new Knowledge and Innovation Contract that is to be concluded in late 2023.

Depending on the available resources for the Knowledge and Innovation Agenda for the Circular Economy, it may be desirable to set up field labs for material technology.

4. Accelerating the procurement of circular Capital Equipment

An important instrument for accelerating business models in the manufacturing value chains is the procurement policy of relevant public authorities, businesses and knowledge institutes. In the private sector, the large producing businesses mainly play an important role in this. They can really boost this development via circular procurement policy in close collaboration with their suppliers.

This is already being encouraged via the various tools of the implementation programme for the manufacturing industry, like the quick scan for circular business models¹⁰² and the self-assessment tool for suppliers¹⁰³.

To realise further scaling up and acceleration, it will be desirable to set up a buyer group for circular equipment. This will depend on the available resources for the circular procurement part of this NPCE.

5. There will be a measurement method for circularity and the impact on sustainability and climate goals

In the establishment of impact targets and the contribution made by circular strategies in the manufacturing industry in this regard, the absence of set European frameworks and of a validated, accepted and especially practically tested measurement method for determination of the environmental impact of valuable R strategies (repair, smart maintenance, asset sharing) plays an important role. At the same time, such a method is a critical success factor for us to encourage businesses, base procurement policy on, and measure the effect of all actions at national and European level. This has an inhibiting effect not only in the manufacturing industry but also in its supply role for other sectors.

In the construction industry, the Environmental Cost Indicator / Environmental Performance of Buildings has been used successfully for years. In this methodology and the associated database (or databases), a so-called 'layered model' is used, made up of elements with both a long lifetime (e.g. the construction components) and a short lifetime (e.g. climate and energy systems like heat pumps and PV panels). This peel approach can also be applied to various machines in the manufacturing industry. Depending on the availability of resources through this NPCE, it will be desirable to initiate an Environmental Cost Indicator / Environmental Performance of Machines in close collaboration with other transition teams. This has already been shown to be successful for the product group of climate control systems as well.

¹⁰² <https://circulairemaakindustrie.nl/projecten/quickscan-circulaire-businessmodellen/>

¹⁰³ <https://circulairemaakindustrie.nl/documenten/cesi-supply-tool/>



6. In 2030, at least 1,000 businesses in the manufacturing industry will have drawn up plans to realise more circular operations (e.g. by following CIRCO tracks)

The achievement of this target will depend on the available resources for CIRCO and the connected nine regional hubs in which 41 organisations are involved. Required activities for manufacturing are:

- Development of tooling for OEMs and suppliers
- Development and roll-out of CIRCO Design Tracks for multiple value creation¹⁰⁴
- Self-assessment tool for environmental impact¹⁰⁵
- Validation and extension of the assessment method for residual financial value¹⁰⁶
- Improvement of the fingerprint methodology for the circular potential of product groups (including business models)¹⁰⁷
- Supervision of communities of practice
- Use of the context scan¹⁰⁸ to set up projects more effectively

In addition, monitoring of the circular business cases emerging from the CIRCO Design Tracks is an important step to realise actual circular business models. Via the existing Value Chain Projects Scheme and the new multi-year support opportunity for big value chain breakthrough projects (phase 2), in addition to the value chain projects which are being initiated by the Circular Netherlands Accelerator! (Moonshots), these business cases can be converted to business models.

7. In 2030, 50% of the broad target group will have been informed about and involved in circular activities

Ideally, the implementation of this target would be addressed in the regional approach of this NPCE. Part of this regional approach is the development of a target group-based

¹⁰⁴ What's important here is that value creation not only manifests itself in a higher margin or turnover, but in the long term may lead to stronger operations thanks to increased loyalty among the business's own staff, a more attractive position on the labour market, better relations with stakeholders like environmental agencies, and a greater innovation potential.

¹⁰⁵ <https://circulairemaakindustrie.nl/self-assessment-tool/>

¹⁰⁶ <https://circulairemaakindustrie.nl/projecten/normering-financiele-waardebepaling/>

¹⁰⁷ <https://repository.tno.nl/islandora/object/uuid%3A09506125-2496-46a6-904f-5e770d8c6306>

¹⁰⁸ <https://circulairemaakindustrie.nl/projecten/contextscan/>

approach that is supported nationally. The existing stakeholder scan¹⁰⁹ and circular cases tool¹¹⁰ of the implementation programme for a circular manufacturing industry can form part of this.

Table 24: Measures for the product group of Capital Equipment

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We will continue using the Raw Material Scanner.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will promote the use of developed tools: <ul style="list-style-type: none">• Quick scan for circular business models• Self-assessment tool for suppliers• Stakeholder scan• Circular examples tool• Context scan	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will explore whether we can enrich the Raw Material Scanner with specific information for solar PV systems and wind farms.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will explore whether and how circularity can play a more prominent role in the service provision of the European digital innovation hubs.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
In the context of the KIA CE, we will renew the knowledge questions relating to circular Capital Equipment.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will explore the development and introduction of value chain-specific product passports.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

¹⁰⁹ <https://circulairemaakindustrie.nl/projecten/stakeholdertool/>

¹¹⁰ <https://circulairemaakindustrie.nl/wegwijzer/>



New measures	Standard-setting	Pricing	Stimulus
We will aim to have Capital Equipment designated as a priority topic in the Ecodesign Directive.	■	■	■
We will explore the set-up of field labs for material technology.	■	■	■
We will explore extension of the ECI to include the broader manufacturing industry ('Environmental Cost Indicator / Environmental Performance of Machines').	■	■	■
We will explore the establishment of a buyer group for circular equipment as seen for other product groups.	■	■	■
We will explore whether we should do the following via CIRCONNECT and circular hubs: <ul style="list-style-type: none"> • develop tooling for OEMs¹¹¹ and suppliers; • develop CIRCO Design Tracks for multiple value creation, and roll these out; • validate the self-assessment tool for environmental impact and extend the assessment methodology for residual financial value; • improve the methodology for the circular potential of product groups (including business models); • supervise communities of practice. 	■	■	■
The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.			

3.4.2 Circular wind farms

This product group mainly concerns businesses in the sectors SBI28.9 (manufacture of machinery) and 35.1 (electric power generation). Businesses in this sector (relevant to wind farms) are already showing a high degree of servitization and maintenance as circular strategies.

The impact target for this product group is identical to the impact target of the entire manufacturing industry, meaning a contribution to 2.2 Mtons of CO₂ reduction (scopes 1 and 2) and a contribution to improvement of the security of supply of the manufacturing industry.

The circularity targets are closely connected to the main developments in the manufacturing industry and to the international nature of the sector. These targets are:

- 1 100% secondary use of wind turbine materials in 2050.
- 2 Mandatory use of recycled materials in wind turbines.
- 3 Reduction of the use of virgin materials.

These circularity targets are linked to the achievement of the following results:

1. Ensuring that circular wind farms are designated as a priority topic in the new Ecodesign Directive

As was mentioned above for the product group of Capital Equipment, it is very important that we have a level playing field and a circular growth market at EU level to accelerate circular business models. This is expected to become applicable in two years' time, when a first set of product groups will be selected to draw up requirements relating to product composition and transparency. To achieve this, we will aim to have circular wind farms designated as a priority product topic in the new Ecodesign Directive.

2. Circular tender criteria

The innovative Dutch approach in the commissioning of plots for wind farms in the North Sea is renowned internationally. Internationally operating businesses view the Netherlands as an important breeding ground for innovation. They are given the opportunity to properly develop new innovative applications on a large scale, and to use them around the world afterwards. As a result, the applied tender criteria will have a global profile.

¹¹¹ Original Equipment Manufacturers.



The government will include circularity and International Corporate Social Responsibility (ICSR) as qualitative preconditions in tenders for onshore wind energy. In the upcoming permit granting process for the IJmuiden Ver Wind Farm Zone (Sites I to IV inclusive), circularity and ICSR criteria will be used for the first time.

In addition, we will explore to what extent we can aim for mandatory use of recycled materials in wind turbines via tender criteria for permit procedures for specific sites.

3. Realising 100% traceability of materials in value chains by 2030

In the expected voluntary agreement for ICSR for renewable energy, arrangements will be made with all relevant stakeholders of the wind and solar PV sectors. Circularity will become part of the voluntary agreement. Within this voluntary agreement, parties can work on value chain projects. We will explore whether the Raw Material Scanner, including the screened-off digital environment where participants can report on their progress, can be entered into the voluntary agreement as the contribution of the Ministry of Economic Affairs and Climate.

In addition, it is important to jointly develop circular product passports in all transition agendas, including that of manufacturing, and to introduce them in a value chain-specific way. Here we can build on the inventory made for the Ministry of Economic Affairs and Climate of the state of affairs with regard to circular product passports. The sector also indicates that 1) a platform for data sharing, and 2) the labelling of decommissioned materials with the data collected during the lifetime of the turbine are desirable in the development of a circular product passport, among other things. Depending on the available resources for digitisation and the circular economy through this NPCE, we want to make a start on circular product passports in manufacturing.

4. Setting up a cohesive research programme

Circularity in renewable offshore electricity is a relatively new topic, and a lot of research still needs to be done in this area. Firstly, the TKI (Top consortium for Knowledge and Innovation) for Offshore Wind is working on a new innovation programme for the coming years. Besides the attention being paid to full recycling of wind farms and their components, as well as to offshore solar energy, we will also focus on extending the lifetime of foundations, cables and network components. In addition, there are initiatives to ensure that the existing offshore oil and gas infrastructure will be reused where necessary for renewable energy (use of gas pipelines for the transport of hydrogen produced with renewable energy). For this the MMIP will link up with ongoing

Top-sector Energy Research by, among others, TNO. In addition, a new sub-topic, 1.4. Standardisation & Industrialisation, will be included. The expectation is that this will also contribute to the development of new (modular) design methods and components for turbines and monopiles, which can be replaced more easily and may be reusable after processing (remanufacturing). This may add to cost efficiency and lifetime extension of turbines as well, and in this way reduce material usage.

The beginning and the end of the value chain will receive special attention here: the use of critical metals and raw materials in turbines and the recycling of materials when turbines are decommissioned. In the area of critical metals, research needs to be done into the possibility to use fewer critical metals in turbines (use of fewer metals or switch to alternative metals). The need for this is even stronger because of the geopolitical dimension of the extraction of these metals.

In addition, in collaboration with the transition teams, the current questions in the Knowledge and Innovation Agenda for the Circular Economy will be updated and will focus more on the priority product groups including circular wind farms. Important topics are modularity, mass reduction, carbon chain emissions and reduction of the use of virgin materials. The new knowledge questions will serve as input for the new Knowledge and Innovation Contract that is to be concluded in late 2023.

5. Accelerating the procurement of circular onshore wind farms

In June 2022, the buyer group for circular onshore wind farms was set up, with Eneco, Vattenfall, the Provinces of Noord-Holland, Zuid-Holland and Flevoland, and the Netherlands Enterprise Agency (RVO) as participants. This buyer group is working on an overarching market vision and the required supporting policy, among other things via market dialogue. Belgium has shown an interest in it as well. We aim to increase the number of participants and to create more awareness. The results will be shared and used as widely as possible.

6. Circularity of materials and carbon reduction will be weighed up against each other clearly

As we already mentioned above for the product group of Capital Equipment, both the broader manufacturing industry and the wind sector lack a measuring method tested in practice for the determination of the environmental impact of valuable 'R strategies' (repair, smart maintenance and asset sharing).



In the construction industry, the Environmental Cost Indicator / Environmental Performance of Buildings has been used successfully for years. In this methodology and the associated database (or databases), a so-called ‘peel model’ is used, made up of elements with both a long lifetime (e.g. the construction components) and a short lifetime (e.g. climate and energy systems like heat pumps and PV panels). This peel approach can also be applied to various machines in the manufacturing industry. Depending on the availability of resources through this NPCE, it will be desirable to initiate an Environmental Cost Indicator / Environmental Performance of Machines with other transition teams. This will also create a good basis for developing and using a broadly supported Environmental Product Declaration for circularity in the wind industry. This has already been shown to be successful for climate control systems as well.

7. Harmonising policy regarding wind energy (or part of it)

The wind industry is under enormous pressure, partly because in their view European targets are not properly aligned with one another (increase in renewable energy, safeguarding the security of supply, reducing geopolitical dependency, environmental requirements). The wind industry has already taken useful steps in the area of circularity. At the moment, an estimated 85-90% of the wind turbines can technically be recycled. If a circular, scalable solution is found for the hard-to-recycle composite blades, wind turbines will be 100% reusable. Because the wind industry is a sector that operates internationally, the Dutch players in this sector operate in a European context, or even globally. This demands coordination in the international value chain between businesses, knowledge institutes and public authorities.

With the support of the Circular Netherlands Accelerator!, the Implementation Programme for a Circular Manufacturing Industry has organised a European Wind Energy Hub including a knowledge, policy and investment hub, to achieve the coordination described above. We will explore whether this can be continued.

In addition, we will explore which incentives may lead to more reuse and recycling of wind turbines.

Table 25: Measures for the product group of circular wind farms

	Standard-setting	Pricing	Stimulus
Continuation and intensification of policy			
We will reuse initiatives of existing offshore oil and gas infrastructure for renewable energy.	■	■	■
In the context of the KIA CE, we will update the knowledge questions relating to circular wind farms.	■	■	■
We will increase awareness of and the number of participants in the buyer group for circular onshore wind farms.	■	■	■
We will explore the continuation of the European Wind Energy Hub for policy harmonisation.	■	■	■
New measures			
We will aim to have circular wind farms designated as a priority topic in the Ecodesign Directive.	■	■	■
We will include circularity and International Corporate Social Responsibility as qualitative preconditions in tenders for offshore wind energy.	■	■	■
We will explore to what extent we can aim for mandatory use of recycled materials in wind turbines via tender criteria when granting permits for specific sites.	■	■	■
We will explore the possibility to have the Raw Material Scanner included in the voluntary agreement for ICSR for renewable energy.	■	■	■
We will explore the development of a circular product passport for wind farms.	■	■	■



New measures	Standard-setting	Pricing	Stimulus
We will start a TKI innovation programme for Offshore Wind, paying attention to full recycling and lifetime extension of foundations, cables and network components.	■	■	■
We will explore possible incentives for increased reuse and recycling of wind turbines.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

3.4.3 Circular solar PV systems

The panels, as well as the inverters, control systems, structure and cabling, belong to the market for circular solar PV systems. In addition, maintenance and end-of-life processing are also part of this ecosystem.

The impact target for this product group is a contribution to 2.2 Mtons of CO₂ reduction (scopes 1 and 2) and a contribution to improvement of the security of supply of the manufacturing industry. In addition to these general contributions, we will specifically aim for solar panels with a small carbon footprint (>50% reduction, scope 3) and a lower environmental impact in the form of a reduction of the impact of SVHCs (lead, PFAS) on the Dutch/European market.

To achieve the impact targets, we will focus on the following circularity targets:

- 1 Extension of the economic lifetime and reuse of panels and components (current generation and next generation of panels)
- 2 High-grade circular processing of solar PV panels that become available
- 3 Availability of solar panels which are free from toxins

These circularity targets are linked to the achievement of the results set out below. A number of the performance targets listed below are based on the assumption that these

targets can build on (and are connected to) an existing European industrial policy that results in an equal playing field as well as European influence on the entire product chain from raw material to product.

PV panels are an important system component for buildings to realise the climate target of both newly constructed and existing buildings. National policy for this is largely directed by European policy via the current revision of the EPBD.¹¹² Where it concerns the role of PV panels on buildings, the actions mentioned for the product group of 'Climate control systems' (or at least some of these) also apply to PV panels. In the further elaboration of these actions, PV panels will therefore be involved as well. This concerns the method for determining the degree to which the materials and products used in a building (also including building systems like PV panels and climate control systems) contribute to the environmental burden caused by this building. For this, the so-called Environmental Performance Assessment Method for Construction Works is used.¹¹³ In any case, the calculation of the environmental burden of construction products from the manufacturing industry must be done according to the same method, so that the results correspond in terms of methodology.¹¹⁴

¹¹² Energy Performance of Buildings Directive IV: https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/energy-performance-buildings-directive_en.

¹¹³ This Assessment Method calculates the environmental burden caused by a construction work. The environmental performance is expressed as a 1-point score. This 1-point score follows from a weighting of the scores of the indicators across the entire lifetime of the construction work and has been converted to the environmental performance per year per m² of gross floor surface area of the building. The calculation is based on European standards (EN15804 and EN15978). For more information: <https://milieudatabase.nl/en/>.

¹¹⁴ So it does not concern the statutory requirement for the environmental performance of new homes and offices in the building regulations. The energy performance and the environmental performance of a building influence each other. A more stringent energy performance requirement will lead to more material use for insulation, sustainable energy (such as PV panels) and climate control systems. This will in turn lead to a poorer environmental performance of a building. The two may conflict when the energy performance requirements and the environmental performance requirements are tightened periodically. For this reason, the Ministry of the Interior and Kingdom Relations will test before any tightening of the requirement whether this will lead to problems in terms of the feasibility of one or both requirements.



1. Creating a facilitating EU playing field for circular solar PV systems

To make circular business models cost-efficient more quickly and to achieve our circularity targets, it is very important that we create a level playing field and a circular growth market at EU level. Based on the Ecodesign Directive, sustainability requirements can be imposed on products. This Directive will be extended and broadened over the next two years. For solar panels and inverters, an ecodesign proposal is currently being discussed to improve the sustainability of solar energy systems, with firm requirements for longevity and repairability.

A maximum carbon footprint will also be proposed. The Netherlands supports this proposal and in this context demands specific attention for inverters, because they are currently difficult to repair and they are also most liable to become defective.

Moreover, the Netherlands will explore, together with other Member States, whether an ecolabel is a good way to promote sustainable solar panels. This would increase the transparency on the sustainability of solar power systems and therefore also – hopefully – increase the demand for and subsequently the supply of sustainable systems. It is very important in this respect that a proliferation of labels is avoided.

In addition, we are working on the introduction of an energy label for solar panels in an EU context. Our aim here is to also give other sustainability issues a place, in addition to adjusting the module efficiency.

PV panels are an important system component for buildings to realise the climate target of both newly constructed and existing buildings. National policy for this is largely directed by European policy via the current revision of the EPBD.¹¹⁵ Where it concerns the role of PV panels on buildings, the actions mentioned for the product group of ‘Climate control systems’ (or at least some of these) also apply to PV panels. In the further elaboration of these actions, PV panels will therefore be involved as well.

2. Organising collection and high-grade processing of EoL PV panels, inverters, cabling and substructures¹¹⁶

The responsibility for the collection and recycling of solar power systems lies with Stichting OPEN, via a Universally Binding Declaration (in Dutch: *Algemeen Verbindend Verklaring* or AVV). An important aspect when organising collection is the proper set-up of the financing mechanism for the Circularity Fund (in Dutch: *Circulariteitsfonds*) for solar panels. This may be further supported by a visible circularity contribution on invoices.

In addition, Stichting OPEN sees opportunities for using the established infrastructure to scale up the circular ambitions in the solar sector. We will assess, in collaboration with all relevant parties, which value chain projects are likely to be successful and can be submitted. Part of the value chain project may be the development of the right contract terms with regard to high-grade PV recycling. Ideally, the recovered raw materials will be used for high-value new products, preferably solar panels, which are produced in Europe. For solar panels which become available prematurely (i.e. which are not end-of-life panels), a second life will be preferable, provided that it is still useful. To enable safe reuse, Stichting OPEN will at least make the CENELEC reuse standard mandatory (including further testing and certification thereof for reuse in the Netherlands or for export). In case of the export of second-life panels outside of Europe, a conflict with European raw material policy may arise. After all, the potentially renewable raw materials of these exported panels will no longer be available to Europe in this case. We will explore whether and how additional research into the desirability of this export can be performed.

3. Realising 100% traceability of materials in value chains by 2030¹¹⁷

In the expected voluntary agreement for ICSR for renewable energy, arrangements will be made with all relevant stakeholders of the wind and solar sectors. Circularity will become part of the voluntary agreement. Within this voluntary agreement, parties can work on value chain projects. We will explore whether the Raw Material Scanner, including the screened-off digital environment where participants can report on their progress, can be entered into the voluntary agreement as the contribution of the Ministry of Economic Affairs and Climate.

¹¹⁵ Energy Performance of Buildings Directive IV: https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/energy-performance-buildings-directive_en.

¹¹⁶ Connection with actions for recycling and reuse of climate control systems.

¹¹⁷ Connection with actions for traceability of materials of climate control systems.



In addition, it is important to jointly develop circular product passports in all priority value chains, including that of manufacturing, and to introduce them in a value chain-specific way. Here we can build on the inventory made for the Ministry of Economic Affairs and Climate of the state of affairs with regard to circular product passports. Depending on the available resources for the topic of digitisation through this NPCE, we want to make a start on circular product passports in manufacturing. This aim is in line with the new Ecodesign Directive that is being developed, where the traceability of materials is addressed as well.

Innovations for circular solar panels are already expressly included in the MMIP for renewable onshore electricity, which falls within the scope of the TKI for Urban Energy. Attention will also be paid here to extending the lifetime of components, reducing or eliminating the use of toxins, design for recycling, and improving the recycling processes for the current generation of solar panels. To date, this has led to a number of promising innovation projects which mainly focus on the development of a new generation of more circular solar panels. An extension to include the full solar power system is the desired next step in this respect. Clearly the first steps have been taken, but a lot of research and development still needs to be done to realise large-scale production of circular solar panels and other system components.

In addition, in collaboration with the priority value chains, the current questions in the Knowledge and Innovation Agenda for the Circular Economy (KIA CE) will be updated and will focus more on the priority product groups including circular solar PV systems. Important topics are panels with better longevity, a more modular design, without lead, antimony and PFAS, alternative cell materials (like perovskite) and PV film that is suitable for large-scale integration in buildings and other surfaces. The new knowledge questions will serve as input for the new Knowledge and Innovation Contract that is to be concluded in late 2023.

Moreover, we want to explore what the chances are of an R&D scheme for the development of circular panels (encapsulant replacement and therefore detachable, free from toxins).

4. Introduction of ambitious procurement criteria¹¹⁸

The national buyer group for sustainable solar panels is working on a market vision, a procurement strategy and circular guidelines to help procurement organisations buy circular solar panels. We will promote this important initiative to increase the number of participants and the impact.

In addition, the European Commission is exploring the set-up of a European buyer group for circular solar PV systems and has asked the Netherlands to be involved in this process. We will explore how the Netherlands can be more proactive in this.

5. Creation of room for experimentation for innovative parties with sustainable panels but with a less proven track record

Via the government's procurement policy, a further acceleration of sustainable solar panels may be realised. A problem for innovative parties is that they have less of a proven track record and therefore have a lower chance of winning bids.

Together with relevant parties like the Central Government Real Estate Agency (RVB) and via tendering through the Energy Generation Scheme for Central Government Real Estate (in Dutch: *Regeling Opwekking Energie Rijksvastgoed*), we want to explore whether we can give innovative parties more room for experimentation.

6. Facilitation of high-grade recovery of raw materials and, where useful, lifetime extension and reuse, plus standard-setting where necessary¹¹⁹

As we have already mentioned, Stichting OPEN is responsible for the processing of solar panels. At the moment, the emphasis is on setting up the recycling infrastructure. The climate control systems section of Stichting OPEN has reached the positive conclusion that in the current product responsibility there are possibilities for the accumulation of financial data regarding the recycling and reuse value of systems and room for experimentation for organising a different settlement system for reuse. We may be able to learn from this to increase the period of use of solar panels so that the technical lifetime is achieved. This is because the period of use of professional solar PV systems may be shorter than the technical lifetime, for example due to the expiry of subsidies

¹¹⁸ Connection with actions for procurement criteria for climate control systems.

¹¹⁹ Connection with actions for recycling and reuse of climate control systems.



for sustainable energy production (SDE subsidies) or due to the temporary nature of destinations for solar PV systems until a definitive destination (such as housing) is realised. For these solar panels which are freed up prematurely, reuse is conceivable, provided that it is safe and responsible. We will explore whether and how additional research can be conducted into the possibilities for giving these panels a useful second life. In a technical sense, the European CENELEC reuse standard is available for this, as we already indicated above.

7. Granting/issue of roof rental and land rights in line with the economic lifetime of a PV field

It has been observed in the context of the national buyer group for sustainable solar panels that roof rental and land rights sometimes have a shorter life span than the maximum economic lifetime of a solar field. Further investigations are needed to assess whether this is a significant obstacle.

If the available resources of the regional approach of this NPCE allow it, consultation with relevant local and regional authorities may be organised to investigate this topic.

8. Development of organisational capacity in the PV sector with regard to sustainability and circularity

To develop the organisational capacity in the Netherlands in relation to shared government issues (climate & energy, construction challenge, and circularity) based on impact within circular solar PV, the sector is asking for the set-up of a supra-regional multi-disciplinary task force that will maintain contact with the regions, the Fair Solar Network and well-known parties like Holland Solar, Stichting OPEN, and Europe.

In the elaboration of the governance of this NPCE, we will also look at the place that the regional approach can have in this regard. If a task force is set up, this should be linked to a regional approach and contribute to the achievement of shared goals, such as the target group-based approach.

Table 26: Measures for the product group of circular solar PV systems

	Standard-setting	Pricing	Stimulus
Continuation and intensification of policy			
We will support the Ecodesign Directive proposal for possible sustainability requirements for solar panels and inverters.	■	■	■
We will support the proposal for a maximum carbon footprint with specific attention being paid to inverters.	■	■	■
We will include circular solar panels in the MMIP, paying attention to extending the lifetime of components, reducing or eliminating the use of toxins, design for recycling, and improving the recycling processes for the current generation of solar panels.	■	■	■
We will explore a broadening of the MMIP to include a full solar power system.	■	■	■
We will explore whether an ecolabel will be a good way to promote sustainable solar panels.	■	■	■
We will aim for extension of the proposal for an energy label for solar panels to include more sustainability aspects.	■	■	■
In the context of the KIA CE, we will update the knowledge questions on circular solar PV systems.	■	■	■
We will increase awareness of and the number of participants in the national buyer group for sustainable solar panels.	■	■	■



New measures	Standard-setting	Pricing	Stimulus
We will explore the possibilities for additional research into the desirability of the export of PV panels to ensure a second life outside Europe.	■	■	■
We will explore the possibilities to have the Raw Material Scanner included in the voluntary agreement for International Corporate Social Responsibility.	■	■	■
We will explore the development of a circular product passport for solar PV systems.	■	■	■
We will explore the chances of success of a Research & Development scheme for the development of circular panels.	■	■	■
We will explore how the Netherlands can play a more proactive role in the development of a European buyer group for circular solar PV systems.	■	■	■
We will explore whether more room for experimentation can be created for innovative parties by the Central Government Real Estate Agency (RVB) and via tendering through the Energy Generation Scheme for Central Government Real Estate.	■	■	■
We will explore whether and how additional research can be conducted into the possibilities for giving these panels a useful second life.	■	■	■
Together with local and regional authorities, we will investigate the issue of having a shorter lifespan due to roof rental and land rights.	■	■	■
We will explore the establishment of a supra-regional multidisciplinary task force.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

3.4.4 Circular climate control systems

The scope of this product group comprises the generation, distribution and release of heat and cold in buildings including the control thereof. For circular climate control systems it is necessary to bring the design, production and usage perspectives together. This product group is therefore a joint effort of the Manufacturing Industry Transition Team and the Construction Transition Team.

The product group of climate control systems concerns:

- Design, procurement and installation in the context of a building
- Production of components and equipment
- Maintenance and repair during the period of use
- End-of-life processing of components and appliances

The sectors involved are:

- 28.2 Manufacture of other general-purpose machinery
- 33.1 Repair and maintenance of machinery and equipment
- 33.2 Installation of industrial machinery and equipment
- 35.1 Electric power generation; transmission and distribution of electricity and gas
- 43.2 Building systems

In the construction industry, the basic points of departure of the ECI/EPB Assessment Method are being used. This method does not focus on the environmental performance of individual products, but rather on the environmental performance of the building or Civil Engineering work as a whole. In this case the construction work is the unit on which the performance (in ECI/EPB) requirement is imposed and in which the product is used to allow the construction work to perform its function. The design and the intended lifetime of the building are therefore determining factors for the applied construction products and building systems, including the number of replacements of these construction products and building systems during the lifetime of the building. The targets for systems of the manufacturing industry are an essential element in the reduction of the impact of the entire construction work. These targets for systems and particularly climate control systems have been specified in the product groups of the Circular Construction Economy Transition Team where they play a role. The advisory roadmap states that an integral approach is essential if we want to reduce the total environmental impact without passing on any negative effects to other areas or future generations.



The impact target aimed for is a 25% lower ECI for climate control systems in 2030, including the usage phase, compared to 2016. We will investigate what ambition is realistic for reduction of the ECI. The aim is to realise a 25% lower ECI in 2030 for all climate control systems on average, including the usage phase, compared to 2016. The ambition may vary between types of climate control systems. Separate ambitions are being formulated for operational environmental effects (energy use, usage phase), embedded environmental effects (material use including maintenance and end of life) in addition to the total ambition.

To achieve this impact target, we will focus on the following circularity targets:

- 1 In 2030 the functional lifetime of climate control systems will have decreased by 50% compared to 2016.
- 2 In 2030, 100% of all components and appliances will be recycled or reused in a high-value manner after their end of life.

These circularity targets are linked to the achievement of the following results:

1. Ensuring that circular climate control systems are designated as a priority topic in the new Ecodesign Directive

As was mentioned above for the product group of circular solar panels, it is very important that we have a level playing field and a circular growth market at EU level to accelerate circular business models. Based on the Ecodesign Directive, sustainability requirements can be imposed on products. Ecodesign Regulations have already been drawn up for a number of climate control systems. The Ecodesign Directive will be extended and broadened over the next two years. The Netherlands will endeavour to have climate control systems included in the Ecodesign work plan of the European Commission, so that the circularity requirements imposed on climate control systems will be ambitious and up to date.

2. Focusing economic incentives in the entire value chain on circular strategies¹²⁰

Too often, the market is still being asked to offer a system package for a new building at the lowest price. In combination with the focus on investment costs this has a number of consequences. Firstly, it is a barrier to circular product design. For circular products the

investment costs are often higher, but these costs can be recovered over time. Secondly, systems are designed exactly for the required volume of the building in question, so that reuse becomes difficult (also if the function of the building or part of it changes, for example). Thirdly, the space for the set-up of the systems is limited to save on investment costs. This also prevents reuse. Moreover, the available space in a building is scarce, because money can be made with every square metre. As a result, less space is often available for systems (especially large ones) and they cannot be easily reached. This has a negative effect on the business case for circular business models.

We will explore whether we can include 1) the accumulation of financial data with regard to the recycling and reuse value of systems, and 2) room for experimentation for a different settlement system in the current producer responsibility.

In addition, we want to explore whether a minimum lifetime can be realised by means of longer factory warranties and an Extended Producer Responsibility with environmental performance targets.

3. Giving a second life to hard-to-recover materials or economically uninteresting flows

In collaboration with the transition teams, the current questions in the Knowledge and Innovation Agenda for the Circular Economy will be updated and will focus more on the priority product groups including circular climate control systems. Important topics include modularity, ensuring the recoverability of critical materials and giving a second life to flows which are of little interest economically. The new knowledge questions will serve as input for the new Knowledge and Innovation Contract that is to be concluded in late 2023. It is important here, by the way, that topics such as modularity and recoverability will be taken into account when considering the environmental burden caused by a system and a building. Modularity and recoverability are good ways to realise a lower environmental burden, but are not the only ways. The means should not get in the way of the goals.

4. Realising 100% traceability of materials in value chains by 2030

In addition, it is important to jointly develop circular product passports in all product value chains, including manufacturing, and to introduce them in a value chain-specific way. Here we can build on the inventory made for the Ministry of Economic Affairs and Climate of the state of affairs with regard to circular product passports. Depending on the available resources for the topic of digitisation through this NPCE, we want to

¹²⁰ This action also applies to PV systems in buildings.



make a start on circular product passports in manufacturing. We will link up with the development of building passports by the Ministry of the Interior and Kingdom Relations for this.

5. Having uniform performance indicators and guarantees at system level and standards for usage information at component and device level

At the moment, there are environmental performance indicators at installation level but not at system level. Environmental data are available for appliances and components, but not for the heating or ventilation system or the electrical system. We will explore whether research into design dimensions at system level can be initiated as a basis for system performance. The Stichting NMB will also be involved here as the operator of the system for the environmental performance of construction works and the associated National Environmental Database (in Dutch: *Nationale Milieudatabase*) in which these environmental data will need to get a place.

When a climate control system is selected, the energetic performance currently plays the central role. In the context of circular policy, the environmental performance of the system will become important as well. The two should be integrated. This applies both to new construction projects and to energy renovations. For this the environmental effects of the usage energy (operational energy consumption, module B6 in the Environmental Performance Assessment Method for Construction Works) should be integrated with the calculation of the environmental performance of the system itself (so-called embedded environmental effects) in order to make proper integral assessments and agree on good performance arrangements. We will explore whether research into design integration can be initiated from a construction and a system engineering point of view. This will be done in collaboration with the Stichting NMB and the Ministry of the Interior and Kingdom Relations. Moreover, we will link up with the intentions of the EU in the context of the current revision of the EPBD (EPBD IV).¹²¹

Finally, performance indicators for energy renovations should be developed. Here we will link up with the intention of the Ministry of the Interior and Kingdom Relations to introduce an Environmental Performance Assessment Method for Construction Works for renovations.

¹²¹ Energy Performance of Buildings Directive IV: https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/energy-performance-buildings-directive_en.

6. Having circular procurement conditions for systems based on system performance and lifetime costs and maintenance based on a multi-year maintenance programme¹²²

It has become apparent from the practice of heat and cold storage that performance contracts can be effective in the realisation of circular and energy-efficient systems. If the available resources in this NPCE allow it, we want to conduct pilot projects to enable the market to gain experience with the use of performance contracts for other systems, like heating, ventilation, etc. An incentive scheme to encourage cooperatives to do this, for example, may lead to the required acceleration. This could be a first concrete target of a buyer group for circular climate control systems to be set up. The Central Government Real Estate Agency (RVB) has already gained its first experience with this in maintenance contracts.

In addition, we will explore whether public authorities and the private sector are able and willing to set preconditions in all their internal and external projects and tender procedures for circular climate control systems and their maintenance (in addition to preconditions for climate and energy).

7. Bringing design, production and usage perspectives together via a shared effort from the Manufacturing Industry Transition Team and the Construction Transition Team¹²³

The targets for systems of the manufacturing industry are an essential element in the reduction of the impact of the entire construction work. These targets for systems and particularly climate control systems have been specified in the product groups of the Construction Transition Team where they play a role. The construction section (3.3) states that an integral approach is essential if we want to reduce the total environmental impact without passing on any negative effects to other areas or future generations.

If the available resources of the regional approach of this NPCE allow it, we want to set up a knowledge platform via the transition teams for the manufacturing industry and for construction (possibly a regional knowledge platform) for installation businesses, industry organisations, financial institutions and knowledge institutes to offer practical support in relation to circularity issues and to connect possible collaboration partners in the field of circular climate control systems.

¹²² For procurement conditions, also see the product group of PV systems.

¹²³ PV systems in buildings will be involved in this as well.



Table 27: Measures for the product group of circular climate control systems

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus	New measures	Standard-setting	Pricing	Stimulus
We will aim to update the existing Ecodesign Directive for climate control systems by having circular climate control systems designated as a priority topic in the new Ecodesign Directive.	■	□	□	We will explore the possibilities for conducting pilot projects to enable the market to gain experience with the use of performance contracts for systems.	□	□	■
In the context of the KIA CE, we will update the knowledge questions in relation to circular climate control systems.	■	□	□	We will explore the set-up of a national buyer group for circular climate control systems.	□	□	■
We will explore the possibility to link up with the introduction of the Environmental Performance Assessment Method for Construction Works to establish performance indicators for energy renovations.	■	□	□	We will explore the possibility for public authorities and businesses to impose preconditions on tender procedures for circular climate control systems.	■	□	□
New measures	Standard-setting	Pricing	Stimulus	We will explore the set-up of a knowledge platform in collaboration with the Construction Transition Team for installation businesses, industry organisations, financial institutions and knowledge institutes to offer practical support in relation to circularity issues			
We will explore the development of a circular product passport for climate control systems.	■	□	□	The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.			
We will explore the accumulation of financial data with regard to the recycling and reuse value of systems and investigate whether there is room for experimentation for giving a different settlement system a place in the current producer responsibility.	■	□	□				
We will explore whether a minimum lifetime can be realised by means of long factory warranties and the EPR.	■	□	□				
We will explore the possibilities for research into design dimensions at system level as a basis for system performance.	■	□	□				
We will explore the possibilities for research into design integration of the energetic performance and the environmental performance of the system.	■	□	□				



3.5 Biomass & food

Through the implementation of its vision of circular agriculture entitled *Waardevol en verbonden*¹²⁴ [Valuable and connected] and various programmes, the Ministry of Agriculture, Nature and Food Quality gives substance to the ambitions of the Circular Economy Implementation Programme 2019-2023 and the National Circular Economy Programme 2023-2030. Sustainable production of bio-based raw materials for various applications, as well as sustainable use and reuse of bio-based raw materials, forms an integral part of these programmes. Below we will explain how the programmes contribute to the circular economy.

Promoting circular agriculture at business level

In the implementation of its vision, the Ministry of Agriculture, Nature and Food Quality is working on a system of Key Performance Indicators (KPIs), among other things. The aim of this is to realise a sustainability performance at business level that contributes to the goals of the Ministry's vision. This KPI process is currently at the stage of development and practical testing. As regards circular targets in this KPI process, we will work on 1) increased use of residual flows for animal feed, for example; 2) better use of protein from our own country, so that we will depend less on external inputs, and 3) increased efficiency of nutrients and reduced emissions into water, soil and air. We will develop a KPI dashboard that provides guiding information to farmers, so that they can adapt their management measures accordingly. By rewarding sustainability results (for instance by means of exemptions or financial incentives), we will encourage farmers to set up their operations in a structurally sustainable and more circular way.

National Agricultural Soils Programme

The National Agricultural Soils Programme (in Dutch: *Nationaal Programma Landbouw bodems* or NPL) is primarily aimed at sustainable management of all agricultural soils in the Netherlands by 2030, and secondly, as was agreed in the Climate Agreement, at the additional capture of 0.5 Mtons of CO₂ equivalent per year in the mineral agricultural soils. Since 2019, the focus has mainly been on identifying measures which farmers can use to achieve sustainable soil management and carbon capture. Over the coming period, the NPL will focus more on specific use of the knowledge gained among

farmers, but also in a broader sense. Think of the identification of bottlenecks and opportunities in provinces and in the value chain.

Protein transition

The goal of the National Protein Strategy (in Dutch: *Nationale Eiwitstrategie* or NES) is to increase the degree of self-sufficiency for plant-based proteins as well as their sustainable consumption. Via the elaboration of the Bean Deal, we will work on strengthening the cultivation in the Netherlands of protein crops for human consumption. The Ministry of Agriculture, Nature and Food Quality is aiming for better access to the use of residual flows, such as animal by-products and food residues, as animal feed or substrate in the EU. For example, the use of animal meal in animal feed has been permitted under strict conditions since September 2021. The NES also promotes innovation of new and alternative proteins, such as cultured meat, microbial proteins and proteins obtained via fermentation processes. Finally, the NES aims to realise a different diet among Dutch consumers, whereby the ratio between animal and plant-based proteins is to shift from the current 60/40 to 50/50 by 2030.

Reducing food waste

The Netherlands has committed to Sustainable Development Goal 12.3 of the UN: halving food waste by 2030 compared to 2015. The Food Letter (in Dutch: *Voedselbrief*) from March 2021 states that permanent efforts are needed to achieve this target. Reducing food waste will contribute significantly to food security and reduction of the carbon footprint of the food system. Policy of the Ministry of Agriculture, Nature and Food Quality mainly focuses on a successful bundling of activities under the foundation called *Stichting Samen Tegen Voedselverspilling* [Together against food waste]. The Ministry wants to continue the approach developed for this and realise a further reduction of food waste both among consumers and in the value chain, along four lines of action: 1) measurement and monitoring, both at national and at European level; 2) joining of forces in the value chain; 3) helping consumers reduce waste, and 4) changing the 'rules of play' that obstruct the reduction of food waste. In addition, the Netherlands will aim to introduce legally binding targets under the Farm to Fork strategy and for the entire food chain.

Growing bio-based raw materials for construction

In addition to the focus on new revenue models for agriculture (as described in the Coalition Agreement), the Ministry of Agriculture, Nature and Food Quality is promoting the development of a new value chain for bio-based materials. In concrete terms, the Ministry of the Interior and Kingdom Relations, the Ministry of Economic Affairs

¹²⁴ <https://www.rijksoverheid.nl/documenten/beleidsnota-s/2018/09/08/vision-landbouw-natuur-en-voedsel-waardevol-en-verbonden>



and Climate and the Ministry of Agriculture, Nature and Food Quality are working on agreements on a value chain for bio-based construction materials that will strengthen both demand and supply. In this, they are looking at raw material flows that contribute to the achievement of the targets for the current agricultural transition. A point of departure is also that over time market structures will develop which will work independently from government instruments such as the Common Agricultural Policy. We will also investigate how an additional revenue model via carbon credits can strengthen the revenue model of the agricultural sector.

Forest strategy

The main ambitions of the Forest Strategy (November 2020, in Dutch: Bossenstrategie) are to add an additional 37,000 hectares to the Dutch forest areas, to revitalise (i.e. restore) existing forests, to realise 10% ‘networks of blue and green’ in rural areas by 2050, and to promote the realisation of 25,000 hectares of ‘agroforestry’. The strategy also promotes high-value use of wood, like in construction. For the 15,000 hectares of forest expansion to be realised in the National Ecological Network of the Netherlands (in Dutch: Natuurnetwerk Nederland or NNN), provinces are investigating on a more detailed level which areas are suitable, and a provincial distribution will be determined. For the ambition of realising 19,000 hectares of forest expansion outside the NNN, financial instruments still need to be found, but site management organisations are already working on planting trees, and the Ministry of Agriculture, Nature and Food Quality has made available a fund for creating forests on government-owned land. What’s more, via agroforestry or landscape elements, trees on agricultural land can help broaden and strengthen farmers’ business operations, among other things by promoting ecosystem services like pollination, pest reduction and soil improvement. Via area elaborations arising from the National Programme for Rural Areas we will explore what is feasible where.

Knowledge and innovation programmes

In the context of the Knowledge and Innovation Agenda (KIA) for Agriculture, Water and Food, several multi-year mission-driven innovation programmes (MMIPs) have been initiated for knowledge development on the circular economy. In particular, these are MMIP AP3: *Geen onbenutte zij- en reststromen* [No unused side-flows or residual flows], and MMIP B6: *Productie en gebruik van biogrondstoffen* [Production and use of bio-based raw materials]. The aim of these programmes is to contribute to the realisation of circular agriculture and a climate-neutral system for agriculture and nature by 2050. These

programmes include several knowledge projects, for example aimed at the development of bio-based products, but also at the development of models that will help make an integral assessment when choosing between different uses of bio-based raw materials.

Table 28: Measures relating to biomass & food

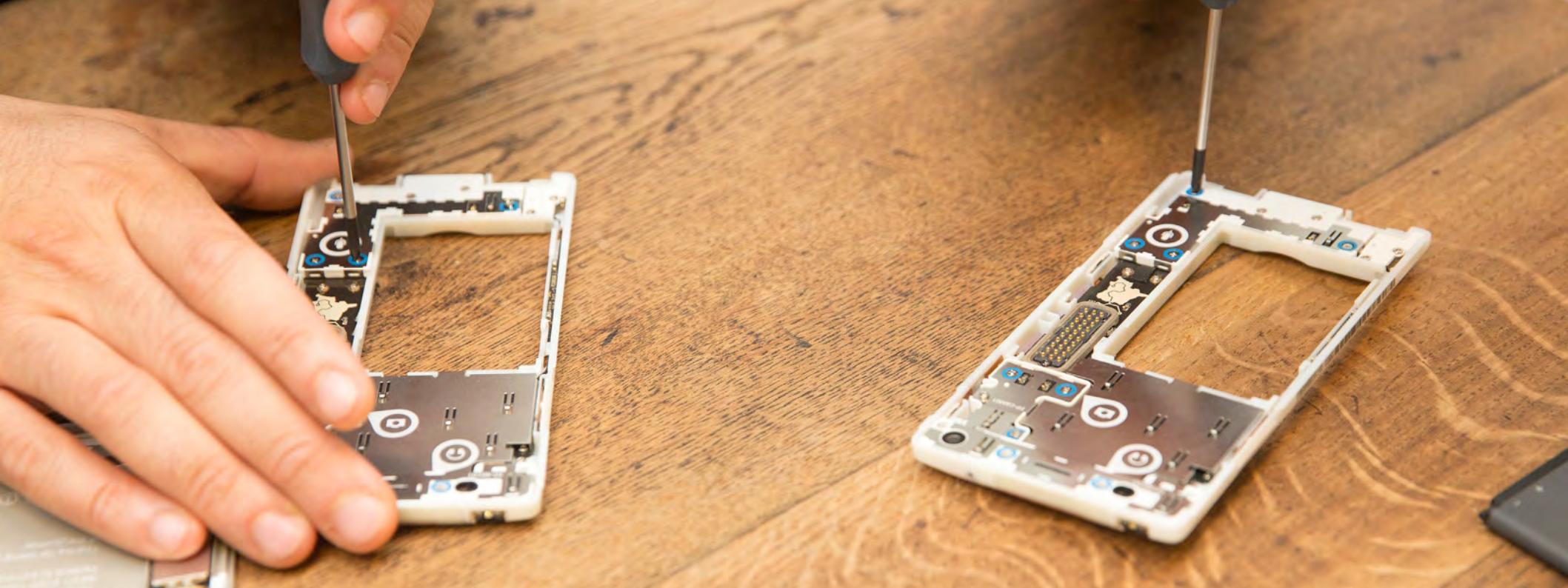
	Standard-setting	Pricing	Stimulus
Continuation and intensification of policy			
We will implement the Forest Strategy.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will implement the National Protein Strategy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We will set up a system of key performance indicators (KPIs).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will focus more on residual flows, for example with regard to animal feed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We will make better use of proteins from our own country to be less dependent on external inputs.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will increase the efficiency of nutrients and reduce emissions into water, soil and air.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We will implement the National Programme for Agricultural Soils.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We will bundle activities under the Stichting Samen Tegen Voedselverspilling.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We will promote the development of new value chains for high-value use of bio-based raw materials.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will implement the multi-year mission-driven innovation programmes (MMIPs) for the circular economy to contribute to the realisation of circular agriculture and a climate-neutral system for agriculture and nature by 2050.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



New measures	Standard-setting	Pricing	Stimulus
We will aim to introduce legally binding targets under the Farm to Fork strategy.	■	□	□
We will make arrangements with the Ministry of the Interior and Kingdom Relations, the Ministry of Economic Affairs and Climate and the Ministry of Agriculture, Nature and Food Quality on the development of a value chain for bio-based construction materials.	□	□	■
We will investigate how an additional revenue model using carbon credits can help strengthen the revenue model of the agricultural sector.	□	□	□

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.





Chapter 4

Supporting measures

To be able to realise the transition to a circular economy, we need proper supporting framework conditions. Therefore, the government is taking measures to support, promote or influence knowledge and innovation, circular business operations, financing, circular procurement, behaviour, education, the labour market, and monitoring.

4.1 Knowledge and innovation

As an international frontrunner in the circular transition, the Netherlands has gained a lot of knowledge and experience. We want to maintain this frontrunner position. We can do this by scaling up the many good examples that already exist and by further developing techniques and methods which cannot be applied widely or on an industrial scale yet or which are currently unaffordable. This will enable a larger group of businesses to make the switch to circular operations. This way, we can create a sustainable earnings capacity for the Netherlands, and we can work on our international competitive position in the economy of the future.

Many technologies that are needed for the circular economy already exist, but are still too expensive or not broadly available. In addition, many new developments are still needed. Examples of this have been included in Chapter 3. The use of existing technologies requires a different role from the government than the development of new technologies. Their use can also be achieved by the government imposing rules and standards, by purchasing differently, by rewarding circular operations (e.g. financially, with tax benefits or with subsidies) and by penalising linear operations (e.g. financially, with extra taxes or levies).¹²⁵ ¹²⁶

In our policy for innovation, we therefore distinguish between two types of instruments:

- Instruments aimed at the development of new technologies, processes and business models that enable businesses to operate in a circular manner. These instruments fall within the scope of the mission-driven innovation policy, where the circular economy is one of the missions. Since 2019, innovation subsidies have been provided in this context for the development of new circular technologies and methods.

- Instruments aimed at the use of those new technologies, processes and business models. Sharing knowledge about which circular solutions are already available to businesses is very important in this regard. This is being done, among other things, via the *Circular Netherlands Accelerator!*, the *subsidy scheme for circular value chain projects*, and the annual National Circular Economy Conference (in Dutch: *Nationale Conferentie Circulaire Economie*). We are also handing out prizes to circular projects, businesses and organisations that make an impactful contribution to the sustainability transitions in the Netherlands.

The focus in this section is on instruments aimed at the development of new technologies, processes or business models.

The Coalition Agreement states the following: "We will support innovative startups and scaleups and focus mission-driven innovation policy on the three major transitions: climate and energy, digitalisation and key technologies, and the circular economy." In 2023, the current Voluntary Agreement for Knowledge and Innovation (KIC)¹²⁷ will cease to be applicable, and in the coming year we will therefore focus on updating the Knowledge and Innovation Agenda for the Circular Economy (KIA CE). With our partners, we will also position the Circular Economy Mission (in Dutch: *Missie Circulaire Economie*) in the new KIC 2024-2027¹²⁸ as well as possible, in line with the Coalition Agreement. We will discuss and revise the collaborations on CE innovations with universities, the Dutch Research Council (in Dutch: *Nederlandse Organisatie voor Wetenschappelijk Onderzoek* or NWO), the Organisations for Applied Science (in Dutch: *Toegepaste Onderzoek Organisaties*), regions and ministries, to be able to focus as well as possible on the transition to the circular economy in the government-wide innovation policy over the coming years.

In addition, we will continue to work on the development of new knowledge which is needed to facilitate the innovations in the market, but also to make the right policy decisions for the circular transition. We are doing this, for example, in the context of the Dutch Research Agenda (in Dutch: *Nationale Wetenschapsagenda*), where circularity is a separate *research route*. Important aspects where a lot of research is still needed in the

¹²⁵ [Broad social reassessment 9](#)

¹²⁶ [Broad social reassessment 11](#)

¹²⁷ <https://www.rijksoverheid.nl/documenten/kamerstukken/2019/11/11/kamerbrief-kennis--en-innovatiecovenant-2020-2023-en-de-roadmap-human-capital-topsectoren-2020-2023>

¹²⁸ The KIC 2024-2027 was announced in a [letter from the Minister of Economic Affairs and Climate](#).



coming years are system-level understanding of the transitions and the way in which the government, in its capacity as director of transitions, can focus on so-called *key enabling methodologies*. Aspects like security of supply, all elements of the raw material footprint and respecting planetary boundaries¹²⁹, full circularity and Safe by Design are already quite widely known conceptually, but are as yet difficult to use in practice. That is why research and support from the government will be needed to elaborate these concepts into concrete frameworks and tools, so that they can be used in the priority product chains (see Chapter 3) and ultimately also in the economy in general.

Coordination of innovation through the KIA CE

To accelerate the innovation towards a circular economy, the government set up the KIA CE in 2019 together with a broad group of partners, based on the mission-driven innovation policy. The KIA has three programme lines (multi-year mission-driven innovation programmes – MMIPs):

- 1 Design for circularity
- 2 Circular raw material chains and processes
- 3 Trust, behaviour and acceptance

Over the past few years, the KIA CE has served as the basis for innovation subsidies from the Ministry of Economic Affairs and Climate, the Ministry of Infrastructure and Water Management and the Ministry of Education, Culture and Science (in Dutch: Ministerie van Onderwijs, Cultuur en Wetenschap or OCW). Via several instruments, the Ministry of Economic Affairs and Climate provides innovation subsidies that contribute to CE innovation¹³⁰, including:

- The [TSE Industry scheme](#), specifically the projects in the context of MMIP 6 *Sluiten van industriële kringlopen* [Closing of industrial cycles] of the Integral Knowledge and Innovation Agenda for Climate & Energy;
- The [MOOI scheme](#);
- Generic instruments like the [WBSO](#) (Promotion of Research and Development Act), the [MIT scheme](#) (SME Innovation Stimulus for Regional and Top Sectors) and the [PPS benefit scheme](#) (public-private partnership allowance for research and development).

¹²⁹ Among others, see PBL (2021). [Policy brief: Mogelijke doelen voor een circulaire economie](#) [Policy brief: Possible objectives for a circular economy].

¹³⁰ So far, the CE projects in the context of the TSE Industry and the MOOI schemes have mainly concerned the recycling of plastics.

The Ministry of Infrastructure and Water Management and the Ministry of Education, Culture and Science are funding innovation projects where businesses work together with other businesses or research organisations. This concerns the following instruments:

- Subsidies for university researchers who work together with businesses, implemented by NWO as [KIC mission-driven calls](#);
- Subsidies for researchers at universities of applied sciences that work together with businesses, implemented by the [Taskforce for Applied Research SIA](#) (in Dutch: *Regieorgaan SIA*) via the KIEM-ce, SPRONG, RAAK-MKB and RAAK-PRO schemes;
- Subsidies for researchers at universities of applied sciences that work together with public organisations (including local and regional authorities), implemented by the SIA Coordinating Body, specifically [RAAK-publiek](#);
- Subsidies for businesses that work together with other businesses on applied science, implemented by the Netherlands Enterprise Agency (RVO) via the [KIA CE scheme](#).

Subsidies have also been provided via EU funds to various research consortiums with many Dutch partners, in Horizon Europe and via the Dutch regional authorities to Dutch businesses from the European Regional Development Fund (ERDF). Project examples can be found on the [KIA CE website](#).

In addition, as part of the KIA CE, proposals have been made for the innovation pillar of the National Growth Fund, with the most visible success being that the government has [allocated resources to the Circular Plastics programme](#).

Look ahead

Many projects funded since 2019 via subsidies in the mission-driven innovation policy will be continued. Most innovation projects run for four years or more (some for a bit shorter), so that over the coming years we will be able to reap the benefits of the innovations made possible by the previous government in the circular transition. We will announce these innovations via various channels, including the [KIA CE website](#), and we will facilitate the use of these innovations by more entrepreneurs.



Innovation relating to higher R strategies deserves more attention¹³¹

In 2020, about 4% of employment in the Netherlands and 4% of the GDP was attributable to circular business activities¹³² like recycling, repair and reuse. Of the businesses that perform such activities, about three quarters focus on repair. Some 10% of the CE businesses are active in the areas of recycling or reuse. Relatively few businesses use strategies like ‘rethink’ (4%) and ‘reduce’ (2%) which are higher on the R-ladder and are aimed at reducing the use of raw materials.¹³³ In other words:

- Circular technologies and business models must be made more accessible and more affordable for entrepreneurs, to enable them to conduct circular business operations.
- More attention needs to be paid to circular strategies at the start of the value chain and higher up the R-ladder, i.e. ‘narrow the loop’ and ‘substitution’¹³⁴. This concerns the design phase of products and business models, the subject of Programme Line 1 of the KIA CE (see below).

Attention paid to trust, behaviour and acceptance besides technology development

Innovation related to non-technological aspects will receive more attention over the coming years. For example, we will work together with the partners in the mission-driven innovation policy on the financing of non-technological research in the third programme line of KIA CE (Trust, Behaviour and Acceptance – including research into system aspects and institutions that obstruct the CE transition). In November 2022, NWO issued the first invitation to submit proposals. This the first time funding is available in innovation policy for non-technological research into the circular economy. Over the coming years, we will work on more subsidy options for this type of research.

In addition, the Ministry of Infrastructure and Water Management is aiming to create more room in European state support frameworks for the provision of subsidies for investments in non-technological innovations, for complex transitions like the one to a circular economy.

Mission-driven innovation programming

In preparation for the talks about the Voluntary Agreement for Knowledge and Innovation (in Dutch: Kennis- en Innovatieconvenant or KIC) 2024-2027, the Ministry of Infrastructure and Water Management is working with the transition teams for construction, consumer goods, plastics and manufacturing on an update of the KIA CE. In this, we are following a method that is in line with the [theory of mission-driven innovation systems](#) and the various market phases which an ecosystem goes through in the circular transition, including the associated business models. When updating the KIA CE, more attention will be paid to strategies aimed at substitution of impactful materials by renewable alternatives – and to a human capital agenda which helps ensure that enough employees with the right skills are actually available for the developments. For the latter we are seeking connection with the awarded Growth Fund process [LLO Katalysator](#) [Catalyst for life-long development], where education institutes at senior secondary vocational and university level give shape to further education, among other things for the raw material transition and the energy transition.

In 2023, the Top consortium for Knowledge and Innovation (TKI) for Chemistry, which coordinates the implementation of the KIA CE on behalf of all Top Sectors, will merge with the [TKI for a Biobased Economy](#). This will bring the innovation programming for secondary and sustainable bio-based raw materials closer to the programming for the circular economy. It will create opportunities for collaboration and synergy.

Another new development is that in 2022 the set-up of the new TKI for Construction & Technology will be completed, in addition to the TKIs of the existing Top Sectors. The TKI for Construction & Technology will focus, among other things, on circular construction and lifetime-extending maintenance. Also see Section 3.3.5.

131 See <https://www.rvo.nl/onderwerpen/r-ladder>.

132 This includes circular business activities such as the demolition of construction works or vehicle repair. The analysis was performed based on a classification of SBI codes of businesses and only covers part of all circular businesses in the Netherlands (see Royal HaskoningDHV, 2022).

133 Royal HaskoningDHV (2022), *Vervolgmeting Circulaire bedrijfsactiviteiten* [Follow-up measurement of circular business activities], 2022. Nijmegen: Royal HaskoningDHV.

134 The names of these circular strategies have been derived from PBL (2021). Policy brief: [Mogelijke doelen voor een circulaire economie](#) [Possible objectives for a circular economy], page 6.



Knowledge development and innovation on a larger scale in an ecosystem approach

An important share of the Dutch climate emissions can be prevented by the transition to a circular economy. For this reason, the Ministry of Infrastructure and Water Management announced in its policy programme that was sent to the House of Representatives in May 2022 that it would take six measures to strongly reduce these climate emissions related to raw materials. One of these measures is to work more proactively on innovations that enable businesses to start working in a circular manner and so reduce the carbon emissions related to production in the Netherlands (scope 1), the supply chain (scope 2) or the use of products (scope 3). In view of the ambitious climate goal for the circular economy, the Ministry of Infrastructure and Water Management has proposed a strong increase in the resources to support circular innovation, via the instruments of the KIA CE and the DEI+ scheme.

Focus on the National Growth Fund

Ideally, innovation processes are embedded in a transition approach, with a focused approach to help the market change in such a way that the innovation can be easily adopted by entrepreneurs and the right conditions are created for their broad application^{135 136}. Such an approach will be aimed at the entire ecosystem of demanding parties, supplying parties and any foreign suppliers, with the necessary support from the government, knowledge institutes and civil society organisations. Together, these parties form the so-called ‘quadruple helix’. Since the introduction of mission-driven innovation policy in 2019, the government has played a leading role in placing missions on the agenda on which the innovation should focus, and quadruple helix partners have been working together to plan the innovation of the Circular Economy Mission.

At the moment, not enough resources have been allocated in the government budget to such large-scale innovation programmes for all priority value chains of circular economy policy (see Chapter 3). Experience has shown that such an approach can sometimes require as much as EUR 500 million in combined public and private investments for each value chain. This is also acknowledged in the assessments by the Advisory Committee on the National Growth Fund (in Dutch: *Adviescommissie Nationaal Groeifonds*). One of the options for

the funding of these programmes is the Innovation Pillar of the National Growth Fund (NGF). For the third round of the NGF, the Advisory Committee on the National Growth Fund specifically called upon market parties to come up with proposals relating to the circular economy.¹³⁷

For the next submission rounds of the National Growth Fund, the Ministry of Infrastructure and Water Management, the Ministry of the Interior and Kingdom Relations, the Ministry of Economic Affairs and Climate and the Ministry of Agriculture, Nature and Food Quality will focus more on proposals that contribute to the circular economy transition.

Support for networks of knowledge and research organisations

At the moment, many different financing instruments are available (including in mission-driven innovation policy) to support projects. However, the government is currently only providing limited support for network development and knowledge sharing between knowledge and research organisations with regard to specific mission topics like the circular economy. Over the past few years, several networks have been initiated, like the Lector Platform for the Circular Economy (in Dutch: *Lectorenplatform Circulaire Economie*) for universities of applied sciences and the Dutch Academic Network on Circular Economy for research universities. The government will explore what is desirable in this area and how it might be facilitated.

¹³⁵ <https://www.government.nl/binaries/government/documenten/publications/2022/01/10/2021-2025-coalition-agreement/2021-2025+Coalition+agreement.pdf>

¹³⁶ <https://www.rijksoverheid.nl/documenten/kamerstukken/2022/11/11/kamerbrief-innovatie-en-impact>

¹³⁷ See: <https://www.nationalgroeifonds.nl/over-de-commissie> under the header *Bijzondere uitdagingen ronde 3* [Specific challenges of round 3].



Table 29: Measures relating to knowledge and innovation

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus	Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We are providing innovation subsidies for the development of new circular technologies and methods, and in this we are focusing mainly on higher R strategies ('narrow the loop' & 'substitution'). We have been doing this for some years now, via the following instruments: <ul style="list-style-type: none"> • subsidies via the KIA CE scheme for CE innovations higher up on the R-ladder and for priority value chains and product groups. • subsidies for closure of the industrial loops in the TSE Industry scheme. • subsidies for big innovation projects in the MOOI scheme, for which CE projects are eligible as well. • generic innovation instruments like the WBSO, the MIT scheme and the PPS benefit scheme, which can also be used for CE. • subsidies for CE research awarded to university researchers who work together with businesses, implemented by NWO as KIC mission-driven calls. • subsidies for CE research awarded to researchers at universities of applied sciences who work together with businesses or public bodies, implemented by the Taskforce for Applied Research SIA in the KIEM, SPRONG and RAAK schemes. • a focus on more CE proposals for the Innovation Pillar of the National Growth Fund. • support for consortiums that want to apply for subsidies for CE innovations in the EU programme entitled Horizon Europe. 	■	■	■	We will conduct research into system change and the elaboration of circularity concepts into frameworks and tools.	■	■	■
In 2023 we will update the Knowledge and Innovation Agenda for the Circular Economy and will provide it as input for the new Voluntary Agreement for Knowledge and Innovation (KIC) 2024-2027.	■	■	■	We will aim for more subsidy options for non-technological innovation (trust, behaviour and acceptance).	■	■	■
We will keep working on the development of new knowledge, for instance via the Dutch Research Agenda, with circularity as a research route.	■	■	■	New measures	Standard-setting	Pricing	Stimulus
				We will conduct research into the way in which the government can focus on key enabling methodologies in transitions.	■	■	■
				We will increase the intensity of the collaboration in the areas of CE and the bio-based economy in mission-driven innovation policy.	■	■	■
				In the new TKI for Construction & Technology, we will focus on CE innovation by means of a separate programme line.	■	■	■
				We will focus on the National Growth Fund to provide support for the set-up of innovative ecosystems for all priority value chains of the circular economy policy.	■	■	■
				We will explore the need and possibilities for support for networks of knowledge and research organisations.	■	■	■
				The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.			



4.2 The Circular Netherlands Accelerator!

The *Circular Netherlands Accelerator!* supports businesses that want to work on the circular economy. The Circular Netherlands Accelerator! helps individual entrepreneurs by providing answers to questions about knowledge, networks, funding and legislation, and promotes collaboration between entrepreneurs in circular value chains. The portal is a partnership of the Confederation of Netherlands Industry and Employers (VNO/NCW), the Royal Association MKB-Nederland for SMEs, sustainability think-tank Het Groene Brein, and the Ministry of Infrastructure and Water Management, and works together with over 100 Acceleration Partners¹³⁸ across the Netherlands.

It has become evident from *the evaluation* that the Circular Netherlands Accelerator! performed well in the first few years (i.e. 2019-2021) in view of its intentions, and that there is room for improvement as well. In the next couple of years, the Circular Netherlands Accelerator! will therefore change course on three points: 1) it will seek closer collaboration with existing Acceleration Partners; 2) it will link up more closely with the targets for product groups as included in Chapter 3 in the support for value chain collaboration; and 3) it will investigate to what extent the Circular Netherlands Accelerator! can be scaled up.

The Circular Netherlands Accelerator! is one of the components of the comprehensive set of instruments used in the transition to a circular economy. The Circular Netherlands Accelerator! works together with other parties on, among other things, circular procurement, circular design, regional efforts for the circular economy, the City Deal for Impactful Business and the Green Deal entitled *Samen werken aan duurzame zorg* [Working together on sustainable healthcare].

The funding of the Circular Netherlands Accelerator! has been taken care of for the period up to and including 2025. After that there will be a gap in the funding. Besides its key aim, i.e. supporting entrepreneurs, the Circular Netherlands Accelerator! will also continue the following activities:

- **The ‘Common Threads Notes’** (in Dutch *Rode Draden-notities*): collecting, analysing and sharing obstacles and opportunities experienced by entrepreneurs (individually and in value chains) in the transition to the circular economy. The aim of this is to put these points on the agenda at parties that can remove the obstacles.
- **The Week of the Circular Economy:** a week full of inspiration from businesses for businesses.
- **Self-service:** development of tools and provision of accessible information. This will help entrepreneurs find answers to common questions more quickly.

Look ahead

There are many reasons for the slow development of circular business, as also emerges from the ‘Common Threads Notes’ of the Circular Netherlands Accelerator!: there is too little coordination and knowledge sharing, there is no market, and financial incentives are still promoting the linear economy.

Because of the obstacle of having ‘too little coordination and knowledge sharing’ within and between value chains, the Circular Netherlands Accelerator! will focus on promoting value chain collaboration and coordination within value chains. This is already happening and it will be expanded together with the Netherlands Enterprise Agency (RVO) and with extra resources from the Ministry of Infrastructure and Water Management. This results in the following support:

1. Subsidy for circular value chain projects with a focus on SMEs

The *subsidy for circular value chain projects* (in Dutch: *Circulaire Ketenprojecten* or CKP) has been available annually since 2020 for small and medium-sized enterprises (SMEs) that want to make a value chain (or part thereof) circular as part of a consortium of three to six SMEs. This way, businesses can receive a subsidy for hiring an independent process supervisor, for example. The scheme has been set up based on knowledge from the Circular Netherlands Accelerator! and is being implemented by the RVO, on behalf of the Ministry of Infrastructure and Water Management. Until 2022, 575 entrepreneurs have been supported in 138 circular value chain projects¹³⁹.

¹³⁸ An Acceleration Partner (in Dutch: *Versnellingspartner*) of the Circular Netherlands Accelerator! is an organisation that also aims to help entrepreneurs who want to operate in a circular manner. These can be regional organisations (the Circular Friesland Association), topic-specific ones (CB'23) or organisations offering a specific type of support (Invest-NL).

¹³⁹ <https://data.rvo.nl/subsidies-regelingen/projecten?f%5Bo%5D=subsidies%3A32041>



2. Support for product group and material value chains: initiation and implementation of value chain projects

The realisation of circular value chains at product group level requires a sector-wide approach in which all (or nearly all) links in the value chain are involved. In addition to the subsidy for circular value chain projects, the Circular Netherlands Accelerator! provides support to sector value chains and product groups, as included in this NPCE, in consultation with the transition teams. This is happening in two phases, with the support in the implementation phase being new:

Moonshots (initiation phase of value chain project)

The Circular Netherlands Accelerator! supports the start-up of so-called Moonshots: projects that lead to potentially major circular value chain breakthroughs. Based on an initiative supported by the market, a consortium of businesses will work to lay down a joint ambition and a multi-year plan to make an entire service or product value chain circular (including a financing plan). The Circular Netherlands Accelerator! provides support in this regard.

Committed and ambitious Moonshots supported by the market (implementation phase of value chain project)

From 2023, the Circular Netherlands Accelerator! will provide multi-year support¹⁴⁰ to consortiums with an established ambition, to implement a joint plan for the realisation of a circular value chain. This can be a follow-up to the Moonshot Initiation Phase (see above) but it can also be a follow-up to another existing consortium with an ambition and a plan. The support involves the appointment of a value chain director and process funds. Only projects which actually contribute to the targets of this programme will be supported in collaboration with the transition teams.

VNO-NCW wants to take action

The Confederation of Netherlands Industry and Employers (VNO-NCW) has made three proposals for the priority value chains of plastics, construction and biomass & food, also on behalf of a number of partners – to show that businesses are serious about the transition to a circular economy as well, in addition to the policy measures, to take concrete action with businesses and to chart what the circular possibilities and obstacles are at product group level.

For example, VNO-NCW sees a lot of potential in the following three value chain projects:

Combating bread waste

The aim of this is to reduce the number of loaves of bread which are baked in excess on a daily basis (700,000 loaves) by means of a number of concrete measures in the bread value chain. At 80 ktons, the carbon reduction potential is limited, but if it is a success, this project can lead to more and bigger value chain projects in the area of food waste: by means of prevention, reduction and extraction of a higher value from unavoidable residual flows, food waste in the Netherlands, in the value chain up to the consumer, can be lowered by 1 Mton per year. This may lead to a reduction of 2-3 Mtons of CO₂-eq/year as well as a cost benefit of at least EUR 1 billion.

Sustainable insulation materials

The aim of this is to address the increasing demand for insulation materials against the background of the housing challenge. This project will work on improvement of the data relating to the total environmental burden of insulation materials across the entire life cycle of a construction work, will formulate improvement proposals for the design of insulation materials to facilitate circular processing after use, and will investigate what is needed to save more insulation materials from incineration and landfill in case of demolition and disassembly. The possible carbon reduction potential as a consequence of our proposed measures will be further explored in the project itself.

¹⁴⁰ See Versnellingshuisce.nl for more information on this support, the preconditions and the submission process.



Plastics

The aim here is to use 40% non-fossil raw materials in 2030, in line with the Action Plans for the Use of Recyclate and Bio-based Plastics (in Dutch: *Actieplannen Toepassen Recyclaat en Biobased plastics*). The proposal contains measures to use more collected plastics and plastics made from sustainable bio-based materials. Finally, we will examine the composition of plastics and the design of products together with partners from the value chain, to prevent a situation where problematic plastics cannot be recycled later on (design for recycling).

In addition, over the coming years VNO-NCW will remain committed to the Circular Netherlands Accelerator! which it set up in 2019 together with Het Groene Brein, the Ministry of Infrastructure and Water Management and MVO Nederland – particularly by supporting value chain collaborations.

In view of the phase that the transition to a circular economy is currently in, it will be necessary to continue the Circular Netherlands Accelerator! at least until 2030, so that entrepreneurs can be further supported and the necessary extension to include more entrepreneurs, particularly in the ‘peloton’, can be initiated. For the Circular Netherlands Accelerator!, resources are currently available for the period up to and including 2025. More resources are needed, therefore.

Table 30: Measures relating to the Circular Netherlands Accelerator!

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
<p>With the Circular Netherlands Accelerator!, we are supporting entrepreneurs by providing answers to questions about knowledge, networks, funding and legislation, and we are promoting collaboration between entrepreneurs in circular value chains. Among other things, we are doing this by:</p> <ul style="list-style-type: none"> • Drawing up a ‘Common Thread Note’. • Organising the Week of the Circular Economy. • Developing tools and providing accessible information ('self-service'). 	■	■	■

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
<p>We will seek closer collaboration with existing Acceleration Partners and will ensure that the support for value chain collaboration will be more closely aligned with the targets for product groups (as included in Chapter 3).</p>	■	■	■
New measures	Standard-setting	Pricing	Stimulus
<p>We will explore how the Circular Netherlands Accelerator! can be continued until 2030 and/or scaled up.</p> <p>We will support the implementation of product group and material value chains via multi-year, ambitious Moonshots supported by the market.</p>	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

4.3 Market incentives

The use of raw materials often has negative external consequences, here in the Netherlands or abroad. These are environmental costs that do not end up directly with the party causing the damage, and are therefore not taken into account, or not in full, in economic actions. If these costs are not factored into the prices of products and services, and consumers are not prepared to pay extra for them, the business case for circular products cannot be established, or not as easily. Market incentives based on the principle of ‘the polluter pays’ will help create a level playing field between the current linear economy and the circular economy. Examples of market incentives are price incentives (subsidies and taxes) which ensure that external effects are factored into the price.



A tax on fossil raw materials will increase the market price and reduce demand; on the other hand, a subsidy for bio-based raw materials or secondary materials will promote demand by reducing the price. This will form an incentive for circular innovations and business models and will thus reinforce the national market for secondary raw materials and for products and services with a circular design.

An important side note in relation to market incentives and innovation subsidies is that in addition to the intended environmental effects they may also have other unintended effects. For instance, there may be an effect on income distribution (i.e. who pays the price) and on the international competitive position of businesses; benefits may ‘leak away’ to other countries. When market incentives are used smartly, this will be taken into account and any potential negative impact will be reduced as much as possible. Market incentives tend to be more effective if businesses, public authorities and citizens can anticipate them properly.

In addition, in case of market intervention by the government there is a risk of government failure: the possibility that due to government intervention a situation occurs that is sub-optimal from a social point of view. Policy efforts must be both effective (i.e. have an effect on the achievement of the targets) and efficient (i.e. have the maximum effect given the resources available). A point for attention for incentive schemes in particular is to ensure that there are as few ‘free riders’ as possible: participants in the scheme that would have also made the same decision at the same point in time without the use of the instrument.

In other words, a market incentive will help create a convincing business case for circular products and services. There is a broad range of market incentives and subsidies (via taxes or otherwise), which each have their own dynamics. The choice of an effective incentive, subsidy or scheme will depend strongly on the transition phase that a product, sector or innovation is in. Knowledge about this is therefore very important for us to be able to use market incentives efficiently. In addition, knowledge of the size of the market and market failure is important as well. Plus, the incentives or actions must be examined in conjunction with each other to ensure that the incentives (and their effects) will reinforce each other rather than get in each other’s way. This also applies to other interventions, including laws and regulations and innovation and knowledge.

Over the next few years the government will use existing and new tax and non-tax market incentives to improve the business case for circular products and services in a permanent manner compared to linear products and services, and to bring it in line with the R-ladder.¹⁴¹

Table 31: Measures relating to market incentives

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We will aim to phase out incentives that have a negative effect on the environment (so-called environmentally harmful subsidies) at national and European level.	■	■	■
We will see whether further tariff increases in the waste tax that will be introduced in 2027-2029 will make recycling a more rewarding alternative.	■	■	■
We will increase the budget for the MIA/Vamil schemes.	■	■	■
We will investigate the possibility to adjust the carbon levy, so that volume measures in waste incineration will be valued appropriately as well.	■	■	■
We will focus on increasing the transparency in reports on the environmental performance of businesses and public authorities.	■	■	■
We will adapt the tariff structure of the energy tax in accordance with the Coalition Agreement.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

¹⁴¹ <https://open.overheid.nl/repository/ronl-0a1560d4-74b3-4e09-8ce2-96649e63f710/1/pdf/bijlage-1-draft-rapport-afvalprikkels.pdf>



4.4 Financing instruments

In February 2022, the Circular Economy Working Group of the Sustainable Finance Platform (set up by financial institutions and the government) published a [Roadmap for Circular Finance for 2030](#), with the following ambition: “By 2030, circularity should be an integral part of how financing applications are assessed and directly inform investment decisions.”

To achieve this, four concrete actions have been agreed on:

- 1 Integrally assess linear and circular risks;
- 2 Taking account of circular metrics in financing to increase transparency, to enable external verification and benchmarking, and to reduce greenwashing;
- 3 Gain experience by closing landmark deals and fine-tuning circular propositions for financing;
- 4 Expand and optimise financing instruments to make circular financing the new ‘business as usual’.

By performing these actions, the financial sector will act as a lever and will boost the circular transition. The intended effect is that it will become more attractive for financial institutions to invest in businesses that work on the circular economy, to make it easier for these businesses to obtain private funding for their business case. Over the coming years, the Ministry of Infrastructure and Water Management will facilitate the collaboration with financial institutions in the Circular Economy Working Group of the Sustainable Finance Platform.

The Roadmap for Circular Finance will also contribute to the policy agenda for sustainable finance published by the government on 7 June 2022.¹⁴² It includes the ambition that the financial sector must be a kick-start for sustainable development, including actions that are to contribute to the realisation of this ambition.

The government is promoting transparency to facilitate assessment of the sustainability of businesses and financial institutions. In this we are linking up with international developments as much as possible. The government is arguing for an ambitious European taxonomy that indicates which investments can be designated as being sustainable.

¹⁴² House of Representatives, 33 043, no. 108

Look ahead

The government will facilitate the transition by making the existing instruments for business financing better suitable for circular entrepreneurs and business cases where possible. Many instruments are already open to entrepreneurs in the circular economy. This concerns instruments implemented by the Netherlands Enterprise Agency (RVO), like the subsidy for circular value chain projects, but also Invest-NL and instruments for international business. The government will keep improving its instruments so that they will be better aligned to the needs of this target group. For example, in the terms and conditions of subsidy schemes for businesses the needs and possibilities of circular business operations are not always sufficiently taken into account. In addition, circularity requirements are not always imposed on subsidies. The goal is to make all relevant subsidy schemes for businesses properly accessible to entrepreneurs in the circular economy – and, where relevant, to impose conditions that promote the circular economy, in accordance with recommendations from the report entitled [Circulair Financieren](#) [Circular Finance] which was published recently on behalf of the Ministry of Infrastructure and Water Management.

Moreover, the government is working on an attractive scheme for green savings and investment. In 2025, a new scheme (which has already been announced) for tax on savings and investments will be introduced. By keeping the scheme attractive for people who want to save or invest money, we will ensure that more savings and invested capital will be spent on these schemes, so that sustainable investments can be made, also to promote the circular economy.

Financing and insurance instruments, like the export credit insurance, the efforts of Invest International and the Netherlands Enterprise Agency (RVO), but also support for Holland Circular Hotspot, offer opportunities for circular entrepreneurs with international ambitions.

In addition, the government is focusing on the implementation of an international Roadmap for Circular Finance¹⁴³, initially aimed at public international financial institutions, followed by private financial institutions.

¹⁴³ This Roadmap was presented during COP27: <https://www.circle-economy.com/resources/unlocking-the-potential-of-international-financial-institutions-in-the-circular-economy-transition>.



Table 32: Measures relating to financing instruments

	Standard-setting	Pricing	Stimulus
Continuation and intensification of policy			
Together with financial institutions we will work on the implementation of the Roadmap for Circular Finance 2030. This way, we will contribute to the policy agenda for sustainable finance.	■	■	■
We will aim for an ambitious European taxonomy for sustainable investments.	■	■	■
We will promote transparency in the assessment of the sustainability of businesses and financial institutions.	■	■	■
We will aim to phase out incentives that have a negative effect on the environment (so-called environmentally harmful subsidies) at national and European level.	■	■	■
New measures			
Where possible, we will make the existing instruments for businesses suitable for circular entrepreneurs and circular business cases.	■	■	■
We will keep focusing on an attractive arrangement for green savings and investments, by introducing a new scheme in 2025.	■	■	■
We will focus on an international Roadmap for Circular Finance, initially aimed at public international financial institutions, followed by private financial institutions.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

4.5 Circular procurement

Circular procurement by public authorities sets an important example. All ministries have signed the Manifest for Socially Responsible Commissioning and Procurement (in Dutch: *Manifest Maatschappelijk Verantwoord Opdrachtgeven en Inkopen* or MVOI Manifest) 2022-2025 and agreed that a concrete action plan will be created. The first signatures were placed on the Manifest on 24 November 2022.

The scale of the procurement by all public authorities (EUR 85 billion per year, of which EUR 13 billion by central government) can give an important boost to the market. By also involving sectors related to the government, like education and healthcare, this boost can be further increased. The creation of demand will ensure that markets become more sustainable and will drive sustainable innovations. For some innovations, the government can play a decisive role as a launching customer.

Instruments

We have various instruments for circular procurement at our disposal, such as the SPP criteria tool (a tool for Sustainable Public Procurement) for many product groups, the ambition web, the web tool ISO 20400, procurement strategies and support for buyer groups, plus the Circular Procurement Acceleration Network (in Dutch: *Versnellingsnetwerk Circulair Inkopen* or VCI).

Within the SPP criteria tool we are working on ever more ambitious criteria for circular procurement. Under the MVOI Manifest, action plans are being formulated in which circular procurement plays an important role, in addition to the other SPP topics. The web tool ISO 20400 and the ambition web will contribute to the achievement of the circular targets and ambitions and will help convert these targets to specific procurement processes and an approach to circular procurement processes. The support for buyer groups will be continued, and this should lead to ever more and ever better circular procurement processes. The Circular Procurement Acceleration Network will be extended and properly integrated where possible. Value chain collaboration, learning environments and ensuring the accessibility of knowledge play an important role here.

In other words, there is a firm basis that we can build on over the coming years.



Circular and Fair ICT Pact and international collaboration

The Circular and Fair ICT Pact is an international collaborative alliance based on the idea that individual countries can only achieve things to a limited extent, but if they join forces they can influence the international ICT market. The Netherlands will remain involved in this. International collaboration is important for circular procurement by product groups like textiles and concrete as well. This concerns the joint development of criteria with European partners. The use of those criteria is voluntary. So far, the focus on joint targets has generally seemed to work better than mandatory criteria. The imposition of criteria can actually obstruct innovation at this stage. The Netherlands is sharing best practices and circular procurement strategies, so that other Member States can benefit from them, and also to boost the market in a broader sense.

Look ahead

In the support for buyer groups, new product groups will be added, in line with the priority value chains. Within a value chain, procurement by businesses is important; businesses will also participate where this is necessary and desirable. In the SPP criteria tool, new insights on circular procurement will be incorporated in a more ambitious way, partly based on the procurement strategies formulated by buyer groups. For relevant product groups that do not occur in the criteria tool, we will explore how they can nevertheless be supported in the procurement process. For the Central Government Procurement Service, firmer arrangements will be agreed on for circular procurement, which can be given a place in SPP action plans and/or the category plans, for example. The plans for the priority product value chains will be linked up with here. The Central Government Procurement Service will be closely involved in the implementation of this NPCE.

As was indicated in Section 2.2.2, we have yet to decide on the measure to promote circular and climate-neutral implementation of public contracts in Civil Engineering and to set standards for it.

Table 33: Measures relating to circular procurement

	Standard-setting	Pricing	Stimulus
Continuation and intensification of policy			
We will implement the MVOI Manifest. All ministries will sign the Manifest and will create an action plan for their own ministry for at least 2022-2025.	■	□	■
We will facilitate the Circular Procurement Acceleration Network. We will extend this where possible and connect regional initiatives.	□	□	■
We will formulate more ambitious criteria for circular procurement in the SPP criteria tool.	■	□	□
For relevant product groups that occur in this NPCE but not in the SPP criteria tool, we will explore how we can offer support for the procurement process.	■	□	□
Within the SPP criteria tool, we will work on ever more ambitious criteria for circular procurement.	■	□	□
We will promote better circular procurement processes by means of buyer groups (and support for them).	□	□	■
We will continue our focus on the Circular and Fair ICT Pact.	□	□	■



New measures	Standard-setting	Pricing	Stimulus
We will deal with new product groups (in line with the product groups in this NPCE) when supporting buyer groups.	■	■	■
We will explore possible support for product groups which do not occur in the criteria tool.	■	■	■
We will agree on firmer arrangements for the Central Government Procurement Service for circular procurement and we will involve the Central Government Procurement Service in the implementation of this NPCE.	■	■	■
We will promote the circular and climate-neutral execution of public contracts in Civil Engineering and will set standards for it.	■	■	■
The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.			

4.6 Behaviour

For a circular economy we need different behaviour from public authorities, businesses, professionals and citizens on a large scale. Everyone will need to fulfil their role in this. In their actions, citizens and market parties often take insufficient account of the long term, while big steps are needed in the period up to 2030 and 2050. That is why it is up to public authorities to ensure that social changes are implemented rapidly enough.

They will set the frameworks for how businesses operate. Via rules and agreements with the market, public authorities can also drive circular behaviour by citizens.

So far, we have mainly focused on informing the public and on behavioural campaigns, like *Iedereen doet wat* [Everyone does something]. These initiatives do work, but they will be even more effective if the physical, social and economic conditions are such that the sustainable and circular choices are obvious, easy and fair. Think of the examples given below.

Table 34: Examples for the physical, social and economic conditions

Desired behaviour	Physical	Social	Economic
Fewer disposable plastics	Reusable packaging will be made available by hospitality businesses and supermarkets	Reusable will be the standard	Disposable packaging will no longer be provided free of charge
More second-hand	Second-hand products can be found in nearly all shops	Second-hand will be the standard, and new will be more and more of an exception	Second-hand will be cheaper than new
More frequent repairs	Repairers will be easy to find (at repair cafes but also in town centres)	Repair will be the standard	Repair will be cheaper than new. Equipment will have a longer warranty period
Waste separation	Separated waste can be disposed of close to people's homes. Containers for separate waste will be clearly visible and well marked with what can and cannot be deposited in them	Waste separation will be the standard	People will pay less waste tax if they separate their waste better

We will investigate per target group and per product group what the most promising desired behaviour is and what drivers and obstacles are relevant. We will focus our policy interventions on those. They should be aimed at concrete actions, like passing on furniture or textiles and having equipment repaired.



The Sustainability Monitor for the Netherlands (in Dutch: Monitor Duurzaam Leven) gives a good idea of the sustainability of our Dutch society. The public information organisation Milieu Centraal will maintain the Monitor together with PBL. With the insights gained from this, we will jointly conduct pilot projects and experiments to investigate which strategy is most effective in changing behaviour per target group. This way, we can further expand the behavioural strategy.

The Ministry of Infrastructure and Water Management has drawn up the Behavioural Strategy for Citizens and the Circular Economy together with behavioural experts from the Behavioural Insight Team of the Ministry of Infrastructure and Water Management (BIT IenW), among others.

Table 35: Behavioural Strategy for Citizens and the Circular Economy

Target	Broad target group will opt for circular
Strategy	<ul style="list-style-type: none"> We will create conditions that ensure that the circular choice is easy, obvious and fair. We will make use of drivers and remove obstacles by designing additional measures specifically for each target group, desired behaviour and product. We will integrate and broaden circular behaviour by also focusing on the development of a sustainable identity. As a result, citizens will make more circular choices more often.
Implementation	<p>We will make adjustments by means of the Sustainability Monitor for the Netherlands and other research projects.</p> <p>We will develop policy based on knowledge about behaviour.</p>

The efforts will be aimed at getting citizens to make sustainable choices (both consciously and unconsciously) through behavioural incentives.

Look ahead

We want to make reuse, repair and refurbishment mainstream for citizens in the next couple of years. In this context, it will help to strengthen and better utilise circular craft centres. A circular craft centre is a location or network where parties work together on reducing waste flows and realising high-value reuse of products and materials. Generally, it is a collaboration between a municipal waste collection facility, a second-hand shop and a repair shop. A circular craft centre facilitates several types of circular behaviour.

Therefore, the information provision organisation Milieu Centraal will conduct an exploration, under responsibility of the Ministry of Infrastructure and Water Management and a number of municipal authorities, of the promotion of circular craft centres, so that citizens will be better able to find them and start using their services.

The government will use behavioural science in a more focused way. We will do this by looking at desired behaviour, obstacles and drivers for specific product groups, and using interventions accordingly. This will be most effective if we work together on it with the sector. For example, we are developing a behavioural approach for the product group of furniture. Which types of sustainable behaviour will consumers be willing to adopt? And what can retailers do to facilitate sustainable behaviour with regard to furniture? This research will provide input for policy regarding the sale, reuse, repair and discarding of furniture. We will set priorities based on research into how we can encourage citizens to reduce their use of raw materials as much as they can.

Part of the Behavioural Strategy for Citizens and the Circular Economy is to integrate and broaden sustainable behaviour. If we integrate this, we can ensure that people will exhibit the desired circular behaviour more often. Broadening can ensure that the desired behaviour leads to more circular conduct in multiple product categories. We can do this by internalising a sustainable identity. Internalisation can be realised by means of post-rationalisation: a reminder or a compliment after someone has shown sustainable behaviour. We want to apply this on a broader scale, but for this we need research into how we can adapt this method as effectively as possible to circular behaviour.

To scale up circular behaviour, one of the measures in the context of the contribution of the circular economy to the achievement of the ambitious climate goal is 'Circular action' focused on increasing awareness and action perspective. This measure is aimed at promoting circular knowledge, skills and behaviour that is suitable for a circular economy. The implementation of this measure will depend on decision-making in the context of the climate challenge in the spring of 2023. In this way the government will offer citizens an action perspective and organise the right preconditions for businesses to realise an inclusive transition.



Table 36: Measures relating to behaviour

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We will implement the Behavioural Strategy for Citizens and the Circular Economy which focuses on the scaling up of circular behaviour and the efforts made to achieve it. This will be done by promoting circular knowledge, skills and behaviour that is suitable for a circular economy ¹⁴⁴ .	■	■	■
We will inform citizens to offer them a better action perspective for circular behaviour, among other things by means of behavioural campaigns, including via Milieu Centraal.	■	■	■
We will create conditions that ensure that circular behaviour is easy, obvious and fair.	■	■	■
We will conduct more research per target group and product group into what the most promising desired behaviour is and what drivers and obstacles are relevant – starting with the product group of furniture.	■	■	■
New measures	Standard-setting	Pricing	Stimulus
We will facilitate the Sustainability Monitor for the Netherlands via Milieu Centraal and PBL, and will adapt the behavioural strategy based on the insights gained.	■	■	■
When devising policy, we will take knowledge on behaviour into consideration as standard.	■	■	■

¹⁴⁴ Also see Section 2.2.2, Measures that help achieve national climate goals.

New measures	Standard-setting	Pricing	Stimulus
We will strengthen the circular craft centres, so that citizens will be better able to find them and make more use of their services.	■	■	■
We will conduct an exploration of the possibilities to encourage citizens to consume less (following from the behavioural strategy).	■	■	■
We will conduct research into how we can maintain circular behaviour in the long term and can broaden it within and between product groups (following from the behavioural strategy).	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

4.7 Education

The transition to a circular economy is not only a technological change but also a social change, and it requires different behaviour, knowledge and skills from everyone. To accelerate this transition we urgently need a structural number of workers who possess the right circular capabilities. In addition, young people are calling for climate action via manifests and climate marches and are demanding more attention for sustainability in education.

Education plays an important role in strengthening and increasing the right values, attitudes, knowledge and skills which are needed for a circular economy, and in providing them to pupils, students and members of the working population. We already have plenty of good examples in the area of sustainability and circular economy in education. For example, in primary and secondary education attention is paid to sustainability as a global topic in various areas of learning, like people and nature, people and society, and citizenship; this topic is also addressed in a number of subjects, like geography and biology. In addition, the circular economy has been included as one of the fixed topics in the development and retention of qualifications in senior secondary vocational



education. In close consultation with schools, education councils and other parties promoting sustainability, the government will explore how the knowledge and skills for sustainability in a broad sense and for the circular economy in particular can be increased and can be integrated in education based on demand. From the world of education we are receiving clear signals that there is a need for facilitation and support in giving sustainability an appropriate place in education. The results of the [support base investigation for sustainable schools](#) conducted in primary, secondary and vocational education show that support is needed for schools to integrate the topic of sustainability. For example, there is a need for best practice sharing, for help in the integration of sustainability in school culture, for professional on-site support for schools, for an integral approach to the topic, for facilitation, and for an integrated information and advice/knowledge service facilitated by the government. This need was also addressed in the round table meeting with the sector councils and the inter-ministerial working party for Sustainable Schools 2021. The government wants to meet these needs, while taking account of the differences between the education sectors, by linking up with existing structures in education, and through alignment with the existing key targets and defined goals in foundational education and the qualification files for senior secondary vocational education.

Paying attention to sustainability in a broad sense and the circular economy in education will strengthen the position of students on the rapidly changing labour market and will prepare students for further education and the rapidly changing labour market. As a result they can also make a valuable contribution to the transition and they will be well equipped for the social challenges that lie ahead. The Ministry of Infrastructure and Water Management is supporting education activities that give substance to this. In 2021 an [exploration](#) was conducted in senior secondary vocational education and at universities to gain insight into the current educational programmes offered in the areas of sustainability, circularity and the energy transition in vocational and higher education. In general, the exploration shows a rise in these topics in education but also concludes that there is a need for flexible and interdisciplinary education. Over the coming years we will work on strengthening the collaboration and connection between education and the labour market, for instance by means of public-private collaboration, exchanges between professionals and lecturers/teachers, and graduation places and internships. This will be done inter-ministerially.

In 2021 the inter-ministerial working party for Sustainable Schools was set up; this was done in collaboration with the Ministry of Education, Culture and Science, the Ministry of Agriculture, Nature and Food Quality, the Ministry of the Interior and Kingdom Relations

and the Ministry of Economic Affairs and Climate, chaired by the Ministry of Infrastructure and Water Management, and supported by the Netherlands Enterprise Agency (RVO). This working party collaborates on the intersection between sustainability, young people and education. We recognise that an integral approach is needed to be able to really fulfil the potential of education for the transition to a circular economy. The Whole School Approach (WSA) is an instrument that can contribute to this. The WSA is an integral approach that supports schools in how to implement their sustainability goals in a broad sense. A connection is made between the educational vision, the manner of operation, the curriculum, competencies and the area surrounding the school. In addition, the WSA concerns sustainability education in a broad sense, from creating awareness and citizenship via knowledge and practical skills to scientific research and innovation.

As a follow-up to the collaboration, the Ministry of Infrastructure and Water Management, the Ministry of Agriculture, Nature and Food Quality and the Ministry of Education, Culture and Science jointly organised the international conference on the Whole School Approach and Education for Sustainable Development (ESD) in 2022. To prepare for this conference, research was conducted into the support base for sustainability in education and into administrative support at public authorities for a joint approach to sustainability in education. Research into best practices of Whole School Approaches around the world were presented as well. The building blocks from the studies are important for the inter-ministerial approach that is being continued in consultation with the sector councils and education professionals.

Look ahead

The sector councils of primary and secondary education and senior secondary vocational education have indicated that they need concrete and local support, knowledge sharing, inspiration, best practices and an overview of what is happening in the areas of sustainability and the circular economy in education. There is a need for an unambiguous, overarching strategy from the government and a tailor-made support structure (per education sector, per region). For this it will be essential to have an overarching approach between the government, local and regional authorities, sector councils and school network organisations, so that the statutory freedom of education can be taken into account properly. The inter-ministerial working party will set to work to develop a strategy for the period to 2030 inclusive that will be in line with the Sustainable Development Goals. Moreover, the working party will investigate, in consultation with education professionals, what support structure will be most appropriate and best in line with their needs. The needs of school boards will be identified by the working party in the



form of a pilot project, the results of which will be presented at the national conference in 2023, which is the successor of the international WSA conference. International policy strategies like the Framework for the Implementation of the United Nations of Economic Commission for Europe Strategy for Education for Sustainable Development from 2021 to 2030 also underline that the education system can only be transformed in a future-proof manner through collaboration. It provides important frameworks and guidelines for the implementation of learning for sustainable development in the Dutch context.

It is important to scale up the activities related to the circular economy in education, so that the circular economy will become 'the new normal' in education. The working party for Sustainable Schools is working towards the realisation of a so-called 'knowledge roundabout' for sustainable schools. This knowledge roundabout will offer schools custom support on request, by means of collaboration between all actors involved both within schools and beyond. The knowledge roundabout for sustainable schools can respond to the call from pupils, students and schools for more structural integration of sustainable development in education. To scale up the circular economy in education and to develop the knowledge roundabout, collaboration between ministries is vital and more resources will be needed as well. As a contribution from the circular economy to the achievement of the ambitious climate goal, the measure 'Promoting knowledge, skills and behaviour that is suitable for a circular economy' has been announced. The implementation of this measure will depend on decision-making in the context of the climate challenge in the spring of 2023. The knowledge roundabout may be facilitated on this basis.

Table 37: Measures relating to education

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We will continue the inter-ministerial working party for Sustainable Schools with the Ministry of Education, Culture and Science, the Ministry of Agriculture, Nature and Food Quality, the Ministry of Economic Affairs and Climate, the Ministry of the Interior and Kingdom Relations, and the Ministry of Infrastructure and Water Management	■	■	■

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We will organise a follow-up to the Whole School Approach Conference that took place in 2022 as an activity of the working party for Sustainable Schools.	■	■	■
New measures	Standard-setting	Pricing	Stimulus
By means of the circular skills programme, among other things, we will focus on further reinforcement of the collaboration and alignment between education and the labour market at regional level with regard to circularity.	■	■	■
We will actively monitor developments and international policy strategies regarding Education for Sustainable Development, and we will translate these for the Dutch context	■	■	■
Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
We will develop a strategy for sustainability and circularity in education for the period up to 2030.	■	■	■
We will conduct a pilot project to investigate the demand articulation for the circular economy in five education sectors to identify the support needed. These results are intended to ultimately lead to a tailor-made support structure.	■	■	■
We will explore, in collaboration with the working party for Sustainable Schools, whether we can develop the knowledge roundabout for sustainable schools.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.



4.8 Labour market

For many employees and sole traders, the transition to a circular economy will mainly manifest itself in a change to the content of their work, more than a fall or rise in employment.¹⁴⁵ Nevertheless, we need to pay attention to social plans for areas where jobs will disappear and where there may be a shortage of workers due to increased activity. We will invest in education for technical jobs – from the vocational to the scientific level. This is not only relevant for design and production, but also for other functions in the value chain, like procurement, logistics, financing, sales and aftersales.¹⁴⁶

Look ahead

In 2022, it was investigated to what extent sectors which are involved in the circular economy can meet the qualitative need themselves – for example via vocational education and further education or re-training of workers and people rejoining the labour market.¹⁴⁷

Based on this study, additional actions may be taken in the next couple of years. We will not only need investment in technical jobs, but rather in all sectors involved in the circular economy.¹⁴⁸

In the medium and the long term, labour-saving innovations in product design and digitisation and robotisation of renewal processes may offer solutions to problems related to shortage and hard physical labour, also in the context of the Action Plan for Green and Digital Jobs (in Dutch: *Actieplan Groene en Digitale Banen*).¹⁴⁹

Circular use of materials is often more labour-intensive and requires different competencies. The shortage in the labour market is a bottleneck for the transition. A shortage of manpower with the right knowledge and skills is one of the main threats to the intended acceleration of the sustainability efforts. This is a complex problem.

¹⁴⁵ Letter to Parliament on the circular economy and the labour factor, May 2021.

¹⁴⁶ Letter to Parliament on the circular economy and the labour factor, May 2021.

¹⁴⁷ KPMG report, *Aan de slag met de Circulaire Arbeidsmarkt* [Working on a circular labour market]. The final report will be published in early 2023.

¹⁴⁸ Letter to Parliament on policy tracks for life-long development, September 2022

¹⁴⁹ Letter to Parliament on the focus on labour market shortages for the climate transition and the digital transition, July 2022.

After all, the use of labour is offset by the preservation of material value. And where many buildings, consumer goods, etc., are currently not designed for reuse, this will increasingly be the case in a circular economy. Also, we want people who are distanced from the labour market to be more easily employable, and we want craftsmanship to be appreciated more. Finally, we want to make secondary products more attractive.

The transition to a circular economy in the Netherlands and surrounding countries will also bring about shifts in international employment ratios. Think of reduced import of primary raw materials and increased trade in secondary materials. We will also need to consult about skills and qualifications of entrepreneurs and professionals. How can we assure a fair transition in the areas of trade, environment and labour conditions in this context, too? This is receiving attention from the EU¹⁵⁰ (in the context of the Green Deal and the EESC), the OESO¹⁵¹ (Skills Outlook and Competence Toolbox) and the UN/UNEP¹⁵² (Global Strategy for Sustainable Consumption and Production).

Table 38: Measures relating to the labour market

Continuation and intensification of policy	Standard-setting	Pricing	Stimulus
Together with the relevant partners – like the National Growth Fund – we will invest in technical jobs, at all levels from vocational to scientific education.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
We will continue the circular skills programme at vocational education and university level (together with the Goldschmeding Foundation, the cooperative Learning for Tomorrow (in Dutch: <i>Leren voor Morgen</i>), and the platform Talent for Technology (in Dutch: <i>Talent voor Technologie</i>)).	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

¹⁵⁰ Cedefop: European skills index 2021, <https://www.cedefop.europa.eu/en/news/get-your-skills-together-europees-green-deal>; EESC: <https://www.eesc.europa.eu/nl/taxonomy/term/5618>.

¹⁵¹ OECD 2021 Skills Outlook – Learning for Life; 2022 – The environmental sustainability competence toolbox.

¹⁵² UNEP 2022-2023 Work programme and budget, WCEF.



New measures	Standard-setting	Pricing	Stimulus
Through the Action Plan for Green and Digital Jobs, we will focus on labour-saving innovations in product design, digitisation and robotisation as a solution to problems related to labour shortage and hard physical labour.	■	■	■
We will aim for the development by Statistics Netherlands of a skills overview for common job profiles by means of the programme entitled <i>Vaardig met vaardigheden</i> [Skilful with skills].	■	■	■
We will increase awareness among producers of the importance of circular knowledge, skills and behaviour that is suitable for a circular economy, for example by organising seminars and training courses.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.

4.9 Practical translation

The circular economy is something that affects us all. Businesses, citizens, local and regional authorities, all kinds of other organisations and the government. The government is obliged to point people in the right direction and create the necessary preconditions, but also to ensure that everyone understands that direction and those preconditions and can act accordingly. We will strengthen the implementation in a number of ways: we will create and amend frameworks for laws and regulations and explain them, we will help entrepreneurs who want to operate in a circular way by providing knowledge and expertise via the Circular Netherlands Accelerator!, we will organise circular economy networks in the regions, and we will promote Sustainable Public Procurement.

Changes to and clarification of frameworks

Updating of the Environmental Management Act (Wm) and the Circular Economy Act

The current Environmental Management Act contains the legal frameworks for our handling of waste and substances and our product policy, but does not sufficiently promote circularity. This legislation does not convey the necessary sense of urgency of the transition to a circular economy that is widespread in society. At the same time, the EU is adopting a lot of ambitious legislation in relation to the circular economy (for instance with regard to product policy and regulations). These regulations need to be integrated in our national legal system. That is why we are in the process of examining whether a Circular Economy Act can offer solutions in this regard. One of the relevant questions here is: how can the transition to a circular economy be better supported via legislation? We will investigate how the basic principles of a circular economy, like the principle of ‘the polluter pays’ and the maximum retention of materials, can be better regulated in the Act. We will also examine the role that businesses, citizens and public authorities should play in this transition and what foundations are required for the adoption of lower-level regulations. Ultimately, the new Act should make it easier to anticipate future developments and new legislation (including EU legislation).

Circular Materials Plan

The National Waste Management Plan (LAP) describes our waste management in the Netherlands, with the protection of people and the environment as the main priority. Businesses and competent authorities, like environmental agencies and municipalities, take account of the LAP in decisions and local regulations. However, the circular economy requires more than just good waste management. Therefore, the LAP will be replaced, probably as of 1 January 2025, with the Circular Materials Plan (CMP). In this plan the basis of the LAP will be extended to include the front of the value chain, with more attention being paid to the higher levels of the waste hierarchy. The CMP will also encourage businesses to process materials in a high-grade manner and in this way support innovation.

The CMP will become a uniform and binding framework for waste management. It will also be a source of knowledge and inspiration for how to handle materials in the transition to the circular economy. The CMP will translate policy regarding the use and processing of materials in all phases of the closed loop into practical measures for businesses and public authorities, specified according to material flow. All relevant information on a specific flow, from design to processing, will be included in a value chain plan.



Permit process for material processing

We want to remove obstacles in the transition to a circular economy. In practice, we have noticed that we often encounter obstacles in implementation rather than regulations. Therefore, we are working together with the Association of Provinces of the Netherlands, the Association of Netherlands Municipalities and the Association of Dutch Environmental Agencies on better implementation of waste management. An important aspect is improvement of the process to assess whether a material is waste or not. For example, we are currently working on the set-up of a body in which environmental agencies can consult with one another about this assessment in concrete cases. This body may lead to a quality improvement or more uniformity in the assessments, and may get different environmental agencies to adopt each other's assessments on a voluntary basis. This way, it will also promote knowledge development and dissemination at competent authorities and environmental agencies. At the same time, we are working on an extensive procedure description for the assessment of whether a material is or isn't waste. The current communication on the assessment is substantive in nature. Even though some environmental agencies can easily make an assessment themselves based on this information, this does not apply to all environment agencies. What's more, at some businesses there is confusion about the procedures to be used to arrive at an assessment. Finally, we will explore whether acceleration in the permit procedure will be possible after a successful experiment by a business that operates in a circular manner.

Information on SVHCs

Businesses and environmental agencies have indicated that it is difficult to determine which substances of very high concern (SVHCs) are contained in waste flows. And yet this is important for the protection of people and the environment during and after further processing of this waste. Therefore, we have investigated whether information provision on SVHCs can be made mandatory in the *Besluit melden bedrijfsafvalstoffen en gevaarlijke afvalstoffen* [Industrial and Hazardous Waste (Notification) Decree]. This change will probably enter into force on 1 July 2023. At the same time, we will continue our talks with the parties involved in order to better safeguard the information provision on SVHCs in waste flows.

Digitisation and the circular economy

The digital transition and the transition to a circular economy are closely linked. By making clever use of data and digital possibilities, we will create opportunities to accelerate circularity. This can be done, for example in the area of stock management (showing which raw materials are already present in the system) and in the area of materials and products which are on the move (tracking of raw materials in the system). New revenue models will also arise, with digitisation as the driving force behind them. For this we need uniform, exchangeable, accurate and traceable data.

In this NPCE, data and digitisation are relevant with regard to a number of topics and product groups, such as construction, manufacturing, consumer goods and monitoring. The Ministry of Infrastructure and Water Management realises connections and exchanges between the various parties working on digitisation, data and the circular economy, to allow them to join forces as much as possible.

Digitisation plays an important role at European level as well. In the EU, digitisation and the climate transition are referred to as the 'twin transitions'. In March 2022, in a revision of the European rules for sustainable products (Ecodesign), a digital product passport was announced. The digital product passport is an important instrument to digitally record and process information on a product and share it between businesses from the supply chain, authorities and consumers. Among other things, the product passport should help consumers make well-informed choices thanks to better access to product information that is relevant for them. It should also offer market participants and other actors in the value chain, like repairers or recycling centres, access to relevant information and allow competent national authorities to perform their tasks.

The Ministry of Infrastructure and Water Management is examining whether there is financial room for a cross-sector data and digitisation strategy, the development and introduction of product and/or material passports, a data sharing platform, and a research agenda for data & digitisation to fill the gaps in the available data and improve their quality. For the latter, we want to work together with different levels of administration. The Ministry of Infrastructure and Water Management can realise connections and exchanges between the various parties working on digitisation, data and the circular economy, to allow them to join forces as much as possible.



The government will lead by example

The Coalition Agreement of the Rutte IV government states that the government will seek to set a good example in the transition to a circular economy. This is because it can make a relevant contribution in this respect through its own actions. This NPCE gives substance to this exemplary role on the basis of a number of topics.

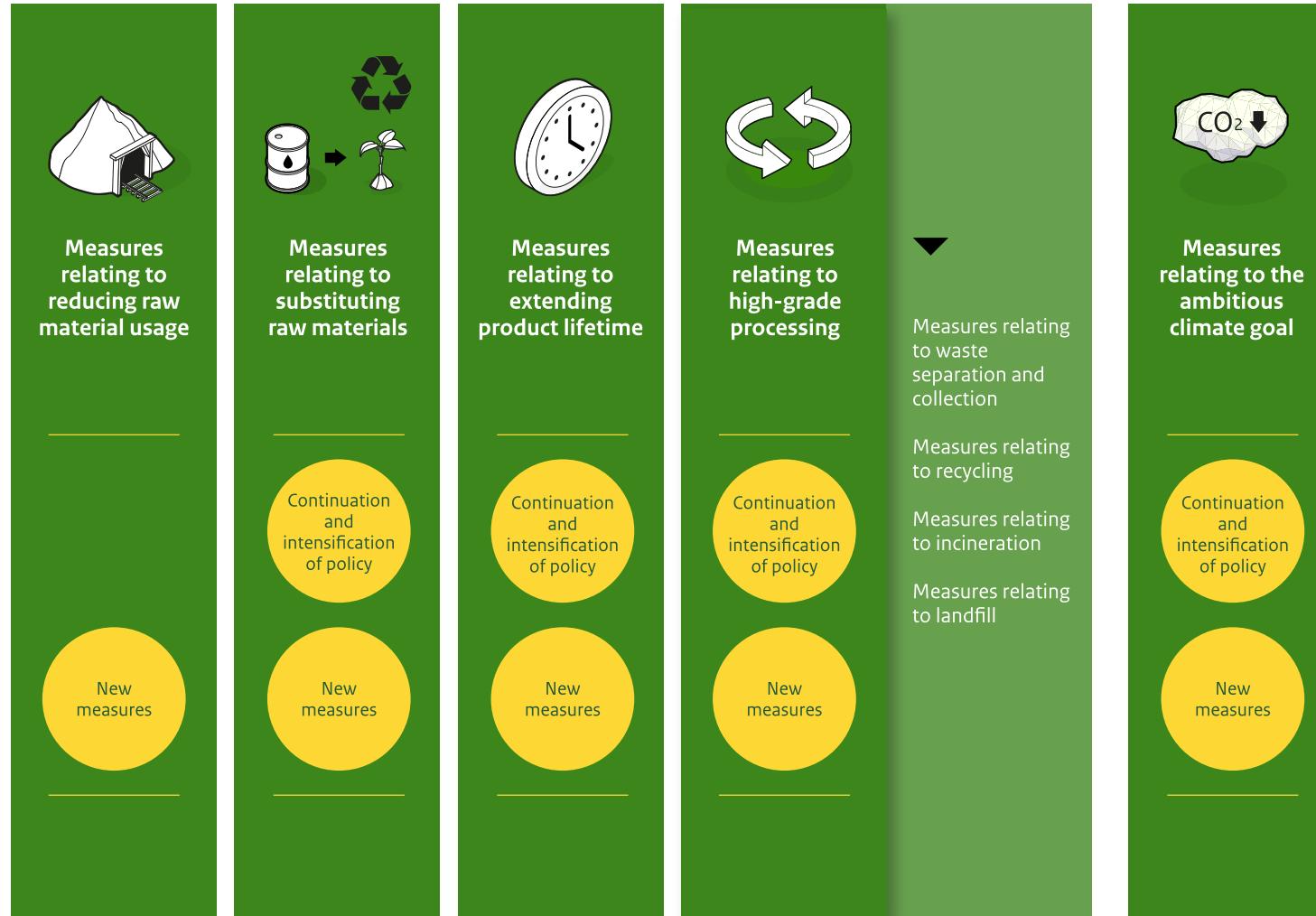
For example, the government can integrate circular solutions into its own procurement and operations, and support local and regional authorities, encouraging them to do the same. The scale of public procurement can provide a strong boost to the market via circular procurement, for instance when buying electrical and electronic equipment and sustainable solar panels. The promotion of reuse and recyclate in construction materials via the Central Government Procurement Service and the Central Government Real Estate Agency (RVB) can be an important driver as well. What's more, as a launching customer the government can play a decisive role in innovations in all product categories in which it buys goods, like textiles.

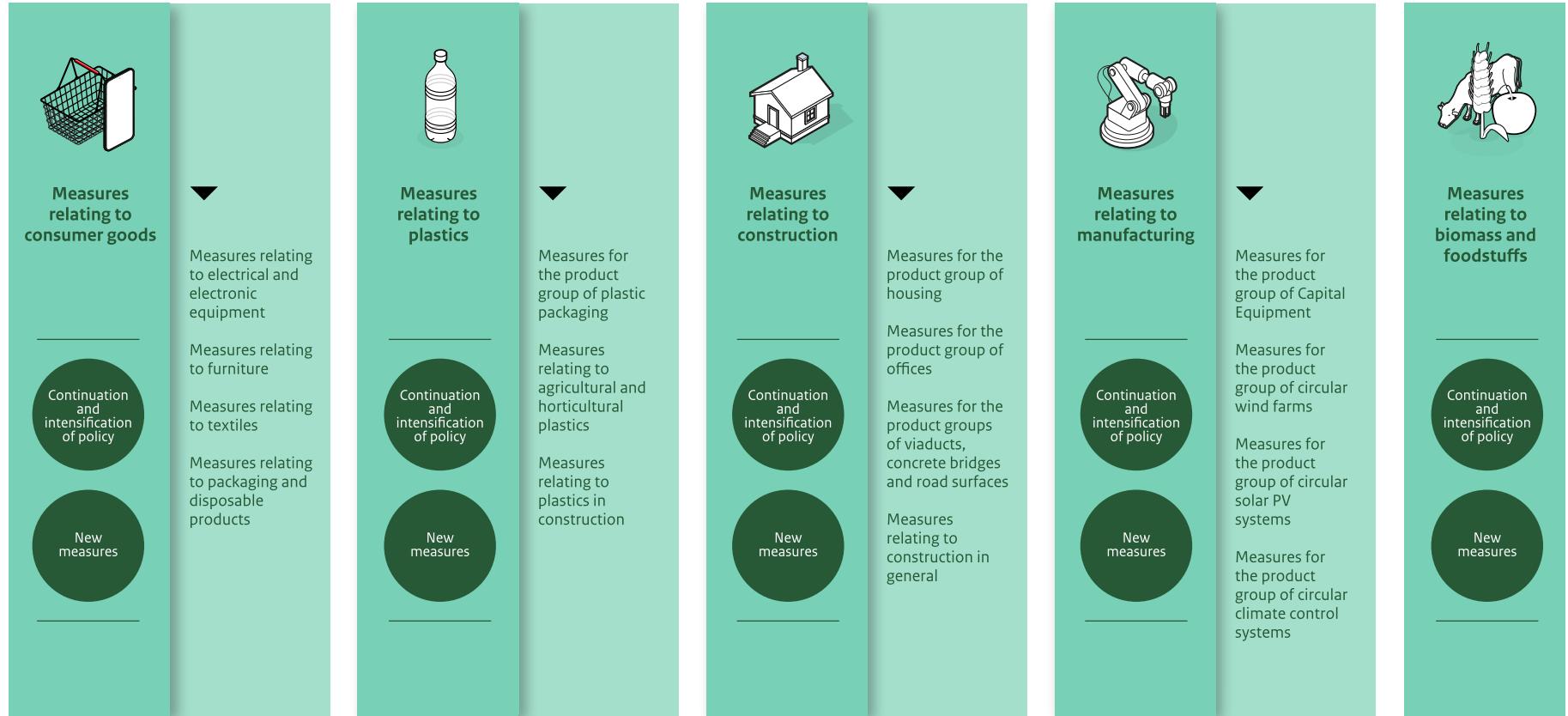
In addition, the government can play a major role in the realisation of climate-neutral and circular infrastructure, for public Civil Engineering contracts. As a client, the government can exert a significant influence on the market as well.

Finally, the government can lead by example with regard to the behavioural change that is needed to realise a circular economy. By promoting knowledge, skills and behaviour that is suitable for a circular economy, it can exhibit the desired conduct.



Overview of measures of the NPCE 2023-2030









Chapter 5

Governance and monitoring



5.1 Governance

Good governance for the transition to a circular economy will change along with the phases in the transition. In the early stages of a transition, other parties work on the challenges than later on in the transition, after all. At the start it is mainly the frontrunners that conduct experiments; later on, system changes need to be implemented, and the peloton and laggards must be motivated or forced to take the necessary steps. The current progress in the transition to a circular economy requires that we will also start focusing more on the peloton, in addition to actively working with frontrunners. This does not mean that the role of frontrunners will become less important. After all, they are leading the way in the transition and showing us what options there are. It is important to enable this peloton to link up with the movement started by the frontrunners, instead of slowing it down.

This will require a more gradual governance adjustment. From now on we will involve the peloton more, describe the collaboration (including with the regions) in more detail, and try to find a CE representative to strengthen the link with the private sector. A complicating factor in the development of governance is that not all value chains and product groups are in the same phase of the transition. This demands different approaches and room for flexibility. In the governance of this programme, we are taking account of these differences, by not imposing the same requirements on all elements. Nevertheless, it will be necessary to uniformly agree on the main points for a number of elements, and to explicitly describe who is responsible for what.

Responsibilities of the government

The government is responsible for policy on the transition to a circular economy and is accountable to the House of Representatives in this regard. To realise the transition, the government may lay down laws and regulations and provide subsidies for developments, among other things. Within the government the State Secretary for Infrastructure and Water Management is responsible for coordinating the transition. This means that the State Secretary takes initiatives to accelerate the transition in the whole of the Netherlands and in all sectors, working together with all policy partners in the area of the circular economy. The State Secretary also draws up this policy programme, sends it to Parliament and organises monitoring. The links with other environmental targets and challenges will form part of the National Environmental Policy Plan that will be published in the autumn of 2023. The members of the government at the line ministries most closely connected with this issue are each responsible for circularity within their

own remit. For the current product chains it concerns the Ministry of the Interior and Kingdom Relations (construction, plus coordinating ministry for spatial planning), the Ministry of Economic Affairs and Climate (industry, plus coordinating ministry for climate), the Ministry of Agriculture, Nature and Food Quality (agriculture), the Ministry of Infrastructure and Water Management itself, and the Department of Foreign Trade and Development Cooperation (in Dutch: *Buitenlandse Handel en Ontwikkelingssamenwerking* or BHOS). Once every two years, the State Secretary holds bilateral meetings with the ministers of these ministries on the progress made, to see whether any adjustments are needed.

Other ministries are involved in the transition to a circular economy as well. Among others, this concerns the Ministry of Health, Welfare and Sport (for sport and material use in healthcare), the Ministry of Defence (for textile procurement and buildings), the Ministry of Education, Culture and Science (for sustainability in education and in education buildings), and the Ministry of Social Affairs and Employment (for changes in the labour market due to the transition to a circular economy). There are other substantive issues which are managed by the ministries involved as well, like mobility and logistics.

Collaboration with businesses and social parties

Among other things, the government is responsible for policy, legislation and the implementation of many measures in this programme, but many parties are involved. After all, it is businesses and their employees who produce and sell products, and consumers who acquire them. Other actors, in turn, speak for nature and the environment, or for young people. Local and regional authorities also have a big role to play in steering developments at community level. Together, all parties get the transition going so that the circular economy can be realised.

In the context of the National Administrative Consultation Platform (in Dutch: *Bestuurlijk Overleg*), arrangements will be agreed on with all these parties on collaboration and contributions to the achievement of the targets. In this platform, chaired by the State Secretary for Infrastructure and Water Management, all parties involved are represented: the Association of Netherlands Municipalities, the Association of Provinces of the Netherlands, the Association of Water Authorities, VNO-NCW, MKB-Nederland, MVO Nederland, FNV, VCP, Natuur & Milieu and De Jonge Klimaatbeweging, as well as the ministries involved in implementation and the chairpersons of the transition teams. We are still investigating how knowledge institutes and financial institutions and consumer organisations can be part of the National Administrative Consultation Platform.



At the moment there are four transition teams: for construction, for consumer goods, for plastics and for manufacturing, each with their own independent chairperson. The Biomass & Food Transition Team was dissolved during the previous government's term of office. The Ministry of Agriculture, Nature and Food Quality has taken on the activities of this team in the context of the transition to circular agriculture¹⁵³. As a result, the aim for circularity in this area is now better aligned with our policy and the governance organised for it.

The transition teams are made up of people from the relevant value chains, who collaborate in a personal capacity and based on their expertise, on advisory roadmaps, icon projects and knowledge development. The government is involved in the transition teams as well. It inputs relevant developments (government policy, European developments, studies) but does not play a role in the provision of advice by the transition team. The chairperson supervises this role.

Transition teams offer advice to the State Secretary for Infrastructure and Water Management and the ministers responsible at other ministries. Their advice, which can be both solicited and unsolicited, concerns the extent to which the sector in question will be able to realise the circular transition, and how this can be accelerated. For this advice it is important that the right parties are involved. Sometimes research will be needed, or transition teams will be asked to set up pilot projects or other projects. Transition teams are well-equipped with a secretary and a paid part-time chairperson. Via Rijkswaterstaat (under responsibility of the Ministry of Infrastructure and Water Management) and the Netherlands Enterprise Agency (RVO), additional efforts can be organised. Assignments for this run via the line ministries which are responsible for the sectors concerned.

Partly based on the four advisory roadmaps from 2022¹⁵⁴, targets have been set for most product groups, with an operationalisation wherever possible. The product groups where this has been done are currently leading the way. In recent years, the role of the transition teams was to get frontrunners to participate, and this helped mobilise the relevant parties in the sectors.

¹⁵³ For a substantive explanation on these activities, see Section 3.5.

¹⁵⁴ <https://open.overheid.nl/repository/ronl-84d60fe722e2aa6f73b7aec3d3e9e36b7a48c73e1/pdf/stand-van-zaken-concretisering-doelen-voor-circulaire-economie.pdf>

In 2023 we will explore for which product groups we can take the step to get the 'peloton' involved, in addition to working with frontrunners. This can be done via direction groups, as has been shown for the climate transition. It is important in this regard that all parties participate in order to close the loop, so that agreement can be reached on actions to be taken by all relevant parties.

Over time, other value chains and product groups will need to be addressed as well. These will be initiated via new transition teams to be established, or they can be accommodated within existing transition teams or direction groups. The government will take the initiative for this and will start with value chains mentioned above, like healthcare and mobility.

Finally, we are still looking for a CE representative focusing on the business world, who can help bridge the gap between business and government even better, to accelerate the transition. A clear mandate and a clear assignment are important here; the experiences of the Delta Programme Commissioner and the chairperson of the National Climate Platform can help with this.

Implementation of this NPCE

In the realisation of the circular transition, various parties are needed. The government can use standard-setting, pricing and stimulus instruments, like the measures set out in this NPCE. The transition teams will play an advisory role. Businesses will innovate and invest money. Parties in the National Administrative Consultation Platform will promote the circular transition by informing citizens and businesses or bringing them together. All these activities require coordination and direction, and the activities of the government are both interconnected and closely related to activities outside of central government. The State Secretary for Infrastructure and Water Management coordinates the alignment between these activities and ensures that there is cohesion. This way, the instruments (such as subsidies) of other ministries can have a major impact if they are implemented in a circular manner, focus more on the front of the value chain, and/or aim for higher levels on the R-ladder. Inter-ministerial collaboration in the context of this NPCE is therefore very important.

Local and regional authorities play an important role in the transition as well, usually together with other regional stakeholders. They help guide the circular transition and have their own responsibility therein. The collaboration between the government and regional authorities has been described in Section 2.3, but cannot be seen separately from governance. After all, the activities in the regions are closely linked to the activities of the



government. To assure this cohesion, arrangements are being made with the regions via the National Administrative Consultation Platform for the Circular Economy. In addition, a consultation structure consisting of public authorities is being set up, in which the cohesion between the national and regional efforts, the local substantiation of national policy and the additions from the regions are coordinated. The aim is to have the parties involved, like the Circular Netherlands Accelerator!, CIRCONNECT and the regional CIRCO Hubs, the regional approach, the Knowledge and Innovation Agenda for the Circular Economy, the possible direction groups and international collaboration, combine their implementation capacity as much as possible in the context of this NPCE.

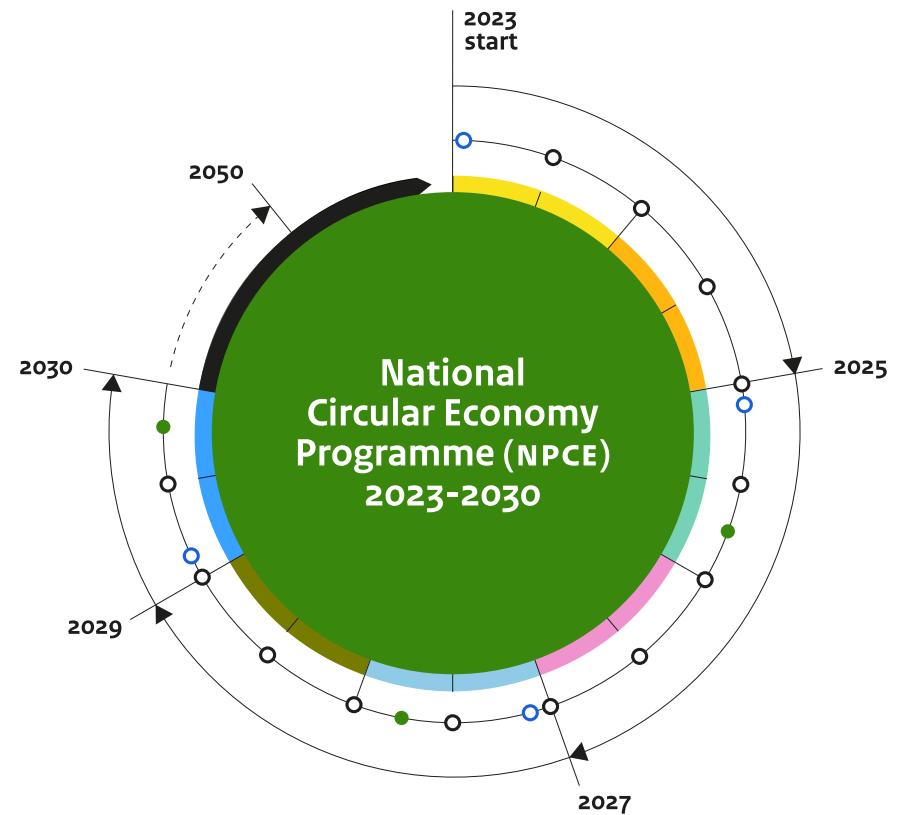
5.1.1 Learning cycle

Every two years, PBL draws up the Integral Circular Economy Report (ICER), on the basis of which we will update this policy programme (as well as on the basis of the 'Common Thread Note' of the Circular Netherlands Accelerator!). This biannual cycle assures the learning process and helps us fine-tune our policy. A generation assessment of this NPCE will be part of the policy cycle. We are still investigating how this can best be incorporated and (together with PBL) how the assessment can serve as input for the ICER from 2025. In 2023, the contents of the generation assessment will be further defined, in collaboration with the Ministry of the Interior and Kingdom Relations and the Ministry of Economic Affairs and Climate, PBL and representatives of De Jonge Klimaatbeweging and other youth organisations of the SER's Youth Platform.

In connection with the recent SER foresight study entitled [Evenwichtig sturen op de grondstoffentransitie en de energietransitie voor brede welvaart](#) [A balanced focus on the raw material transition and the energy transition for broad prosperity], the cycle of this NPCE will run in sync with the policy cycle of the Climate Act as of 2025. The report and the programme update will therefore be published at the same time as the draft climate memorandum, i.e. at the time of the State Opening of Parliament (in Dutch: Prinsjesdag).

The update of this NPCE will be realised via the National Administrative Consultation Platform for a Circular Economy, under the direction of the State Secretary for Infrastructure and Water Management. In the National Administrative Consultation Platform, the approach is agreed on and intermediate adjustments can be made. The National Administrative Consultation Platform meets twice a year and is chaired by the State Secretary for Infrastructure and Water Management. In addition, the Reflection Group, led by the SER President, is asked to reflect on the progress of the CE policy, particularly on both the ICER and an update of this NPCE.

Figure 10: The policy cycle



Legend:

- Meeting of National Administrative Consultation Platform every six months
- Integrated Circular Economy Report (ICER)
- Update of National Circular Economy Programme (NPCE)



The website www.nederlandcircularin2050.nl states which arrangements have been agreed on, which results have been achieved, and what the parties still need to do. Annually, the National Conference on the Circular Economy takes place for all those involved in the circular economy.

5.2 Monitoring

Monitoring is an important instrument to identify the progress made with regard to the targets as well as the contribution of the measures and resources used to this progress. As the circular economy is a relatively new policy area, the monitoring of the transition process also involves an important learning aspect. Based on new knowledge, we can make changes in the interim, for instance by including specific measures in reviews of this NPCE. It is important to reserve sufficient room for this in the policy programme.



In 2019, the Minister of Infrastructure and Water Management asked PBL to act as an auditor of the circular economy. In this role, PBL directs the implementation of the Work Programme on Circular Economy Monitoring and Guidance (in Dutch: *Werkprogramma Monitoring en Sturing Circulaire Economie* or WP M&S CE). The insights gained through this Work Programme will be included biannually in the ICER. The ICER describes the trends and scope, and makes recommendations for reinforcement of our policy efforts. In the report, connections are also made with other topics, like climate change, environmental pollution, biodiversity, land use and security of supply. The second ICER was published on 6 January 2023.

Such broad monitoring of the circular economy has not been undertaken before either in the Netherlands or elsewhere in Europe. The learning approach, with a central role for monitoring, is unique as well. Because of the phase that the transition is in, the knowledge on the circular economy is still fully in development. Together with

a consortium of knowledge institutes, PBL will elaborate a fully-fledged monitoring and guidance system over the next few years. The consortium consists of Statistics Netherlands (in Dutch: Centraal Bureau voor de Statistiek or CBS), the Institute of Environmental Sciences (in Dutch: Centrum voor Milieuwetenschappen Leiden or CML), the Netherlands Bureau for Economic Policy Analysis (in Dutch: Centraal Planbureau or CPB), the National Institute for Public Health and the Environment (RIVM), the Netherlands Enterprise Agency (RVO), Rijkswaterstaat (RWS) under responsibility of the Ministry of Infrastructure and Water Management, Utrecht University (UU), and the Netherlands Organisation for Applied Scientific Research (TNO). The Work Programme includes impact and raw material monitoring, the development of a Raw Materials Information System (RMIS), transition monitoring, scenarios and modelling for policy evaluation. In the Work Programme, the monitoring and guidance system will be further developed, including knowledge development on the effects of raw material usage. From 2023, half of the Work Programme will focus more on the product group level, to be able to provide more targeted guidance information for policy purposes.

In the development of the monitoring system it is important to link up with other monitors on different levels of government. At regional, international and domain level (e.g. for circular procurement, for behaviour by means of the Sustainability Monitor or the textile monitor), monitors will also be developed, or monitoring activities will be performed. Uniformity in monitoring of targets and activities will help accelerate the transition to a circular economy. That is why we need coordination between international, national and regional monitoring. What's more, any progress made can only be examined in an integral way if there are harmonised monitoring systems and data. This requires coordination of monitoring techniques, indicators and data between the various layers of government. In the EU, the Netherlands is actively contributing to the efforts made by the European Environment Agency and the European Commission to further develop the monitoring framework and the indicators for the circular economy.

At regional level, too, it is necessary to gain insight into the progress made in the efforts to achieve the transition to a circular economy. This will give us an idea of the regional diversity in acceleration opportunities for the transition. Provincial, municipal and water authorities handle monitoring in different ways. Together with a number of municipal authorities, the provincial authorities are working on more uniform monitoring of the circular economy. Monitoring has been designated as one of the main topics of the IPO 'Power Map'. In this area we are working together with Statistics Netherlands, Geofluxus, I&O Research and Royal HaskoningDHV (RHDHV). PBL, the provincial authorities and



the Ministry of Infrastructure and Water Management are examining which aspects of the ICER can be regionalised, and which regional insights offer guidance information at national level. This is being done in conjunction with the arrangements made with the regional public authorities.¹⁵⁵

As we stated earlier, coordination of monitoring techniques, indicators and data between the various layers of government is required. For this coordination and harmonisation, we need the Raw Material Information System (RMIS) which is currently being developed within the Work Programme on Circular Economy Monitoring and Guidance. In addition, the RMIS can provide basic data for quantification of the impact of policy, like generic and more detailed specific measures from this policy programme. Trends in relation to environmental impact and supply risks of various raw material and product chains are part of these basic data. The exact scope and substantiation of the RMIS are currently being explored and will largely depend on the available financial resources. Its development will take several years. There is already a broad demand for the harmonised and coordinated data which are expected to be included in the RMIS. For example, the parties involved encountered questions about the availability or unavailability and quality of data during the process to realise more concrete targets for the circular economy. Differences in data from different sources have also led to confusion. This means that it is a challenge to thoroughly understand studies and their reliability and usability. A number of parties in the PBL knowledge consortium have been asked to explore together with the Ministry of Infrastructure and Water Management whether the set-up of a ‘knowledge alliance’ may help answer these questions. In late 2022, they started exploring what this knowledge alliance may look like and how it relates to the RMIS from the Work Programme on Circular Economy Monitoring and Guidance. The actual establishment of a knowledge alliance from 2023 onwards will depend on the available financial resources.

The circular economy is a young policy area. Everyone agrees on the fact that we still need a great deal of knowledge and data development to be able to properly predict the impact of the measures, and to be able to monitor progress made towards a circular economy (in relation to the targets). Among other things, this includes calculation of the effects of policy on climate, environmental pollution, biodiversity and security of supply. Long-term reservation and supplementation of financial resources for the Work Programme on Circular Economy Monitoring and Guidance will determine the speed of

the knowledge and data development and the retention of the knowledge which has already been developed. In addition, the development of the RMIS and a knowledge alliance will be further elaborated, and this can really boost the circular economy policy.

Look ahead

This policy programme brings with it new targets and actions, the progress of which must be monitored as much as possible. It is important therefore that targets and actions have been formulated in a specific, measurable and time-bound way. In some cases, further operationalisation will be needed. We also need to agree properly on who will be responsible for which monitoring tasks and the performance of the underlying actions. Plus, we need to make clear what is needed in terms of knowledge development and data to be able to monitor the targets and actions. This can be included in a research agenda for data & digitisation (see box on *Digitisation and the circular economy*).

Part of the monitoring tasks will be performed by PBL and the knowledge consortium in the Work Programme on Circular Economy Monitoring and Guidance. However, monitoring is also a task of ministries, transition teams and local and regional authorities. In 2023, further arrangements will be agreed on with all parties involved for the monitoring of this policy programme. In addition, a monitoring framework needs to be developed to be able to track our progress in the implementation of measures from this policy programme. This will be done in 2023 as well.

Many of the required monitoring data are not being recorded yet. Developments in the EU regarding the product passport and the Corporate Sustainability Reporting Directive (CSRD) will help improve the availability of data on the sustainability of businesses and raw materials in products. The RMIS is expected to play a vital role in making various data sources uniformly accessible. During the development of the RMIS we will therefore take stock of which data are already being collected and which important data are still missing at the moment. Based on this exploration we will determine whether any additional reporting requirements need to be imposed, or whether Statistics Netherlands needs to expand its existing data collection, for example.

¹⁵⁵ See Section 2.3.



Table 39: Measures relating to monitoring

	Standard-setting	Pricing	Stimulus
General policy used			
We will ask PBL to act as an auditor for the circular economy. For this they will direct the Work Programme on Circular Economy Monitoring and Guidance and publish the Integrated Circular Economy Report (ICER) once every two years.	■	■	■
We will link up with, and align with, monitors at different levels of government (regional, international and domain level).	■	■	■
We will explore the scope and substantiation of the Raw Material Information System (RMIS) with the parties involved.	■	■	■
New measures			
We will establish a knowledge alliance to support policy development with expertise on data regarding raw materials and environmental impact.	■	■	■
We will review all actions and targets in this NPCE and elaborate these so that they will be specific, measurable and time-bound.	■	■	■
We will agree how the monitoring tasks and the performance of the underlying actions will be divided among the various parties.	■	■	■
We will get clarity as to what knowledge and data are needed for monitoring, and we will include this in the research agenda for data & digitisation.	■	■	■

The materials included are covered financially. In case of an exploration or investigation, the exploration or investigation itself will be covered, but the translation of the outcomes of the explorations and investigations into possible policy measures will not.





Chapter 6

Financial resources



The transition to a circular economy requires both public and private funding. To this end, the government has various financing options at its disposal.

The resources available in the budget of the Ministry of Infrastructure and Water Management are accounted for in the table below. It should be noted here that the budget structure from the table below is no longer properly aligned with the structure of this NPCE. During the coming year we will endeavour to make it fit, also to increase the transparency of the expenses. The aim is to realise this by the time of the publication of the Draft Budget (in Dutch: *Ontwerpbegroting*) for 2025, or sooner.

The resources are available for, for example, promotion of knowledge and innovation development, circular textiles and plastics, scaling up of market-ready and nearly market-ready techniques, and implementation costs of, among other things, the Circular Netherlands Accelerator!, monitoring and communication.

In the Coalition Agreement of the Rutte IV government, resources have been earmarked for:

- a stimulus programme for the development and scaling up of recycling and reuse;
- a mandatory percentage of recyclate in construction materials;
- circular value chain projects;
- an increase in the budget for the MIA/Vamil schemes.

In addition, resources are being used, in the context of the Climate Agreement, to promote the value chain approach, climate-neutral and circular procurement and tendering, recycling and reuse of plastics, bioplastics and textiles, in Civil Engineering. Schemes for circular craft centres, circular design and the subsidy scheme for value chain projects fall within the scope of the value chain approach.

In the spring of 2023 a decision will be made on additional measures for the realisation of the climate targets.¹⁵⁶ Attention will at least be paid here to the following measures with regard to the circular economy:

- Promotion of, and standard-setting for, circular and climate-neutral execution of public contracts in the sector of Civil Engineering;
- Creating a possible levy on plastics, including polymers, in combination with:
- Stimulus measure to realise a circular plastics and textiles hub;
- Promotion of the phasing-out of excess capacity for waste incineration at incineration plants;
- Facilitation of knowledge development and innovation;
- Promotion of circular knowledge, skills and behaviour which is suitable for a circular economy.

The climate resources will be used to achieve the Dutch targets relating to climate, and therefore primarily focus on scope-1 measures. This means that circular measures with a demonstrable and accountable carbon reduction effect will have the greatest chance of being funded via these resources.

The circular economy is also part of a number of other schemes aimed at sustainability or support for sustainable business operations, such as the MIA/Vamil schemes, the National Growth Fund and the Green Projects Scheme. For the MIA/Vamil schemes, extra resources have been made available in the budget for 2023. With these schemes, we are promoting investments that contribute to carbon reduction, the circular economy, sustainable mobility, climate adaptation and improved sustainability of construction and agriculture, among other things. Because these tax schemes are not exclusively focused on the circular economy, this series has not been included in the table below.

For Invest-NL, the circular economy is an important focus area as well. In addition, there are subsidy schemes like the TSE Industry scheme and the MOOI scheme, and generic instruments like the WBSO, the MIT scheme and the PPS benefit scheme.

Other ministries and local and regional authorities will also contribute financially to the transition to a circular economy. For this we refer to the budgets of the Ministry of the Interior and Kingdom Relations, the Ministry of Economic Affairs and Climate, and the Ministry of Agriculture, Nature and Food Quality. This also concerns tax schemes like the DEI and the MIA/Vamil schemes.

¹⁵⁶ House of Representatives, 32 813, no. 1091.



The proposed legislative measures, both at national and at European level, will have an impact on enforcement, implementation and supervision – also financially. The impact on implementation and enforcement will be further identified via a HUF assessment when specific legislative measures are further elaborated. This will offer insight into the implications for the competent authorities (including the ILT and environmental agencies), implementation organisations (including RWS and RVO) and in some cases local and regional authorities, and the budgetary consequences.

Without additional resources for acceleration of the transition to a circular economy, we will need to use different instruments to achieve the CE targets. It cannot be ruled out that the ambitions may need to be adjusted as a result.

Table 40: Budget consequences of policy under Article 21 (amounts x €1,000)

Circular economy budgets	2023	2024	2025	2026	2027	2028	2029	2030	Structural
4. Sustainability instruments	859	859	859	862	862	862	862	862	862
Assignments	859	859							
5. Sustainable production value chains									
Assignments	20,605	22,703	23,514	9,941	9,941				
Subsidies	22,162	17,961	18,072	14,776	14,753				
Fees for agencies	20,512	20,512	20,512	20,512	20,512				
Contributions to autonomous administrative authorities (ZBOs) and legal persons with a statutory task (RWTs)	457	457	457	458	458				
Total 5. Sustainable production value chains	63,736	61,633	62,555	45,687	45,664	42,663	42,663	42,663	29,156
	63,736	61,633	62,555	45,687	45,664	-	-	-	-
...of which via Coalition Agreement	7,100	10,300	12,300	13,300	12,200	12,200	12,200	12,200	10,000
Stimulus programme for recycling	6,800	8,000	9,000	9,200	9,200	9,200	9,200	9,200	7,000
MIA/VAMIL implementation costs	-	-	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Circular value chain projects	300	2,300	2,300	3,100	2,000	2,000	2,000	2,000	2,000
...of which via policy-based budget	11,500	5,500	4,500	1,500	3,000	-	-	-	-



Circular economy budgets	2023	2024	2025	2026	2027	2028	2029	2030	Structural
MIA/VAMIL implementation costs	1,000	1,000	-	-	-	-	-	-	-
Circular value chain projects	10,500	4,500	4,500	1,500	3,000	-	-	-	-
...of which via climate envelope	12,000	-							
Circular procurement	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	-
Value chain approach	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	-
Plastics and textile recycling	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	-
6. Natural capital	4,616	5,115	5,116	5,029	5,029	5,029	5,029	5,029	1,629
Assignments	4,616	5,115	5,116	5,029	5,029	5,029	5,029	5,029	
...of which via resources from Coalition Agreement	1,500	2,000	2,000	1,900	1,900	1,900	1,900	1,900	1,500
Mandatory percentage of recyclate in construction materials	1,500	2,000	2,000	1,900	1,900	1,900	1,900	1,900	1,500
...of which via climate envelope	3,000	-							
Civil Engineering	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	-
Budgets for the circular economy (version dated 23 Dec, cumulative)	69,211	67,607	68,530	51,578	51,555	48,554	48,554	48,554	31,647



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www.rijksoverheid.nl/onderwerpen/circulaire-economie
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