PBL Netherlands Environmental Assessment Agency

ADDRESSING INTERNATIONAL IMPACTS OF THE DUTCH CIRCULAR ECONOMY TRANSITION

CHALLENGES AND OPPORTUNITIES FOR LOW- AND MIDDLE-INCOME COUNTRIES

Paul Lucas, Hester Brink and Mark van Oorschot

Policy Brief

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Addressing international impacts of the Dutch circular economy transition. Challenges and opportunities for low- and middle-income countries

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Addressing international impacts of the Dutch circular economy transition

With its Government-wide programme for a circular economy, the Dutch Government aims to achieve a fully circular economy for the Netherlands by 2050. The circular economy is not an end in itself but a means to reduce environmental impact (e.g. combatting climate change and environmental pollution, and reducing biodiversity loss) and to improve the security of supply of material resources.

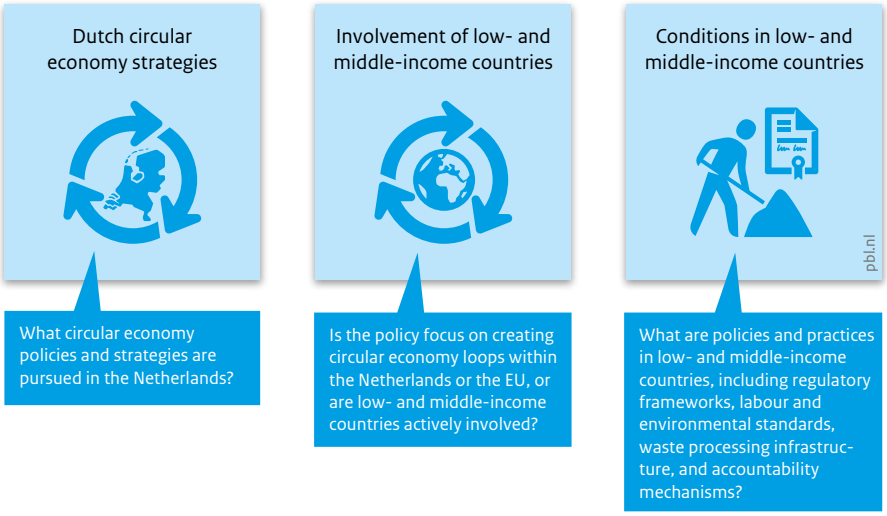
At the request of the Dutch Ministry of Foreign Affairs, this policy brief discusses risks and opportunities of the Dutch circular economy transition for low- and middle-income countries (LMICs) that are connected to the Dutch economy through international supply chains. Furthermore, it provides a policy perspective for strengthening the international dimension in Dutch circular economy policies. It puts the circular economy transition in the context of the United Nations Sustainable Development Goals (SDGs), thereby taking a broader perspective than the Government's focus on environmental impact and security of supply.

The Dutch economy is strongly interlinked with the global economy through trade in material resources, materials, components, new and discarded products, and waste

Both production and consumption in the Netherlands is highly dependent on resources imported from countries all over the world. In 2017, the Netherlands ranked 10th, globally, for imports of goods and 6th for exports. As a consequence, a relatively large part of the environmental impacts related to Dutch consumption and production lies abroad, with significant shares in LMICs. For example, in 2015, 40% of consumption-related greenhouse gas emissions and 90% of consumption-related land use took place outside the Netherlands, 40%–45% of which in LMICs. Furthermore, significant shares of waste and discarded products are exported, including plastics, minerals from the construction sector and waste from the food industry, as well as discarded textiles and electrical and electronic equipment for reuse or recycling.

Figure 1

Key determinants of the impact of a Dutch circular economy transition on low- and middle-income countries



Source: PBL

A circular economy transition in the Netherlands impacts countries that are connected to the Dutch economy through international value chains

A circular economy means a radically more efficient use of material resources. This includes using more sustainably produced materials and renewable resources, increasing the lifespan of products through design or by reusing or repairing them, and using recycled materials and components for making new products. A successful transition requires action throughout whole value chains, thereby also affecting businesses and citizens in countries that are connected to the Dutch economy through these international value chains. Potential negative impacts include increased pressure on food systems, biodiversity and ecosystem services resulting from increased demand for renewable resources, employment losses in current mining and the manufacturing industries, and an expansion of decent work deficits for informal workers, women, and migrant workers due to growing demand for remanufacturing, waste collection, sorting and recycling.

Impact determinants include Dutch circular economy policies and strategies, the roles played by low- and middle-income countries in this circular economy, and their current policies and practices

The impacts of the transition towards a circular economy in the Netherlands on LMICs takes place within the context of changing trade flows (Figure 1). Trade flows are influenced by the types of circular economy policies and strategies in the Netherlands, as they affect the demand for primary and secondary materials, certain goods and services, and used goods,

and have an impact on total waste generated. Trade flows are also influenced by the extent to, and the way in which LMICs become part of the Dutch circular economy loops. Is the focus on closing loops with the Netherlands or the European Union, or are LMICs actively involved, for example by promoting circular manufacturing or recovering materials and components for reuse in these countries. Subsequently, impacts in LMICs that are confronted with changing trade flows are influenced by the policies and practices in these countries, including regulatory frameworks and standards and appropriate waste infrastructure and capacity, as well as accountability mechanisms.

International impacts are not yet an integral part of current circular economy policies in the Netherlands

Currently, international efforts are aimed at strengthening international political support for the circular economy and deploying Dutch knowledge and expertise, internationally. With respect to LMICs, the latest implementation programme focuses on dialogue with regional organisations, increasing support and knowledge about the circular economy, and integrating circular economy principles into existing development programmes. While one of the objectives of the Government-wide programme for a circular economy is to contribute to 'an international circular economy without negative impact', international impacts of the Dutch circular economy transition are not actively taken into account in policies and activities in the circular economy implementation programme. To meet the government's ambition to switch to a fully circular economy by 2050, more comprehensive and specific targets and policies are needed. A joint process has been started to concretise targets per product group and to develop related implementation programmes. Contributing to an international circular economy without negative impact requires taking international impacts into account when developing these implementation programmes.

There is a risk that current environmental and socio-economic impacts in the linear economy are repeated in the circular economy

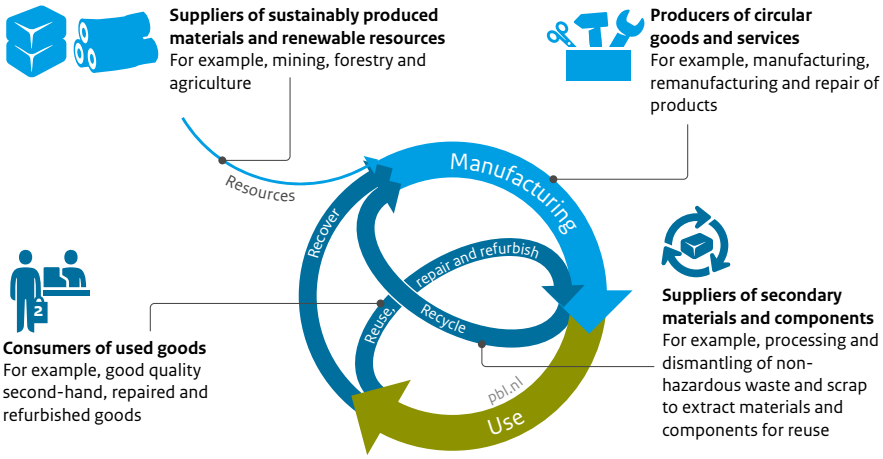
In countries that lack proper waste-processing infrastructure or have weak labour rights protection and poorly implemented environmental protection measures, socio-economic and environmental costs can easily be externalised to vulnerable and marginalised groups such as informal workers, women, and migrant workers. These groups are currently overrepresented in those parts of the more linear value chains that are likely to expand in a more circular system (e.g. remanufacturing, waste collection and sorting, and recycling). As many of these value chains are already subject to environmental and socio-economic impacts, including environmental pollution and decent work deficits, there is a risk that these negative impacts are repeated in the circular economy. Therefore, without specific attention for the local policy and practices, the transition to circular economy in the Netherlands can create trade-offs with achieving the SDGs in LMICs.

Significant changes in consumption and production patterns require attention for economic diversification and training in low- and middle-income countries

While it is likely that, in a circular economy, consumption patterns will change and demand will shift, new types of manufacturing services may also become sought after, for example

Figure 2

Roles for low- and middle-income countries in a circular economy of the Netherlands



Source: PBL

in repair, remanufacturing and recycling. This requires existing industries in LMICs to transform or adapt, for example in the garment manufacturing industry, to incorporate repair, refurbishment, recycling and the use of recycled materials. As a result, LMICs could see an increase in employment opportunities in certain industries. At the same time, these new jobs will require soft skills and technical competencies that many workers in LMICs are currently lacking, especially those working in the informal economy. Furthermore, these employment gains may be negated by employment losses in, for example, primary resource production and processing and the manufacturing industry, resulting from reduced demand for goods. Therefore, without action to promote training and economic diversification, many LMICs could miss the boat, with net employment losses as a result.

A focus on environmental impacts and security of supply can overlook the relevant roles that can be played by low- and middle-income countries in the Dutch circular economy transition and related benefits

LMICs can play important roles in the circular economy transition of the Netherlands, for example, in remanufacturing, value retention, resource recovery and recycling (Figure 2). In fact, in the current linear economy, many LMICs already play these roles, to a certain degree, but not yet in an equitable and sustainable way. This includes major mining operations across Africa, large manufacturing hubs in Asia, and reuse and recycling hubs for electronics and textiles in Africa and South Asia. Awareness of the challenges and opportunities of these roles in the Dutch circular economy is important when designing new policies. For example, strict product design standards can form non-tariff barriers to trade for LMICs and impede their opportunity to develop more circular manufacturing

processes. Furthermore, restricting the export of non-hazardous reusable, repairable or recyclable goods constitutes a lost opportunity for reuse and refurbishment on a large scale, as well as for transforming existing waste management systems in LMICs into more safe and environmentally sound processes, with secondary material recovery operations at scale.

With the right safeguards, active involvement of low- and middle-income countries can not only strengthen the Dutch circular economy transition, but also contribute to SDG achievement abroad

As the circular economy constitutes a radical change in consumption and production, it also provides an opportunity to make progress beyond environmental impacts and security of supply. This requires active involvement of LMICs that are active in Dutch value chains, as well as safeguards to ensure positive impact in these countries. Safeguards include standards and policies to ensure decent wages and responsible working conditions, sustainable production processes and safe and environmentally sound waste management. By providing these safeguards, the circular economy transition can also contribute to SDG achievement in LMICs.

Mitigating risks and capitalising on the opportunities requires enhanced coherence between national circular economy policies and foreign policies on international trade and development cooperation

Addressing the challenges and opportunities for low- and middle-income countries in the Dutch circular economy transition includes taking a global perspective, a focus beyond environmental impact and security of supply, adding safeguards for LMICs in circular economy and trade policies and practices, and promoting an enabling environment in LMICs through development cooperation. Specific policy actions include:

- **Investing in knowledge and data on trade and impacts**: Knowledge needs include impact research to understand drivers, challenges and opportunities for LMICs in different value chains, trade flow modelling to map the impacts of Dutch circular economy policies on LMICs, and analysis of labour impacts and decent work opportunities in LMICs. A knowledge and information exchange platform can help to keep track and share such knowledge developments, as well as steer knowledge development that is fed by policy agendas. Furthermore, increased transparency and traceability in global value chains includes monitoring and reporting beyond environmental indicators, a revision of the World Customs Organization's Harmonized System (WCO HS) codes to better distinguish between various types of materials and products traded, and better labelling and product passports.
- **Integrate the circular economy in existing policies and programmes**: There are already many policies and programmes, both in the Netherlands, at EU level and internationally, that can also be used to address international impacts of the circular economy transition. At the international level, this includes setting internationally recognised standards for the circular economy. At the EU level, this includes expanding the scope of Extended Producer Responsibility (EPR) to second-hand products exported to LMICs, including circular economy provisions in new EU free trade agreements (FTAs), and integrating circular

aspects and objectives into the enhanced implementation, monitoring and enforcement of existing FTAs. Nationally, this includes more attention for the international aspects of the circular economy in International Responsible Business Conduct agreements, including the circular economy in the revision of the action plan Policy Coherence for Development (PCD), and including international impacts in new circular economy targets.

- **Involve low- and middle-income countries in designing and implementing circular economy policies**: Engaging dialogue with relevant stakeholders in LMICs (e.g. policymakers, businesses, NGOs, representatives of the informal sector) can help include their circular economy-related challenges and opportunities in circular economy policies and strategies of the Netherlands and LMICs. The announced dialogue with regional organisations in the Circular economy implementation programme 2021–2023 may contribute to this. Through development cooperation and trade and investment promotion, LMICs can be supported in developing and implementing their own national circular economy strategies or roadmaps and adapt to changing trade flows and product requirements.

FULL RESULTS

1 Introduction

With its government-wide programme for a circular economy, the Dutch Government aims to achieve a fully circular economy for the Netherlands by 2050 (Ministry of Infrastructure and the Environment and Ministry of Economic Affairs, 2016). The circular economy is not an end in itself but a means to reduce environmental impact (e.g. combatting climate change and environmental pollution, and reducing biodiversity loss) and to improve the security of supply of material resources. Compared to the current practice of incremental efficiency improvements in the use of material resources, a circular economy means a radically more efficient use of those resources. This includes using more sustainably sourced materials, increasing the lifespan of products through design or by reusing or repairing them, and using recycled materials for the making of new products.

Achieving a circular economy, therefore, requires action throughout the whole value chain, from resource extraction and processing to product design, manufacturing and use of products, and finally collection and waste management. As most value chains are largely international, spanning many countries, significant changes in trade flows could be expected, such as in primary raw materials, secondary materials, second-hand, repaired or refurbished products, and recyclable waste (Yamaguchi, 2018; Van der Ven, 2020; Yamaguchi, 2021). Therefore, a circular economy transition not only affects businesses and citizens in the Netherlands, but also businesses and citizens in countries that are connected to the Dutch economy through international value chains.

The Dutch Ministry of Foreign Affairs has requested PBL Netherlands Environmental Assessment Agency to analyse the risks and opportunities of the Dutch circular economy transition for low- and middle-income countries (LMICs). Earlier analysis already concluded that the impact of a Dutch circular economy transition on LMICs is highly context-specific. Impacts can be both positive and negative and differ per product group and circular economy policies and strategies (Lucas et al., 2016; Circle Economy, 2020). Therefore, two case studies were conducted, with one focusing on end-of-life electrical and electronic products (Brink et al., 2021a) and the other on cotton production and processing of post-consumer textiles (Brink et al., 2021b). These two studies looked at the potential impacts of circular economy policies and strategies for these products groups on LMICs, the main challenges and opportunities they present, as well as pre-conditions to create positive outcomes.

This policy brief discusses the risks and opportunities of the Dutch circular economy transition for LMICs, and provides a policy perspective to strengthen the international dimension in Dutch circular economy policies, with specific attention for the role of the Ministry of Foreign Affairs. To do so, it takes a broader perspective than the government's

focus on environmental impact and security of supply, putting the circular economy transition in the context of the United Nations Sustainable Development Goals (SDGs).

The analysis builds on the main insights from the two case studies (electronics and textiles), trade data and environmental footprint analyses from the Netherlands integral circular economy report (Hanemaaijer et al., 2021a), an assessment of various stakeholder perspectives on the role of LMICs in the circular economy of the Netherlands and European Union (Ashraf and van Seters, 2021) and insights from the broader literature. In the case studies, literature review and expert consultation were used to qualitatively assess socio-economic and environmental impacts in LMICs, both under current trade flows and those that would result from various circular economy strategies. The expert consultation process was conducted through semi-structured interviews with scientists, policymakers, and representatives of NGOs, advocacy groups and the private sector. For the textile case study, an expert workshop was also held. For the assessment of various stakeholder perspectives, data have been collected through desk research, and online interviews with various public, private and civil society actors.

The policy brief is structured as follows:

- Chapter 2 discusses global resource challenges, the role of the Netherlands in global resource use, and how international impacts of the circular economy are addressed in the Circular economy implementation programme of the Netherlands.
- Chapter 3 stresses the relevance of explicit attention for international impacts in circular economy policies and strategies. It addresses key determinants of impacts, various roles, and related impacts that LMICs can play in the circular economy transition of the Netherlands, and challenges and opportunities linked to these roles and impacts.
- Finally, Chapter 4 discusses strategies and actions to mitigate potential risks and seize opportunities to strengthen the circular economy transition in the Netherlands and contribute to the achievement of the SDGs in LMICs, with specific attention for the role of the Ministry of Foreign Affairs.

2 International relevance of the Dutch circular economy transition

The circular economy is a response to escalating growth in global resource use and related environmental and socio-economic impacts. This chapter outlines the global trends and challenges related to resource use, the role of the Netherlands in global resource use and trade, and to what extent current Dutch circular economy policies take account of its impact abroad.

2.1 Global resource use challenges

Resource use is an important driver of climate change, biodiversity loss and pollution

The global use of material resources (e.g. minerals, metals, fossil fuels and biomass) has been growing steadily since 1970 and is expected to double by 2060, compared to the 2017 level (IRP, 2019).[1] The main drivers behind this future growth are a marked increase in population and production in low- and middle-income countries (LMICs) and rising standards of living of the middle classes in those countries.

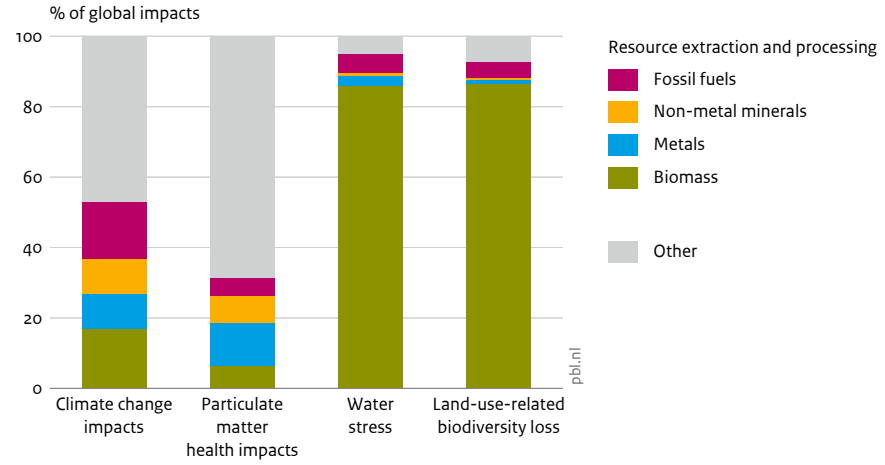
Growth in the use of material resources puts increasing pressure on the global environment. The extraction and processing of material resources contributes significantly to climate change, loss of biodiversity and well-functioning ecosystems, and pollution of air, water and soils. Another concern is rising prices and increasing supply risks for resources that are of great importance for the economy. For example, critical metals, such as cobalt, indium and rare earth elements, are crucial for modern electronics and sustainable energy technologies, such as wind turbines and solar panels.

In 2011, the extraction of resources and the processing into materials and products accounted for about half of total global greenhouse gas emissions (not including emissions related to land use), around 30% of fine particulate matter emissions, and more than 90% of land-use-related

[1] Material resources include biomass (e.g. crops, crop residues, grazed biomass, timber, wild fish catch), fossil fuels (e.g. coal, petroleum, natural gas, oil shale, tar sands), metal ores (e.g. iron, aluminium, copper) and non-metallic materials (e.g. sand, gravel and clay) (IRP, 2019).

Figure 2.1

Contribution of resource extraction and processing to global environmental impacts, 2011



Source: IRP Global Resources Outlook 2019

biodiversity loss (global species loss) and water stress (IRP, 2019; Figure 2.1).[2] Biomass production (including agriculture and forestry) was the main driver of terrestrial biodiversity loss and water stress, while all types of resource extraction and processing accounted for a significant share of climate change due to associated greenhouse gas emissions, and to health impacts due to particulate matter emissions.

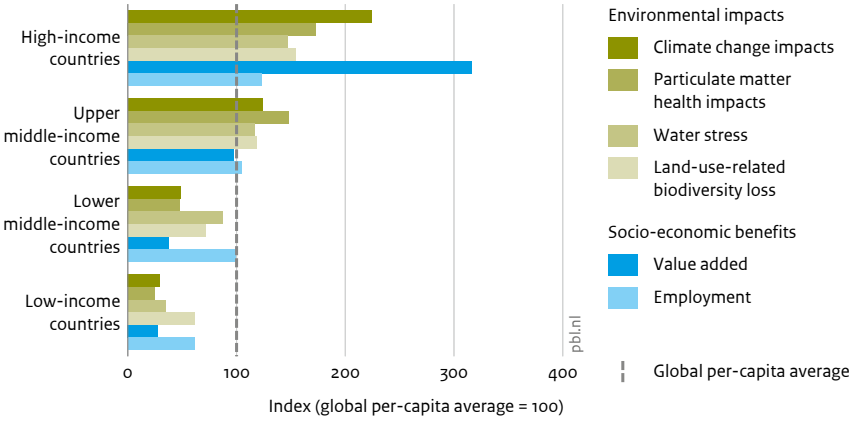
A significant share of environmental and social impacts linked to resource use in high-income countries takes place in low- and middle-income countries

LMICs play an important role in global value chains with respect to resource use, including raw material production (e.g. agriculture, forestry and mining), manufacturing (e.g. textiles and consumer goods) and waste management (e.g. plastics, e-waste and post-consumer textiles). Global trade in material resources (excluding waste) has grown four-fold since 1970 (UNEP and IRP, 2020). While production in high-income countries has become more efficient in terms of resource use, they have also reduced domestic environmental impacts by outsourcing more materials and energy-intensive stages of production chains and related environmental impacts, to low- and medium-income countries. Differences in labour costs, free trade and less strict and low enforcement of environmental regulation abroad amplified this trend.

[2] These include environmental impacts of a product only covering the first stages of the life cycle, that is from resource extraction to the moment it enters the store, including the full supply chain of all inputs and the disposal phase of all outputs arising in these phases.

Figure 2.2

Per-capita impacts and benefits of consumption-related resource use, 2011



Source: IRP Global Resources Outlook 2019

The share of environmental impacts of economies abroad can be analysed by using footprint indicators (see Box 2.2). Footprint indicators measure the impacts of production or consumption, taking all environmental pressures along the whole supply chain into account. Footprint data for 2011 show that the per-capita consumption-related environmental impacts of high-income countries are three to six times greater than those of low-income countries (IRP, 2019; Figure 2.2). Consumption and production in high-income countries rely heavily on material extraction, processing and product manufacturing in low- and middle-income countries, thereby outsourcing environmental impacts. At the same time, the value added in these countries of origin is relatively low (IRP, 2019). Typical negative impacts include severe local pollution from mining, deforestation for agriculture, poor labour conditions and public health risks associated with resource extraction and manufacturing.

In the Circular Economy Action Plan (CEAP) (EC, 2020), the European Union committed to explore the feasibility of defining a 'Safe Operating Space' whereby the use of natural resources does not exceed certain local, regional or global thresholds, and environmental impacts remain within planetary boundaries (see Box 2.1). Defining a safe operating space can help management of natural resources globally and guide national and regional discussions on *safe and just* levels of resource use (Lucas and Wilting, 2018).

Box 2.1: A safe and just operating space

Resource use is an important cause of environmental impact, such as climate change, loss of biodiversity and pollution. The core of environmental challenges at the global level is that there are limits to the availability of natural resources (e.g. water, soil, land, minerals, metals, biomass) and the Earth's capacity to absorb increased emissions and pollution related to resource use (e.g. CO_2 emissions, nitrogen and air pollutants), while people are dependent on the goods and services that the Earth's system provides (e.g. food, clean water and energy security).

The planetary boundaries framework proposes maximum levels of global environmental change for nine critical Earth-system processes, including climate change, biodiversity loss and water scarcity (Rockström et al., 2009; Steffen et al., 2015). Crossing any of the boundaries on a global scale would increase the risk of large-scale, possibly abrupt or irreversible environmental change, undermining the resilience of the Earth's system as a whole and impacting human well-being. Together, the planetary boundaries define levels of global environmental change in which the risks to humans are considered manageable, also referred to as a *safe operating space*.

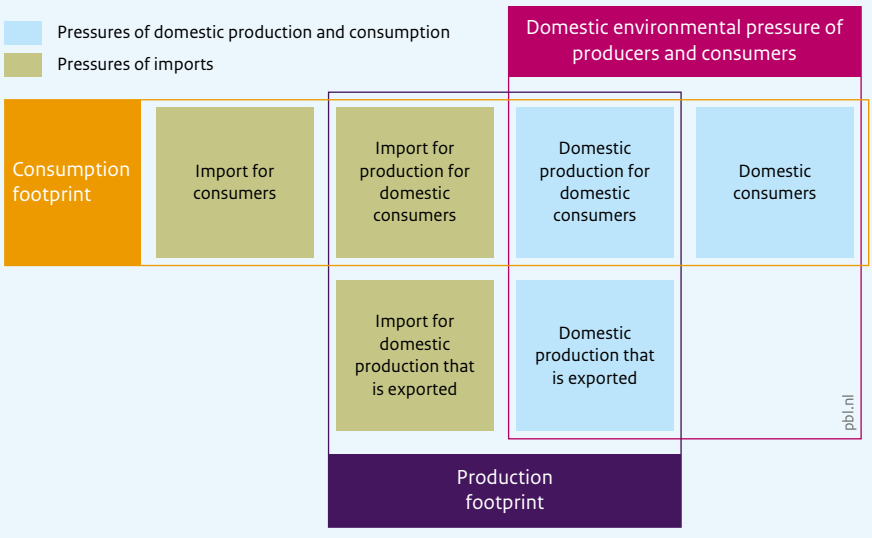
Combining the planetary boundaries with critical human needs ('social foundation') defines an environmentally safe and socially just space for humanity to thrive in (Raworth, 2012, 2017). Moving into this *safe and just operating space* means eradicating poverty to bring everyone above the social foundation, and reducing global resource use and pollution, to bring it back within planetary boundaries. Currently, no country lives within this safe and just space (Circle Economy, 2022). Countries with high levels of human development generally also have a high environmental impact, while countries with a low environmental impact generally also have low levels of human development. Moving into the safe and just space, thus, requires far greater efficiency in transforming resources to meet human needs, as well as far greater equity — within and between countries — in the use of natural resources (Raworth, 2012).

Box 2.2: Footprint indicators

Footprint indicators can be used to track integral environmental impacts of resource use. A purely territorial perspective on environmental impacts (red box in Figure 2.3) ignores the impacts related to resources imported from abroad. Footprint indicators include pressures from resource extraction, processing, manufacturing, transport and retail, and finally consumptive use. They show the total impact of national production or consumption, by taking into account environmental pressures along the whole supply chain, including those beyond national borders. Footprint indicators, thereby, expand the awareness about environmental impacts from a national to global level, and open up debate on international responsibilities for global environmental impacts. This makes them especially useful to analyse impacts of the Dutch economy abroad.

For footprint indicators, two supply-chain perspectives can be distinguished.
A consumption perspective includes all pressures or impacts associated with the different steps of making products destined for final consumption by citizens and the government of a country (yellow box in Figure 2.3). A production perspective accounts for all supply-chain impacts related to the resource use for production processes of all economic sectors within a country (purple box in Figure 2.3). The two perspectives partly overlap, so quantitative results of both perspectives should not be added.

Figure 2.3
Perspectives on resource-use related environmental pressures in supply-chains



Source: PBL

Box 2.2 Continued

The footprint concept has been applied for several environmental pressures, for which individual footprint indicators have been developed. These are now available for greenhouse gas emissions, land use, water use, material use, nutrient emissions, impacts on biodiversity and others (Vanham et al., 2019). These footprint indicators can be linked to the sustainable development goals, both in terms of causes (to meet human needs) and environmental impact (Van Oorschot et al., 2021).

2.2 Dutch trade in material resources and waste and related impacts

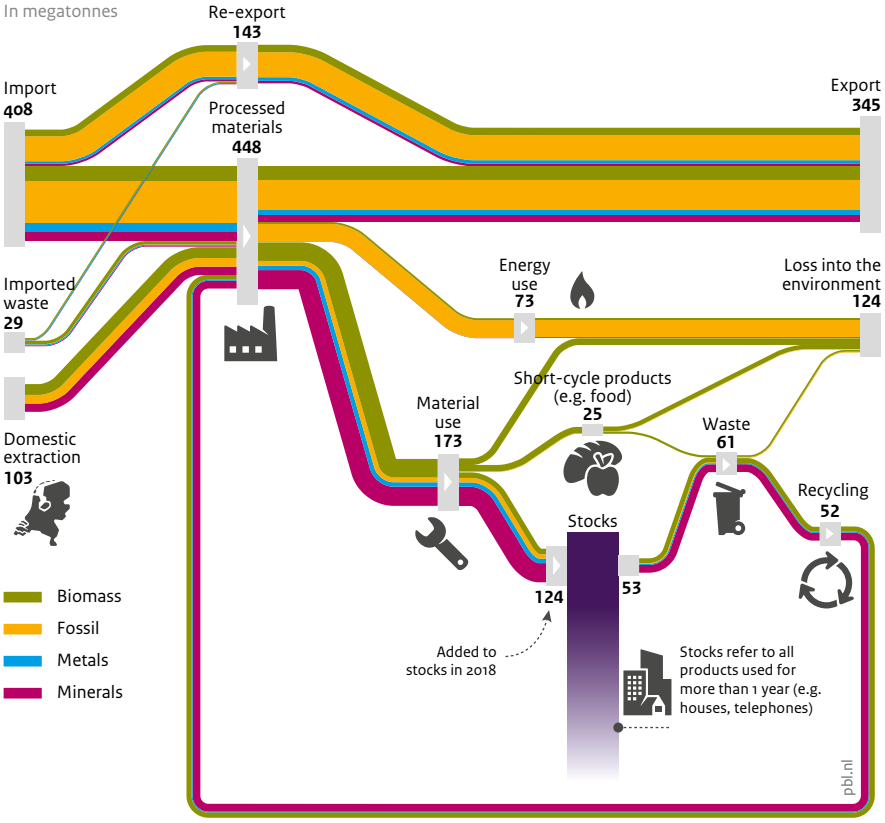
The Dutch economy is strongly interlinked with the global economy through trade in material resources, materials, components and products

International trade is an important source of income for the Netherlands. Due to its strategic geographical position and the presence of major harbours, the Netherlands imports and exports/re-exports large amounts of materials and products. In 2017, in terms of value, the Netherlands ranked 10th, globally, in total imports of goods and 6th in total exports (CBS, 2019a).

In 2018, the Dutch economy used almost 450 Mt of material resources, including primary resources, recycled materials and resources included in materials, components and products (CBS, 2021; Figure 2.4). A quarter came from domestic extraction (e.g. natural gas, gravel and agricultural products), while three quarters came from abroad (e.g. fossil fuels, metals and materials, components and products). About half of the material resources processed in the Netherlands are exported in the form of finished and semi-finished products (e.g. fodder that is transformed into meat, or metals that are processed into machine parts). Furthermore, the Netherlands imported a significant amount of material resources that are forwarded to other countries almost without any processing (known as re-export).

Figure 2.4

Material resource flows through the Dutch economy, 2018



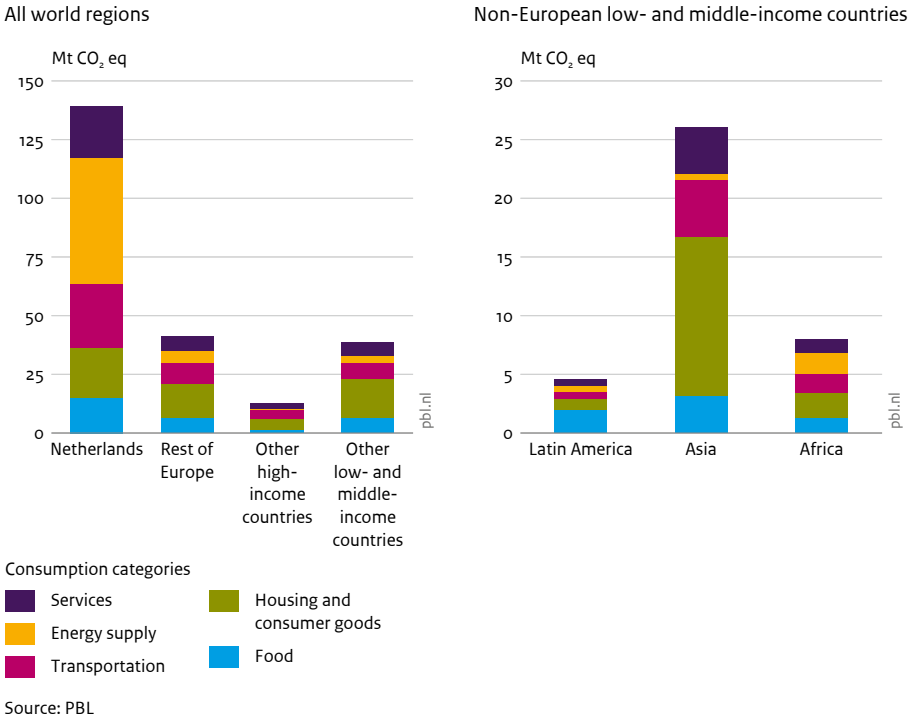
Source: CBS 2021

Resource-use-related environmental impacts stretch largely beyond Dutch borders

In 2010, the environmental footprints of Dutch consumption with respect to greenhouse gas emissions, land use and biodiversity loss were much larger than the global average consumption footprints (Lucas and Wilting, 2018). Furthermore, due to strong dependence on resource extraction and processing abroad, a significant share of these footprints lies abroad. Also compared to other EU Member States, the Netherlands has a relatively large environmental footprint abroad (SDSN and IEEP, 2021). This is partly due to the fact that a significant amount of imported material resources is used for the production of products that are destined to be exported.

Figure 2.5

Distribution of the greenhouse gas consumption footprint of the Netherlands, 2015



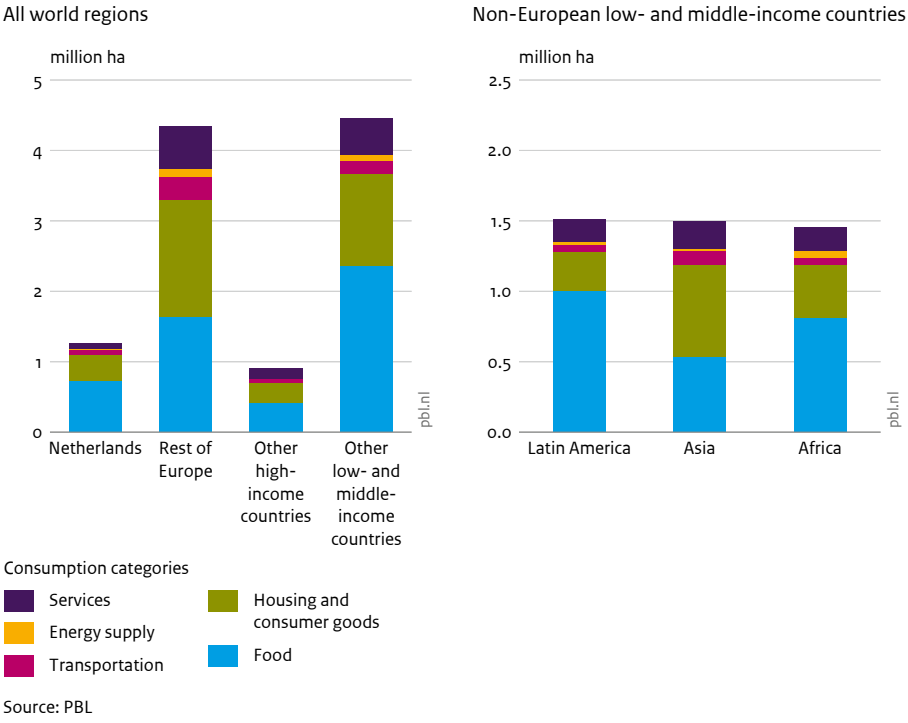
Source: PBL

In 2015, around 40% of the greenhouse gas footprint of Dutch consumption was outside the Netherlands, 17% of which in low- and middle-income countries (LMICs) (Figure 2.5).[3] Of these LMICs, around two thirds were in Asia, mostly for industrial manufacturing of machinery and consumer goods. Of the land-use-related consumption footprint, almost 90% was abroad in 2015, 40% of which in LMICs (Figure 2.6). With respect to the LMICs, this footprint was distributed almost equally over Africa, Asia and Latin America. The footprints in Latin America and Africa were largely related to food consumption (including animal feed). In Asia, a large part of land use related to the production of timber used for construction, housing and infrastructure. Land use related to clothing manufacture is a relatively small category (2% of total land-use-related consumption footprint), and most of this is located in Asia. The greenhouse gas and land-use footprints represent the most

[3] The shares of the Dutch consumption footprint abroad, as presented in Figures 2.5 and 2.6, were calculated with PBL's MRIO-FP model, due to the large regional detail in this model (Wilting, 2021). As a result, the total footprints differ slightly from the figures presented in the Integral Circular Economy Report 2021 (Hanemaaijer et al., 2021a) as these were calculated with different models with lower regional detail but larger sectoral detail.

Figure 2.6

Distribution of the land-use consumption footprint of the Netherlands, 2015



Source: PBL

important pressures on global biodiversity. A relatively large share of the impacts on biodiversity can be attributed to the consumption categories of housing and consumer goods, and food (Van Oorschot et al., 2021).

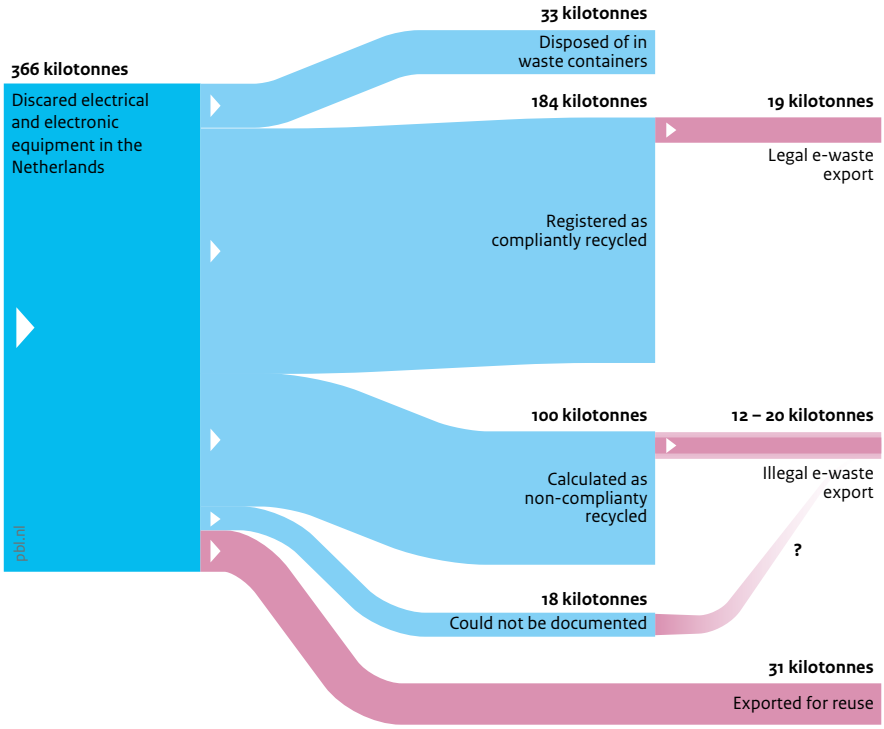
While the share of the Dutch land-use footprint abroad is relatively high, a large share of added value in product supply chains takes place within the Netherlands, including wages, investments and profits. For example, the Dutch food industry is able to generate a significant amount of added value by processing imported agro-commodities, while most of the land use and greenhouse gas emissions in the supply chain take place abroad, with large shares outside the European Union (PBL, 2017).

Significant shares of waste and discarded products are exported for reuse or recycling abroad

In 2016, total exports of waste from the Netherlands amounted to 22.4 million tonnes, over a third of which was re-exported (i.e. waste that had not been generated in the Netherlands) (CBS, 2019b). These exports include plastics, minerals from the construction sector and

Figure 2.7

Dutch flows of discarded electrical and electronic equipment, 2018



Source: UNU/UNITAR, NWR

waste from the food industry. Although much less in weight, also large shares of discarded textiles and electrical and electronic equipment are exported for reuse or recycling.

Around 50% of electrical and electronic equipment discarded in 2018 was collected and registered as compliantly recycled, and around 20% of all discarded products was exported (Brink et al., 2021a; Figure 2.7). This export flow was comprised of shares of differing statuses. Almost half was exported for reuse, mostly to Eastern EU Member States and Western Africa (Ghana and Nigeria). Around one quarter was legal and registered export of e-waste, mostly to countries within the European Union. Another quarter was exported illegally, most likely to other EU Member States and Western Africa.

Over 50% of post-consumer textiles was incinerated in 2018, while around 35% was exported (this includes imported discarded clothing from neighbouring countries) (Brink et al., 2021b). A large share of this exported clothing ends up in African countries where it is reused or discarded, while large shares of low quality clothing are typically imported by

Asian countries (such as India and Pakistan) to be made into rags, or for mechanical recycling.

Export in discarded products creates development opportunities, but is also associated with negative impact

There are several environmental and socio-economic impacts in low- and medium-income countries that are related to the Dutch export of discarded products (Brink et al., 2021a; Brink et al., 2021b). Positive impact includes access to affordable electrical and electronic products and clothing, as well as income and job opportunities in refurbishment and recycling. In many LMICs, there is a lively trade in reusable goods and it is common practice to buy second-hand clothes or refurbished products, such as laptops. The best jobs are typically in repair and refurbishment, while collection and recycling jobs are associated with low incomes and unsafe working conditions.

In the case of electrical and electronic equipment, products often contain many hazardous and toxic substances that can be released into the air, water and soil if not dismantled and recycled properly, resulting in environmental pollution and public health risks.
The likelihood of negative impacts is very high in Western Africa, where large shares of discarded electrical and electronic products end up, and only 0.4% of the e-waste generated domestically in 2018 was managed in an environmentally sound manner.

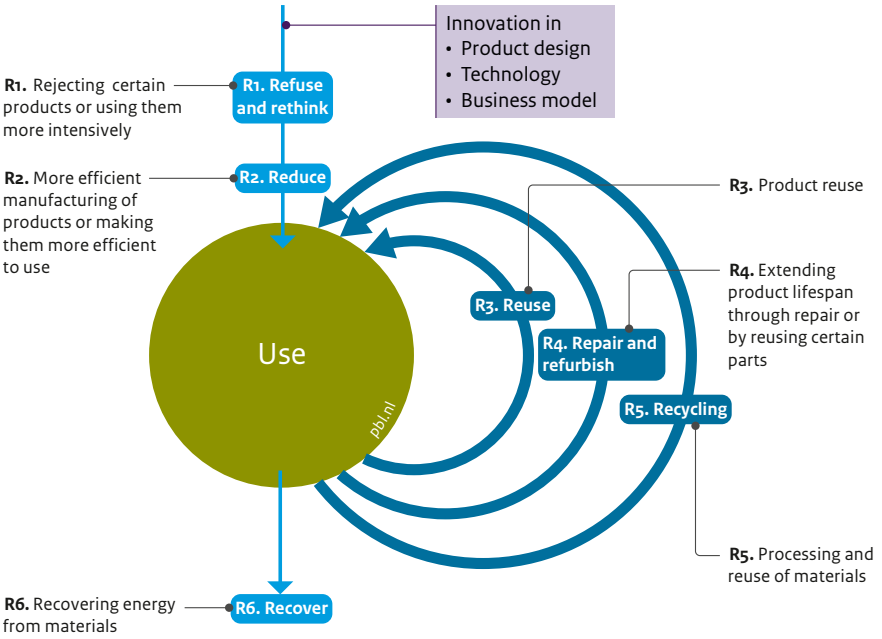
For textiles, improper disposal of waste materials and the use of hazardous substances for recycling, such as bleach, negatively impact both the environment and the workers' health. Most recycling of textiles takes place near established textile manufacturing industries in South Asia, for example, in Pakistan, which is also a major recipient of discarded textiles from the Netherlands. The conventional textile industry in these countries is known to be plagued by decent work deficits, such as gender discrimination, low wages and barriers to freedom of association. Despite a lack of knowledge on the practices in post-consumer textile businesses, similar challenges like the ones in conventional textile industries can be expected for sorting, grading and recycling.

2.3 International effort in Dutch circular economy implementation

A circular economy is about applying resources as efficiently as possible

Many natural and environmental problems can be traced back to the wasteful use of material resources. In response, a circular economy is aimed at a radically more efficient use of these resources. This can be done through various circularity strategies, or 'R-strategies' that can be combined to form a circularity ladder, or 'R-ladder' (Figure 2.8; Potting et al., 2018; Hanemaaijer et al., 2021a). The strategies at the top of the ladder (refuse and rethink, and reduce) are aimed at reducing the amount of material input, by sharing or foregoing the use of certain products, and by more efficient manufacturing or making products more efficient to use (narrowing loops). This includes substitution of finite resources with

Figure 2.8
R-ladder with circularity strategies



Source: PBL

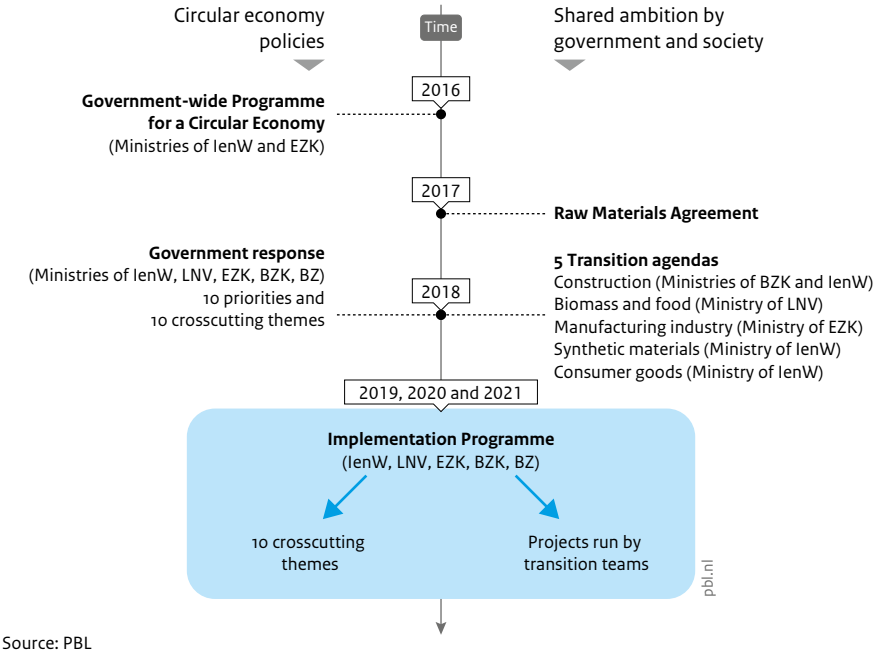
renewable resources (i.e. bioresources) or materials with a lower environmental footprint. The strategies halfway down the ladder (reuse, and repair and refurbish) are aimed at keeping products or materials in use longer and, thus, postpone the demand for virgin materials (slowing loops). Finally, measures at the bottom of the ladder (recycling, and recover) are aimed at closing the cycle of materials by recovering energy or recycling materials into new products, with as little waste as possible (closing loops).

The Dutch circular economy transition focuses on reducing environmental impact and addressing raw material supply risks

With its Government-wide programme for a Circular Economy, launched in 2016, the Dutch Government expressed the ambition to realise a fully circular economy in the Netherlands by 2050 and, as an intermediate goal, to halve the use of primary abiotic raw materials by 2030 (Ministry of Infrastructure and the Environment and Ministry of Economic Affairs, 2016). The circular economy is not an end in itself but a means to achieve a range of societal goals. The overarching societal goals of the Dutch circular economy transition are to decrease and limit environmental impact (e.g. combatting climate change and environmental pollution, and reducing biodiversity loss) and improve security of supply with regard to crucial resources. The Government-wide Programme also states that, with

Figure 2.9

Circular economy policies and shared ambitions in the Netherlands



Source: PBL

the transition to a circular economy, the Dutch Government aims to contribute to the realisation of the UN Sustainable Development Goals (SDGs).[4]

International effort is aimed at increasing international political support for the circular economy, capacity building and creating opportunities for Dutch business.
The ambitions formulated in the government-wide programme have given rise to a wide variety of actions and interventions to promote the circular economy transition (Figure 2.9).
These actions and interventions are formulated in the Raw Materials Agreement (Dutch Government, 2017) and five transition agendas (for Biomass and Food, the Construction Sector, Consumer Goods, Plastics, and the Manufacturing Industry) that are informed by multi-stakeholder dialogues. The government's response to the transition agendas (Ministry of Infrastructure and Water Management, 2018) and an annually updated implementation programme (Ministry of Infrastructure and Water Management, 2019, 2021) set out the government's actions.

[4] Through decoupling of economic growth from environmental degradation, making industries and cities more sustainable, ensuring sustainable production and consumption, preventing waste, and integrating ecosystem and biodiversity values into national and local planning and into development processes.

The international dimension of the circular economy is implicitly part of the government's ambition as it concerns efficient resource use throughout the whole value chain. Furthermore, the Government-wide programme for a Circular Economy formulates three objectives for international cooperation (Dutch Government, 2017):

1. Creating international conditions for a circular economy
2. International market for Dutch leaders
3. Contributing to an international circular economy without negative impact

All five transition agendas call for an international perspective, which includes EU legislation and regulation and a supply chain perspective. In response, 'international effort' is included as one of the 10 cross-cutting themes of the implementation programme, being both an opportunity and a necessity. International cooperation is necessary because many value chains are by definition international, and because of the importance of a level playing field and an international market for circular goods and services.

International effort is aimed at strengthening international political support for the circular economy, strengthening coherence between the circular economy and climate policy, and deploying Dutch knowledge and expertise, internationally. Two multi-stakeholder platforms have been set up — PACE (Platform for Accelerating the Circular Economy) and Holland Circular Hotspot — to accelerate the transition in specific sectors and supply chains and to create international backing for the circular economy, showcasing Dutch expertise and scaling up circular innovations. Specific actions in the latest implementation programme in relation to LMICs include elaboration and implementation of the CEAP of the EU (also see Box 2.3), starting a dialogue with regional initiatives[5] to bring parties together and exchange managerial and practical knowledge, increasing support and knowledge about the circular economy in priority countries,[6] and integrating circular principles into existing development programmes (Ministry of Infrastructure and Water Management, 2021).

Promoting a circular economy in LMICs is also addressed in the policy document 'Investing in global prospects' (Ministry of Foreign Affairs, 2018a). The policy document makes specific reference to coordination with national policy agendas, including the circular economy, but no specific actions are mentioned. Furthermore, the document states that, as a trading nation and partner in development, the Netherlands wants to contribute to sustainable and inclusive growth in other countries, including through circular economy knowledge. These ambitions are iterated in the latest Coalition Agreement, through the stated commitment to high standards for fair production, human rights, food safety, sustainable growth and climate.

[5] Initiatives include the EU's Global Alliance on Circular Economy and Resource Efficiency (GACERE), the African Circular Economy Alliance (ACEA), the Latin America & Caribbean Circular Economy Coalition (LACCEC), and the Regional 3R and circular economy Forum in Asia and the Pacific.

[6] Priority countries are countries that are crucial for achieving the Dutch goals, countries with opportunities for Dutch companies, and LMICs in focus regions who want to make the transition to a circular economy.

Box 2.3: The role of low- and middle-income countries in the new Circular Economy Action Plan (CEAP) of the European Union

The new circular economy action plan (CEAP), adopted in March 2020, is one of the main building blocks of the European Green Deal, Europe's agenda for sustainable growth (EC, 2020). With the CEAP, the European Union wants to reduce pressure on natural resources and create sustainable growth and jobs. Furthermore, a circular economy is seen as a prerequisite to achieving the EU's 2050 climate neutrality target and to halt biodiversity loss. The CEAP stresses that the European Union cannot achieve a circular economy alone, and that widespread adoption of circular business practices is largely dependent on their broad integration in global value chains.

Regarding LMICs, the European Union states that these countries stand to profit from the circular economy transition, as a result of economic diversification, value creation, skills development and jobs. Some of the EU actions to encourage and strengthen circularity in global value chains include a European Plastics Strategy; the launch of the Global Alliance on Circular Economy and Resource Efficiency (GACERE) for knowledge exchange to identify and address bottlenecks and barriers in the transition; exploring the feasibility of defining a Safe Operating Space for natural resource use; initiating discussions on an international agreement for the management of natural resources, which could establish rules on waste management, EPR, product design and consumer information; building stronger partnerships with Africa to maximise the benefits of the green transition and the circular economy; and ensure that Free Trade Agreements reflect the enhanced objectives of the circular economy (EU, 2020).

Key policy developments that directly or indirectly affect the circular economy and global value chains include the Sustainable Textile Strategy, the Sustainable Product Initiative (SPI), the Extended Producer Responsibility (EPR) scheme, revision of the Waste Framework Directive and the Waste Shipment Regulation, the Sustainable Corporate Governance Initiative, and the proposed EU Directive on Corporate Sustainability Due Diligence.

International impacts of the Dutch circular economy transition are not an integral part of the current policy process

With all these ambitions and actions, the government further elaborates on the first two objectives regarding international cooperation in the Government-wide programme for a Circular Economy. The third objective, contributing to an international circular economy without negative impact, receives less attention. Actions are mostly aimed at helping countries to set up their own circular economy. The government-wide programme specifically mentions the need for impact assessments at an early stage, to map out the impacts of circular economy policies on global sustainable development and low-income countries. This was not elaborated on in the government's response to the transition

agendas, nor in the circular economy implementation programme. The following chapter will discuss why more explicit attention for international impacts in circular economy policies are important.

3 Potential impact on low- and middle-income countries

The transition from a linear to a circular economy is highly complex, takes place over a long period of time, and affects many different parts of the economy and society, both nationally and abroad. As the transition is still in an early stage of policy implementation, its consequences are difficult to oversee. Nevertheless, based on sparse analyses and impact research, some general implications of a Dutch circular economy transition for low- and middle-income countries (LMICs) can be identified. This chapter discusses key determinants of impact, the roles LMICs can play in the Dutch circular economy transition and related impacts, and resulting challenges and opportunities for LMICs and the Netherlands.

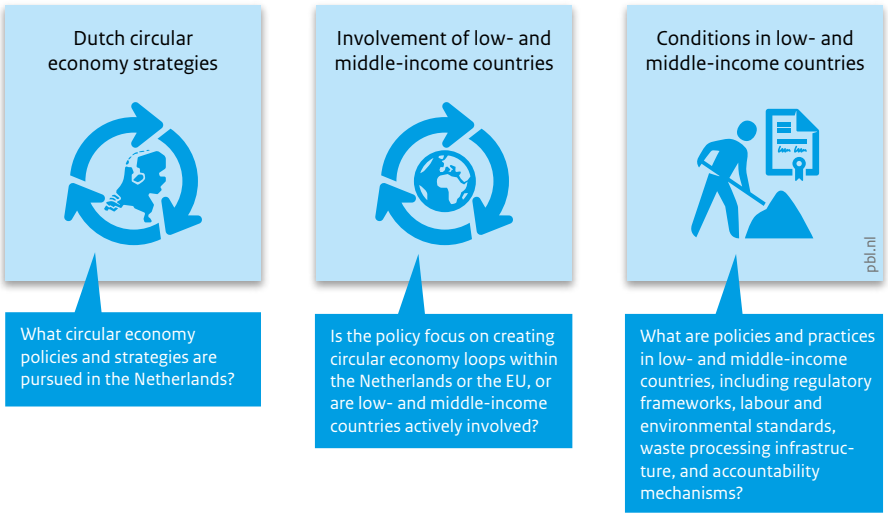
3.1 Key determinant of impact

The impact of a Dutch circular economy transition on low- and middle-income countries takes place in the context of changing trade flows

A circular economy means a radically more efficient use of material resources. This can be done through various circularity strategies (Figure 2.8). Trade flows are affected by the type of circular economy policies and strategies implemented within the Netherlands (e.g. the part of the value chain that is targeted and the CE strategies used) and if and how LMICs become part of the circular economy loops of the Netherlands (e.g. a focus on a circular economy within the Netherlands or EU or explicitly including LMICs). How these changing trade flows subsequently impact LMICs depend on current policies and the practices in these countries (e.g. existence of regulatory frameworks and standards, appropriate waste infrastructure and capacity, monitoring of standards, and accountability mechanisms).
The following paragraphs discuss these three determinants in more detail (see also Figure 3.1).

Figure 3.1

Key determinants of the impact of a Dutch circular economy transition on low- and middle-income countries



Source: PBL

Different circular economy strategies lead to different outcomes for resource use

To achieve a circular economy, all types of circularity strategies are required (see Figure 2.8). However, different strategies have different effects on resource use (Table 3.1). In principle, all strategies lead to an overall lower demand for primary non-renewable resources. Furthermore, substitution leads to increased demand for renewable resources, such as wood or bio-based plastics, or for sustainably sourced materials. Strategies aimed at slowing loops can increase demand for circular products, components and services for reuse, repair or refurbishment. Finally, the availability of secondary materials, recycled from existing products, can be expected to grow as a result of strategies aimed at closing loops, making them available for repair and refurbishment, as well as for the production of new items.

Table 3.1

Overview of circular economy strategies and measures

Circular economy strategy	Step on R-ladder	Examples of measures	Affecting	Effect on resource use
Substitution	-	Using renewable resources or alternative materials with reduced environmental impact	New products	Increased demand for renewable resources and sustainably produced materials
Narrowing loops	R1: Refuse and Rethink R2: Reduce	Reducing material use through, e.g. rejecting or sharing products, or more efficient manufacturing	New products	Reduced demand for primary materials
Slowing loops	R3. Reuse R4. Repair and refurbish	Extending the use phase and lifespan of products, e.g. through repair or refurbishment, repair cafes, lowering VAT on repairs, or buying second-hand	Used products	Reduced demand for primary and secondary materials; increased demand for used products and related services
Closing loops	R5. Recycle R6. Recover	Recycling and reusing materials and components, and recovering energy from materials	Waste	Reduced demand for primary materials; increased use of secondary materials and components

Trade flows are affected by changes in resource use, as well as non-tariff barriers and the role of low- and middle-income countries in the circular economy

As a result of changing demand and availability of resources, the circular economy encourages reduced trade in primary non-renewable raw materials, while increasing the trade in renewable resources and secondary materials, recyclable waste, second-hand products, and services (OECD, 2018b; Van der Ven, 2020; Barrie and Schröder, 2021; Yamaguchi, 2021).

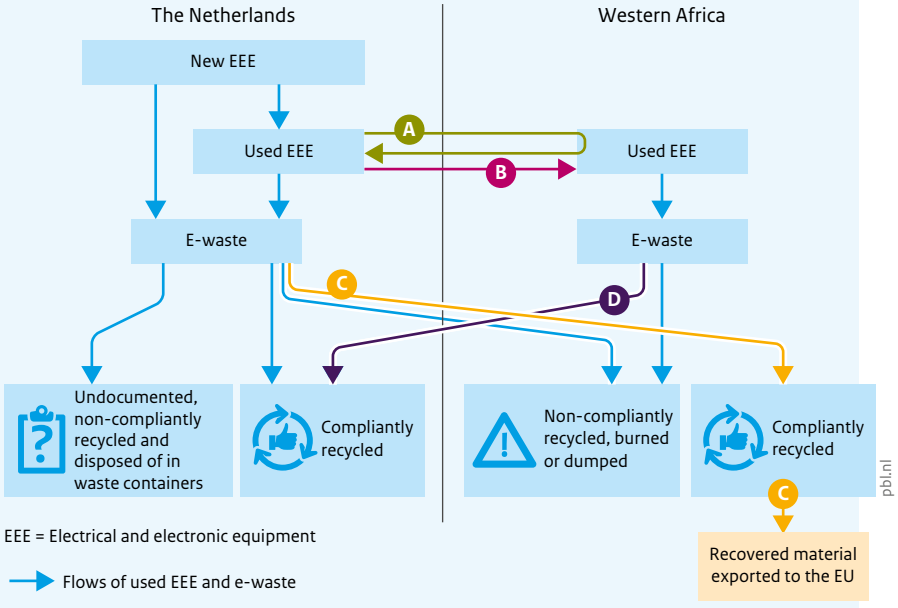
Trade can also be affected by the setting of more strict sustainability standards, creating barriers for LMICs to produce for the European market, or by setting more strict standards for the export of waste, scrap and second-hand products outside the EU, creating barriers for markets for these products or processing this waste into secondary raw materials in LMICs (Kettunen et al., 2019; Yamaguchi, 2021). In the CEAP, the European Union announced investment in large-scale recovery of valuable secondary materials, thereby decreasing the export of second-hand goods.

Box 3.1: Different roles of low- and middle-income countries for circular electronics (Brink et al., 2021a)

With respect to end-of-life electrical and electronic equipment (EEE), there are several ways for LMICs, such as Ghana and Nigeria, to become part of the circular economy of the Netherlands (Figure 3.2). Refurbishment of used EEE abroad could create employment opportunities and improve resource efficiency, but would also need to deal with the side effects of the generation and current mismanagement of e-waste. Increasing the exports of used EEE for reuse abroad can improve access to quality products as well as achieve higher value retention, but also needs a strategy to improve waste management, as the used EEE eventually also becomes e-waste. Exporting e-waste to Western Africa for processing and material recovery is illegal and is only possible if environmentally sound e-waste management can be ensured.

Figure 3.2

Flows of used electronics and e-waste in circular economy strategies that include West Africa



EEE = Electrical and electronic equipment

Flows of used EEE and e-waste

A Refurbishment of used EEE in Western Africa for European consumers

B Increased exports of used EEE to Western Africa for value retention

C Exports of e-waste to Western Africa for safe processing for the European market

D Reimportation of e-waste from Western Africa for safe processing in the EU

Source: PBL

Box 3.1 Continued

Finally, the collection of e-waste abroad and shipping it to Europe to recycle and recover valuable materials and the safe processing of the remaining fractions could have the benefit of reducing pollution. However, this approach faces practical barriers such as restrictions and high costs for cross-border transport of hazardous fractions (Closing the Loop, 2020). In addition, it would see LMICs lose out on the economic potential of valuable secondary materials, as they are extracted abroad. Furthermore, while EPR programmes offer a possible solution, it is not clear how to ensure that the full cost of safe processing of discarded items that have too little material value is covered. Under all four scenarios, the level of success will depend on finding ways to work with the informal sector, which currently plays a central role in waste and scrap management.

How global trade is reshaped by the circular economy also depends on if and how LMICs are included in the circular economy strategies of the Netherlands or the European Union (see Box 3.1). For example, circular economy strategies could aim at moving certain manufacturing or processing activities closer to Europe ('nearshoring' or 're-shoring'), thereby reducing the trade in goods with manufacturing hubs in LMICs. Alternatively, policies could also focus on supporting the transition of current material extraction, manufacturing, reuse, and resource recovery in LMICs, thereby increasing trade in certain material resources, circular and second-hand products, and recyclable waste.

Environmental and socio-economic outcomes in low- and middle-income countries depend on local conditions

How changing material trade flows create environmental and socio-economic impacts in LMICs will depend on policies and practices in these countries. For example, whether regulatory frameworks and standards, appropriate infrastructure and capacity, and adequate resources are in place and available locally to prevent potential negative impacts (e.g. regarding decent wages, environmentally sound waste management, responsible raw material extraction and production, EPR schemes). In addition, whether implementation of standards is monitored and legitimate accountability mechanisms are present will likewise affect impacts on people and the environment.

This is expected to function in circular value chains in the same way as it does in linear value chains. For example, higher demand for recycled textile fibres could lead to higher levels of employment in textile sorting and recycling facilities. However, jobs in textile recycling in countries such as Pakistan or India often do not meet the standards of decent work. Increasing these jobs without efforts to improve labour conditions may therefore exacerbate existing labour rights abuses (Arisa and Sympany, 2021; Brink et al., 2021b; BSR, 2021; Repp et al., 2021).

In addition, trade-offs can be expected when value chains are transformed or when demand for one product is replaced by another. In the case of cotton farming, farmers growing certified cotton could see higher demand for their crops when market preferences change in favour of sustainably produced raw materials, while conventional cotton farmers may not be able to adapt quickly enough to meet demand for certified cotton, and thus miss out (see Box 3.2) (Brink et al., 2021b).

Box 3.2 Preferred cotton and sustainability standards

In the textile industry, there is broad commitment to the use of what are called preferred types of fibres and materials. There is an array of sustainability standards to support this, covering both social and environmental issues (labour, wages, water, land use, pesticides use, animal welfare, deforestation). In 2018–2019, about 25% of globally produced cotton was preferred cotton, and this percentage grew from about 5% in 2012–2013. Different labels and standards are used in different world regions (TextileExchange, 2020). The Better Cotton Initiative (BCI) represents the largest share, with a global coverage of 22% of total cotton production. Cotton made in Africa (CmiA) represents the largest share of labelled cotton in Africa, certifying more than 30% of the total cotton production in 2018–2019. In Ivory Coast, Burkina Faso and Cameroon, almost 100% of the cotton produced was CmiA certified.

Sustainability standards contain several criteria to improve environmental protection and the living conditions of smallholders. Farmers are for instance trained in sustainable production methods as part of the CmiA programme, to attain higher yields and diversify crops. Furthermore, support programmes are in place to improve the position of women (AbTF, 2021). Life Cycle Analysis studies show that cotton produced under CmiA criteria performs better with respect to CO_2 emissions, nutrient pollution and water use (Sphera, 2021). At the same time, certified cotton is not seen as being of higher quality in comparison to conventionally produced cotton. Better quality cotton fibres can be recycled more often than lower quality fibres. If certified West African cotton would improve, in terms of fibre quality, this would greatly improve its position on the global market (Brink et al., 2021b).

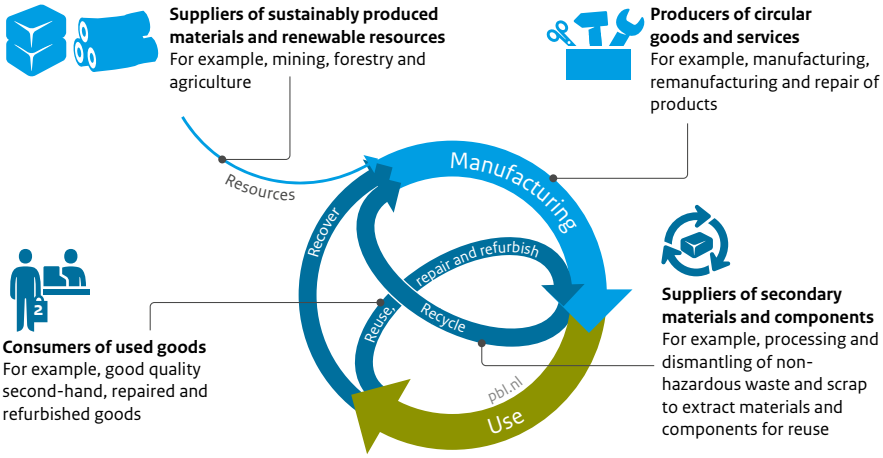
3.2 Roles and impacts for low- and middle-income countries

Low- and middle-income countries can play a role in the circular economy in various stages of global value chains

The circular economy transition influences every stage of global value chains, from resource extraction and processing, to manufacturing, use of products, and finally collection and waste management. LMICs can play a role in the circular economy in all these parts of the value chain (see Figure 3.3). In fact, in the current linear economy, many LMICs are already active in these

Figure 3.3

Roles for low- and middle-income countries in a circular economy of the Netherlands



Source: PBL

roles to a certain degree, but not yet in a circular or sustainable way. This includes major mining operations across Africa, large manufacturing hubs in Asia, and reuse and recycling hubs for electronics and textiles in West Africa and South Asia, respectively. The circular economy transition will affect what these roles look like and how they influence environmental and social well-being in LMICs. The implications for LMICs can be both positive and negative. It is important to bear in mind that conflicting trends and rebound effects are possible, and most of the potential positive impacts will depend on careful attention for the necessary preconditions. The following paragraphs zoom in on these roles in the various stages of global value chains.

Circular design and stricter production requirements can have a positive impact, but also create non-tariff barriers and could lead to near-shoring

Both at national and EU levels, policy measures are being taken to advance sustainable production. This includes, for example, the EU Sustainable Products Initiative and the Dutch Policy programme for circular textiles 2020–2025, which both aim to promote the use of sustainably produced materials. Policy programmes such as these will determine the sustainability criteria products and production processes will have to meet in order to have access to the EU market.

From an EU perspective, circular economy policies can be viewed as a way of encouraging cleaner production processes and lower environmental footprints in LMICs that produce for the European internal market (OECD, 2018b). At the same time, stricter product and production requirements and environmental regulation can also form non-tariff trade barriers, as exporters in LMICs can struggle to meet changing requirements that often vary

between countries (CBI, 2021). Furthermore, sustainable product and production policies, combined with possible supply chain disruptions, could stimulate near-shoring or re-shoring of certain processes to handle secondary material flows. This can likewise affect entrepreneurs in LMICs and potentially exclude them from the market (BSR, 2021), in turn negatively affecting employment. This calls for investment in and support from the European Union for producers and exporters in LMICs, to facilitate the switch to more environmentally friendly and circular production methods (Ashraf and Van Seters, 2021).

Although circular economy policies aim to reduce demand for primary resources, at the global level, demand is not expected to decrease in the short term

At the heart of the Dutch circular economy transition is the aim to reduce the use of primary resources. For countries whose economies rely on the extraction and export of non-renewable material resources, an overall drop in demand would be expected, resulting in a loss of export earnings and employment opportunities (De Jong et al., 2016; Preston et al., 2019; OECD, 2020; UNEP and IRP, 2020; Van der Ven, 2020).

However, it is unlikely that overall resource extraction and processing will drastically decline in the foreseeable future. The environmental gains as well as loss of export earnings and employment opportunities are thus probably small. Substitution of finite resources with renewable resources (i.e. biobased chemicals, plastics and medicines) will boost the demand for bioresources (e.g. agricultural and forest products), with expected negative impacts on food and agricultural systems, as well as on biodiversity and ecosystem services (Lucas et al., 2020). Furthermore, projected population growth and rising incomes in LMICs will likely result in rising raw material demand, globally. LMICs are projected to account for more than half of all global resource consumption by 2030 (OECD, 2018a), which will shift the demand for raw materials from high-income countries to emerging economies (Ashraf and van Seters, 2021; Barrie and Schröder, 2021).

In parallel to the circular economy transition, many countries are also moving away from fossil fuel use towards low-carbon technologies, such as solar and wind energy, but also bioenergy and biofuels. This clean energy transition is projected to significantly increase the demand for minerals and metals such as cobalt, nickel, lithium and rare earth elements, which are often also mined in LMICs (IEA, 2021). Furthermore, similar to the increased demand for, for example, biobased chemicals or plastics, increased demand for bioenergy and biofuels may also negatively impact food systems and biodiversity. Because the LMICs that supply bioresources, minerals and metals are not necessarily the same countries that supply fossil fuels, the clean energy transition is associated with both winners and losers, both environmentally and socio-economically.

Demand for manufactured goods and intermediate products from low- and middle-income countries is expected to change and can create new economic opportunities

The concerns regarding a potential decline in demand for raw materials is mirrored in discussions around the manufacturing industry in LMICs. Over the years, manufacturing of

consumer goods and intermediate products has largely shifted from high-income countries to low- and middle-income countries (LMICs) for various reasons, including lower labour and production costs. A successful circular economy transition in Europe would thus affect production in LMICs, as a result of lower resource consumption and higher value retention (Kettunen et al., 2019; Ashraf and Van Seters, 2021).

However, there are several other factors to consider with regard to the demand for manufacturing. It is likely that, in a circular economy, consumption patterns will change and demand will shift, new types of manufacturing services may become sought after, for example in repair, remanufacturing and recycling. Furthermore, as many countries will probably continue to source products from manufacturing hubs in LMICs, it remains to be seen whether a changing demand from the European Union would drastically affect manufacturing industries in LMICs.

The concern that LMICs may lose out in the circular economy is also connected to the fear of re-shoring or near-shoring, or job losses as a result of technological innovation and automation. However, moving production operations to Europe implies that companies would be willing and able to significantly increase production costs. The alternative would be to transform or adapt existing manufacturing processes in LMICs, for example in the clothing manufacturing industry, to incorporate repair, refurbishment, recycling and use of recycled materials. While this requires investment, it may be a more affordable option than moving entire manufacturing industries back to the European Union. In this scenario, production processes in LMICs may change, and LMICs could even see an increase in employment opportunities in certain industries, as manufacturing infrastructure would be expanded to include repair, refurbishment and/or recycling operations.

Both the Netherlands and low- and middle-income countries can profit from the trade in reusable goods, secondary raw materials and waste, while the risks of trade-offs remain

Reusing, repairing and refurbishing products as well as recycling materials and recovering energy are key aspects of the circular economy. For a fully circular economy, circular processes would need to be scaled up, drastically. To achieve economies of scale, there is a potential benefit in the safe processing of specific flows of discarded goods, waste and scrap abroad. The existing knowledge, skills and labour availability in LMICs, when it comes to repair, refurbishment and material recovery, could offer an important opportunity, in this regard (OECD, 2020; Ashraf and Van Seters, 2021).

The potential positive outcomes of increased trade in certain types of waste, scrap and reusable goods, however, strongly depend on safeguards, such as having in place the relevant infrastructure, regulatory frameworks and capacity to safely process these materials (see also Box 3.3). These conditions are almost always lacking in LMICs. As such, there is concern amongst stakeholders outside the private sector about the potential for job creation not leading to decent jobs. Trade-offs between waste management and decent work, safe working environments and human health are likely (Schröder, 2019). Moreover,

Box 3.3: Opportunities and challenges of imported second-hand clothing in Africa

The value of the trade in second-hand clothing, shoes and home textiles has grown from USD 2.7 billion in 2009, to USD 4.5 billion in 2019, an increase of 67% (ITC Trademap, 2021). Many of these garments are discarded in the West and sold for profit in other parts of the world. While large volumes of second-hand clothing are first exported from high-income countries to, for example, Eastern Europe, the United Arabic Emirates, and Pakistan for sorting and grading, a significant share will eventually end up in Sub-Saharan Africa for reuse. This is part of a trend that has developed since the 1990s.

From the 1960s to the 1980s, African countries produced and exported clothing and shoes made in regional value chains (Katende-Magezi, 2017). The significant decline in this industry can be explained by supply-side constraints undermining efficiency, a shift in consumer preferences to more western fashion styles, and by trade liberalisation in the 1980s leading to the influx of cheap clothing from East Asia (Baden and Barber, 2005; Katende-Magezi, 2017; Ljungkvist et al., 2018).

Demand for second-hand clothing in Sub-Saharan Africa is high, with cited percentages of up to 80% or 90% of the population in certain countries buying imported second-hand clothing (Katende-Magezi, 2017; Nørup et al., 2019). Consumers, typically, prefer second-hand over new clothing, for reasons of affordability, quality and style (Wolff, 2021). Furthermore, the buying, selling, repairing and altering of imported second-hand clothing creates many jobs and provides a living for local people (Brady and Lu, 2018b). In Kenya, for example, it is estimated that the second-hand industry generates 121,000 direct and 27,000 indirect jobs (Wolff, 2021). Finally, tax revenues on imports of second-hand clothing can be large. For example, in 2013, Kenya earned USD 54 million in tax revenues on 100 kt of imported second-hand clothing (Katende-Magezi, 2017).

Discussions around the future of the African textile industry continue, with questions addressing issues of affordability for low-income consumers and what to do with a growing mountain of discarded, low-quality imported clothing. A research project in Ghana shows that roughly 40% of imported second-hand clothes is landfilled as the quality is too low, causing major problems for local waste management, as well as environmental and public health risks. Beyond the potential value of good quality second-hand clothes for African consumers, the debate around countries being responsible for their waste, thus, extends to the import of second-hand clothing from Western countries.

there is a real concern that the predominantly informal waste economy in LMICs will expand (Ashraf and Van Seters, 2021).

Because of these reservations, some parties favour stronger export restrictions for discarded goods and waste outside the European Union, preferring investment in regional waste management solutions. This is in line with proposed EU policies, with the new CEAP introducing stricter waste export controls (EC, 2020). However, banning the export of reusable, repairable or recyclable goods and all waste also constitutes a lost opportunity to transform existing waste management systems in LMICs into safe and environmentally sound processes, with decent work standards (Ashraf and Van Seters, 2021). Exploring the opportunities to invest in safe recovery of secondary materials in LMICs warrants further attention, in this regard.

3.3 Challenges and opportunities

Environmental benefits of the circular economy transition in low- and middle-income countries are not guaranteed

Many circular economy strategies can have negative rebound effects, potentially resulting in an increase rather than decrease in environmental pressure. For example, consumers in West Africa who are now buying second-hand telephones or clothing imported from the Netherlands or the European Union, will still need ICT equipment and clothes if the inflows of used goods were to stop. As trade data on some Eastern and Southern African countries have shown, lower influx of second-hand clothing can go hand in hand with substantial increases in imports of new clothing, thereby increasing environmental footprints (Brady and Lu, 2018a). Furthermore, substitution of finite resources with renewable resources shifts environmental pressure to agricultural and forest systems, negatively impacting food systems, biodiversity and ecosystem services (Lucas et al., 2020). To achieve the overarching role of reducing environmental pressure, such potential impacts must also be considered when designing circular economy policies.

There is a risk that the negative environmental and socio-economic impacts in the current linear economy are repeated in the circular economy

The absence of the necessary infrastructure, regulatory frameworks and expertise in LMICs can hamper efforts to achieve positive outcomes throughout value chains. Vulnerable and marginalised groups, such as informal workers, women, and migrant workers, are currently overrepresented in those value chain segments that are likely to expand in a more circular system (e.g. remanufacturing, waste collection, sorting, and recycling). Currently, in many value chains, there are environmental and socio-economic impacts, including environmental pollution and related public health risks, and decent work deficits, such as gender discrimination, low wages, and barriers to freedom of association. Without attention for the local policies and practices, there is thus a risk that the negative impacts of the current linear economy are repeated in the circular economy, creating trade-offs between the circular economy and achievement of the SDGs (ILO, 2018; BSR, 2021).

The costs and benefits of the circular economy transition are not automatically distributed equally

The transition towards a circular economy is projected to contribute to a worldwide growth in employment of 0.1% by 2030, compared to a business-as-usual scenario, primarily in services and waste management (ILO, 2018). Without further measures, high-income countries are expected to see a growth in higher value jobs in circular waste management, such as repair and recycling, whereas low-income countries are projected to only benefit from low-value jobs in waste and scrap management (ILO, 2018; Barrie and Schröder, 2021). Overall, global employment gains may be negated by employment losses in mining and the manufacturing industry. This means that, if no action is taken to promote economic diversification, net employment losses are expected in LMICs (ILO, 2018).

New jobs in the circular economy are likely to be more multifunctional and technology-intensive, requiring technical competencies that workers are currently lacking, and current training efforts are insufficient to prepare for the transition (CBI, 2021). Other trends and developments related to labour rights could also affect the social outcomes of the circular economy transition. The global textile industry, for example, has seen growing economic precarity and inequality throughout its value chains, in recent years (BSR, 2021). In light of these developments, labour rights organisations recommend investment in understanding and building the skills that are needed in future sustainable, circular systems, with support being geared around a diversity of needs (e.g. for formal vs informal, migrant vs local, and male vs female workers) (BSR, 2021).

The circular economy transition can build on existing circularity in low- and middle-income countries

Some circular practices have been part of the current 'linear' economy for years, such as buying second-hand products (e.g. bicycles, cars or household appliances), or collecting and recovering materials (e.g. glass and paper). This is especially the case in LMICs where reuse, repair, refurbishment and recovery are common practices. There are large markets for second-hand goods in LMICs, such as for clothing and electrical and electronic equipment, thereby contributing to lifetime extension of consumer goods (see Box 3.3). The circular economy transition in the Netherlands can build on this existing 'circularity', for example by exporting used goods for value retention, resource recovery and recycling, while ensuring that the safeguards as discussed above are in place. At the same time, the Netherlands can learn valuable lessons from countries where circular thinking is the norm, such as normalising reuse and repair, prioritising quality over quantity and using products for longer.

Understanding the drivers and options for people in low- and middle-income countries in existing value chains helps addressing risks and grasping opportunities of the circular economy transition

For a successful transition with shared benefits, it is important to consider motivations and alternatives for businesses, consumers, marginalised communities and workers already connected to the sectors affected by the circular economy. There are reasons why practices

that negatively impact people and the environment continue in value chains relevant for the circular economy. For example, people working in dangerous conditions in mining or informal waste management may have no alternative means of earning a living and cannot afford taking the necessary safety precautions. Furthermore, if resource extraction, production or waste management operations cause pollution or other negative outcomes, local communities may face difficulties in making this known and in finding ways to address these negative impacts. With respect to the trade in used goods and waste materials, trade flows are often discussed in terms of 'dumping', while overlooking the actors in LMICs that actively source, buy and ship material from industrialised countries to sell, process or use elsewhere. Better understanding peoples' choices and actions in LMICs in existing, linear, value chains helps to address negative impacts, as well as grasping opportunities for LMICs in the circular economy transition of the Netherlands.

With the right preconditions, the circular economy transition can create a positive impact for both the Netherland and low- and middle-income countries

As the circular economy constitutes a radical change in consumption and production, and thereby in production systems and trade patterns, it also provides opportunities for doing things differently. By building on existing 'circularity' in LMICs, the Dutch circular economy transition opens a policy window for addressing current negative impacts. Furthermore, by actively involving LMICs, the circular economy transition can contribute to SDG achievement in these countries (Schröder et al., 2019). To ensure a 'just transition' (see Box 3.4), thereby creating mutual gains for the Netherlands and LMICs, requires active participation of the LMICs involved in Dutch value chains, as well as creating safeguards to ensure a positive impact for these countries. The following chapter will discuss related actions and strategies.

Box 3.4: A just circular economy transition

The concept of a 'just transition' was first used by the trade union movement, to emphasise the importance of protecting workers' rights and livelihoods in the shift towards renewable energy protection (McCauley and Heffron, 2018). In recent years, it has been used more broadly and includes reference to poverty eradication and taking measures to ensure that the benefits of a greener, regenerative economy are shared equally (Stevis and Felli, 2020). In the context of the circular economy, a just transition is one that ensures that environmental sustainability goes hand in hand with decent work, social inclusion and poverty eradication (Schröder, 2020). While the notion of a just transition has been mentioned in high-level policy plans, such as the EU's Circular Economy Action Plan, there is concern that the scope is limited to a national or EU level (Schröder, 2020). As such, it is mostly used in reference to increasing competitiveness, boosting economic resilience and jobs within the EU, rather than to supporting global developmental needs. Critics argue that, as a result, the impact of major policy actions within the CEAP on low-income countries has not been fully considered (Schröder, 2020). Nevertheless, attention is growing for the development dimensions of a circular economy transition in global value chains (EU, 2020).

4 Towards a circular economy with positive impact abroad

While international impacts are not an integral part of the current circular economy policies in the Netherlands (Chapter 2), they matter and merit more serious consideration (Chapter 3). This message was also emphasised in interviews with a broad range of stakeholders working in civil society organisations, private sector associations, international organisations and research institutes (Ashraf and Van Seters, 2021). This chapter reflects on ways to address international impacts of a Dutch circular economy transition on low- and middle-income countries (LMICs), and how the Ministry of Foreign Affairs can capitalise on the transition in furthering its own ambitions on development cooperation.

4.1 Align national and international policy agendas

Now is the time to advance International effort in circular economy policies

The circular economy transition in the Netherlands is gaining momentum. Together with societal stakeholders, the Dutch Government has created a basis and structure for making the transition. However, to meet the government's ambition to switch to a fully circular economy by 2050, more comprehensive and specific policies are needed, including a more detailed vision with concrete and measurable targets, more compelling instruments, and more financial resources (Hanemaaijer et al., 2021a). Not taking international impacts into account when designing new targets and policies can negatively affect LMICs. It can create lock-ins that are difficult to overcome at a later stage, while opportunities to strengthen Dutch transition and contribute to progress on the SDGs in LMICs may be missed (Preston and Lehne, 2017; Schröder et al., 2019).

A joint process has now been started to concretise targets per product group and to develop related implementation programmes. Contributing to an international circular economy without negative impact requires taking international impacts into account when developing these implementation programmes.

The Dutch Ministry of Foreign Affairs could specifically point to the risks and opportunities of the transition for LMICs when new circular economy policies are developed. Furthermore, the ministry can support knowledge development and sharing of the impacts of the circular economy transition on LMICs, and involve LMICs in the development of policies, both for the Netherlands and in these countries themselves. Finally, through its own policy instruments around trade and development cooperation, the ministry can aim for mitigating potential risks and seizing opportunities of the circular economy for the achievement of the SDGs in partner countries.

Enhance coherence between national circular economy policies and foreign policies on trade and development cooperation

There is a risk that the environmental and socio-economic concerns of the linear economy are repeated in the circular economy, negatively affecting LMICs. These concerns include biodiversity loss, pollution, public health risks and decent work deficits. The Dutch Government has responsibilities regarding all of these challenges, most prominently with the 2030 Agenda for Sustainable Development and the 17 SDGs. As the circular economy constitutes a radical change in production systems and trade patterns, it can build on 'circularity' in LMICs, while contributing to the achievement of the SDGs, both domestically and abroad, including poverty eradication (SDG1), decent work and economic growth (SDG8), sustainable production processes and waste management (SDG12), combating climate change (SDG13), and halting the loss of biodiversity and ecosystem services (SDG 15) (Preston and Lehne, 2017; Schröder, 2019; Brink et al., 2021b).

Capitalising on these opportunities requires enhanced coherence between national circular economy policies and foreign policies on international trade and development cooperation (Kettunen et al., 2019). In the SDGs, this is addressed under target 17.14: Enhance Policy Coherence for Sustainable Development (PCSD).[7] The OECD recommendations on PCSD include building strong, inclusive political commitment and leadership, improving policy integration, ensuring whole-of-government coordination, and stakeholder engagement (OECD, 2021).

Improve data and knowledge, strengthen safeguards in global value chains, and include low- and middle-income countries in developing circular economy policies and programmes

For the circular economy, enhancing coherence between national circular economy policies and foreign policies on trade and development cooperation requires taking a global perspective, a focus beyond environmental impact and security of supply, creating safeguards for LMICs in circular economy and trade policies and practices, and promoting

[7] The objectives OPF PCSD in the context of the 2030 Agenda are to ensure an integrated implementation of the SDGs by: (i) Fostering synergies and maximising benefits across economic, social and environmental policy areas; (ii) Reconciling domestic policy objectives with internationally agreed objectives; and (iii) Addressing the transboundary and long-term impacts of policies, including those likely to affect developing countries.

an enabling environment in LMICs. Doing so, requires improved knowledge and information on impacts abroad, better supply-chain data to support value-chain transparency, integration of circular economy notions in existing circular economy, trade and development cooperation policies and programmes, an inclusive policy process that involves stakeholders from LMICs in designing circular economy policies and strategies, and capacity building in LMICs to strengthen their own circular economy transition. The following sections will further elaborate on these requirements.

4.2 Invest in knowledge and information

Conduct impact research to better understand global, regional and local challenges and opportunities

The knowledge on affected trade flows and related impacts abroad is limited and fragmented. Whether impacts will be positive or negative, and how severe, is highly context-specific (Circle Economy, 2020; Brink et al., 2021a; Brink et al., 2021b). Furthermore, next to circular economy policies and strategies, global production, consumption, and trade patterns are also affected by other macro trends, such as global population growth and an increasing global middle class (Circle Economy, 2020), and the global low-carbon transition and related demand for material resources (IEA, 2021).

Understanding the local context is key to recognising the different needs, mitigating negative impact and leveraging potential opportunities. Furthermore, research is required to better understand the impacts of macro trends, and the potential geopolitical actions that arise as a result, on consumption and production, globally, and thereby on the realisation of the circular economy ambitions. Knowledge needs include impact research to understand current challenges and opportunities in value chains (including the role of macro trends), trade flow modelling to map the impacts of a circular economy transition in the Netherlands or European Union on different LMICs as well as the implications of macro trends, and more in-depth analysis of labour impacts and decent work opportunities in LMICs (Ashraf and Van Seters, 2021; Brink et al., 2021a).

It could be worthwhile to set up a knowledge and information exchange platform that keeps track of existing knowledge and shares new knowledge developments on the topic of circularity in global value chains and related impacts on LMICs, as well as guide knowledge development by contributing to a global knowledge agenda fed by policy agenda's.

Improve value chain monitoring through increased transparency and traceability

Transparency and traceability is currently inadequate in most value chains, making it difficult to monitor trade flows and manage sustainability risks. Challenges include the current monitoring focus on the formal sector, little insight into second-hand trade and South–South trade, and lack of downstream value chain transparency. More and better quality data are urgently needed to set and monitor meaningful sustainability standards. This includes monitoring and reporting on the progress made on more than environmental

indicators (e.g. in terms of human rights, labour standards and gender equality), and beyond first-tier suppliers or business partners. Opportunities also lie in revisiting definitions on waste and scrap, second-hand goods, and goods for refurbishment and remanufacturing (Yamaguchi, 2021) and a revision of the World Customs Organization's Harmonized System (WCO HS) codes to better distinguish between these types of materials and products traded (Brink et al., 2021b). Finally, better labelling and product passports for better supply chain traceability can improve downstream value chain transparency (Brink et al., 2021b; PACE, 2021c).

4.3 Integrate the circular economy in existing policies and programmes

There are already many policies and programmes, both in the Netherlands and at EU level, that can also be used to address international impacts of the circular economy transition, thereby mitigating potential risks and seizing opportunities for achieving the SDGs in partner countries.
This includes integrating the circular economy into the development cooperation strategies that Netherlands has with different developing countries. However, this is not limited to foreign policies on trade and development cooperation, but also holds for domestic circular economy policies. Furthermore, this is not limited to national policies, but also requires discussions at an EU or global level (e.g. World Trade Organization). This section discusses some prime examples of policies and programmes where adding a circular economy dimension has added value for addressing international impacts.

Support the circular economy through trade policies

As international trade links national circular economy policies with the related impacts in LMICs, trade policies are central to creating a positive impact abroad (Kettunen et al., 2019; Van der Ven, 2020; Yamaguchi, 2021). This is also included in the new EU trade policy adopted in February 2021, which reflects the ambition 'to ensure that trade tools accompany and support a global transition towards a climate-neutral economy, including accelerating investments in clean energy and promoting value chains that are circular, responsible and sustainable' (EC, 2021).

EU trade policy measures, such as EU free-trade agreements (FTAs), can be used more proactively to support a more inclusive circular economy transition in global value chains, for example by including stronger provisions in future FTAs, as well as integrating circular aspects and objectives into the enhanced implementation, monitoring and enforcement of existing FTAs (Ashraf and Van Seters, 2021). The World Trade Organization could also play a role in advancing an inclusive circular economy transition (Van der Ven, 2020; Bellmann, 2021).

The lack of commonly recognised circular economy standards forms a barrier for trade. Therefore, the development and harmonisation of such standards needs to be promoted,

such as those related to material content, recyclability, reparability, sustainable production, material quality and product quality. This includes international harmonisation of definitions and quality standards (including global eco-labelling schemes), both upstream and downstream value chains (Kettunen et al., 2019; Van der Ven, 2020).

Extend the scope of Extended Producer Responsibility policy to also include second-hand products exported to destinations outside the European Union

Extended Producer Responsibility (EPR) is a policy approach in which the responsibility of producers is extended to also include the post-consumer stage of a product's lifecycle. However, producers, or in many cases importers, are only financially responsible for the collection and treatment of products reaching an end-of-life stage within national borders.[8] As soon as second-hand products are exported to countries where EPR is not implemented (e.g. outside the European Union), their responsibility stops. At the same time, many LMICs lack the capacity and policy frameworks to properly manage these products once they reach their end-of-life.

Expanding the scope of EPR to second-hand products exported to LMICs could help address adverse environmental and socio-economic impacts at the end-of-life product stage in these countries (Simons and Iwundu, 2017; Dimitropoulos et al., 2021; Tijm et al., 2021). This entails producers also having responsibility for the end-of-life collection and treatment costs of second-hand products that are exported. That would lead to direct benefits for LMICs in the form of shifting the financial burden of end-of-life product collection and treatment from local communities to producers, and facilitating the environmentally sustainable treatment of end-of-life products. In addition, such an extension could support the development of secondary material markets, and reinforce producers' incentives to reduce the post-consumer treatment costs per product unit, thereby possibly promoting eco-design. To be effective, however, such efforts for extending the EPR's scope should be co-ordinated on the EU level. In this way, a level playing field could be ensured within the EU Single Market.

Extending EPR to include second-hand products exported to countries outside the European Union requires integrating EPR in international trade flows, and developing a legal framework and an enabling environment to support the private sector and governments in destination countries in monitoring second-hand and end-of-life product flows and in using EPR finances for the collection and proper treatment of post-consumer products. In the shorter term, public bodies, Producer Responsibility Organisations and private stakeholders in the Netherlands and the rest of the European Union can support LMICs in setting up their own EPR systems. A potentially effective way of doing so would be through sharing knowledge and expertise gained from their long experience with implementing

[8] In practice, the scope of producers' financial responsibility is further restricted to the share of products stipulated by EPR separate collection targets. For the remaining products (i.e. those mixed with other household waste, littered or dumped), responsibility continues to lie with local authorities.

EPR. Knowledge-sharing could also be accompanied by financial support for investments in waste collection and recycling infrastructure (Tijm et al., 2021).

Strengthen the role of circular economy in Responsible Business Conduct agreements

Creating responsible supply chains of material resources is addressed in a number of voluntary sector agreements on International Responsible Business Conduct (IRBC). This instrument is part of the government policy mix to promote IRBC (BZ, 2020), giving a combination of voluntary and mandatory interventions for transparent, responsible and sustainable supply chains. This makes these agreements a useful instrument to address international impacts of the circular economy.

The voluntary agreements are taking shape in a multi-stakeholder setting, and set out how companies are working together with civil society organisations and government to prevent abuses in their supply chains in the areas of human rights, labour rights and the environment. They are based on the OECD good practice guidelines for multinationals, the UN guiding principles on business and human rights, and the ILO international labour standards (see IRBC website). By adhering to these principles and guidelines, companies can contribute to the realisation of SDGs in sourcing countries. The agreements are also important to implement due diligence principles for supply chains. A new EU Directive on Corporate Sustainability Due Diligence is under way, which requires large companies to identify and, where necessary, prevent, end or mitigate adverse impacts of their activities on human rights (e.g. child labour and exploitation of workers), and on the environment (e.g. pollution and biodiversity loss) (EC, 2022).

Addressing the circular economy in the sector agreements provides entry points for more specific commitments and targets, which can be used to further the circular economy transition agendas on manufacturing, construction and consumer goods. For example, the agreements on responsible gold and sustainable garments and textiles explicitly intend to contribute to the creation of a circular economy, and e-waste is mentioned as a valuable source of metals in the gold agreement. Furthermore, the agreement on promoting sustainable forestry focuses on sustainable forest management, which is a precondition for labelling wood as a renewable resource for the circular ambitions in the construction sector. Within the agreement for the metals sector, there is a working group active on building responsible supply chains for secondary materials. A first step is to map secondary supply chains to identify new actors that could join the agreement.

The evaluation of IRBC agreements that were started between 2014 and 2019 concludes that most agreements were successful in raising awareness about due diligence, support learning and facilitate company compliance to the general IRBC targets (Bitzer et al., 2020). However, progress on due diligence was overall too limited to identify concrete impacts in the supply chains. Moreover, the reach and sectoral coverage of several IRBC agreements was limited. Recommendations include improving monitoring and reporting on the progress in due diligence, and establishing clear minimum standards on concrete

deliverables to help realise the general expectations for a circular economy. These recommendations can also be used for strengthening the relationship with circular economy impacts. Addressing impacts downstream of international supply chains will receive explicit attention in new agreements that are currently under negotiation, specifically on renewable energy and on the garments and textile sector.

Incorporate the circular economy in the action plan policy coherence for development

The action plan policy coherence for development (PCD) seeks to take into account the objectives of development cooperation in foreign and domestic policies that are likely to have an impact on developing countries. PCD aims at minimising contradictions and building synergies between national policies and development cooperation, with a specific focus on achieving the SDGs.

The current action plan includes goals, policy actions and indicators linked to the SDGs focusing on the following five priority areas: combatting tax evasion and avoidance, development-friendly trade agreements, development-friendly investment regime; increasing sustainability of production and trade, and combatting climate change (Ministry of Foreign Affairs, 2018b). Although, in theory, several themes have a strong link to the circular economy, the action plan does not yet make the link to the Dutch circular economy ambitions and strategies.

The revision of the action agenda, foreseen for 2022, provides an opportunity to improve coherence between national circular economy policies and foreign policies on trade and development cooperation. This includes specific attention for potential impacts, sharing knowledge and lessons learned, as well as capacity building. Options include adding a specific goal that aims for a circular economy without negative impact. Such a goal could include specific actions to promote positive outcomes on the SDGs, and help LMICs in addressing potential negative impacts and developing and strengthening their own circular economy. The circular economy could also be added as one of the policy actions within an existing overarching goal. Increasing sustainability of production and trade is an obvious candidate. Finally, the circular economy could be integrated into existing policy actions, including actions under the goals on trade agreements and sustainability of production and trade, while the goal on climate change could also benefit from a link with the circular economy.

Address international impacts in circular economy targets

Achieving a circular economy requires a set of targets that address the input, use and loss of raw materials, as well as the impacts of raw material use (Kishna et al., 2019). In doing so, it makes sense to distinguish between targets that focus on the more efficient use of raw materials, i.e. by narrowing, slowing and closing loops (circularity targets) and targets that state what societal goals are to be achieved with the circular economy, i.e. by focusing on the environmental and socio-economic impacts of raw material use (impact targets) (Hanemaaijer et al., 2021b).

The environmental and socio-economic impacts of resource use are most effectively addressed at the level of product groups (e.g. food, electronics, textiles). By looking at a product group rather than individual resources or materials, insights can be gained into and control over the product group's impacts throughout the production chain and product life cycle, including impacts abroad. Furthermore, circularity and impact targets need to be developed in relation to each other. For example, minimum requirements for secondary material content in new clothing boosts recycling, but without environmental standards and quality criteria, positive impact in the LMICs where most of the recycling and production is likely to take place is not guaranteed. At the same time, the challenge is to arrive at a limited and thus manageable set of targets. The environmental and socio-economic impacts that a circular economy should at the very least address, and for which it makes sense to formulate impact targets, include reducing climate change, loss of biodiversity, pollution of air, water and soil, and the supply risks for resources (Hanemaaijer et al., 2021b).

This does not mean that other impacts are not relevant. For examples, in several steps in the value chain, issues such as poverty, inequality and decent work in LMICs, are a challenge in the current linear economy as well as in a circular economy. Although these issues are not directly priorities of the Dutch circular economy transition, they are part of the UN Sustainable Development Goals to which the Netherlands has committed itself and that are a key priority of the Dutch Ministry of Foreign Affairs. Therefore, it is relevant to include such issues as a precondition of the transition towards a circular economy (Hanemaaijer et al., 2021b). Such preconditions could be included in, for example, trade policy, Responsible Business Conduct agreements, and the action plan policy coherence for development (PCD).

4.4 Involve stakeholders from low- and middle-income countries

Involve stakeholders in low- and middle-income countries in policy design and implementation

Engaging in dialogue with stakeholders from LMICs can contribute to a better understanding of their circular economy-related challenges and opportunities, and how these can be taken into account in national circular economy-related policies (Ashraf and Van Seters, 2021). For example, often discussions around global trade in second-hand products, scrap and waste centre around a narrative on exports and do not consider the importing parties. Successful policy outcomes require an understanding of what motivates importers and, here, policy discussions could benefit from input by stakeholders operating in LMICs (Brink et al., 2021b).

Relevant stakeholders include policymakers from different policy domains, such as economic development, finance and trade, but also stakeholders from business, NGOs and academia. It is important to involve social partners to match the demand for and supply of

skills, and equity outcomes, including gender equality (ILO, 2018). The current dialogue with regional initiatives and the announced support and knowledge-sharing on the circular economy in the Circular economy implementation programme 2021–2023 can assist all this.

In terms of labour-related impacts, much can be learned from organisations that represent both formal and informal workers in LMICs, regardless of whether they have a focus on circular economy (Brink et al., 2021a). Positive impacts on job creation and job quality as part of the circular economy transition calls for inclusion of actors from both the private and informal sector. While the latter can be challenging, associations for informal workers can play a role, such as national or local waste picker associations. Including civil society stakeholders can also help to strengthen and legitimise the chosen strategy, as these organisations can facilitate communication and capacity-building with workers and communities, and act as watchdogs to ensure people's rights are respected (Brink et al., 2021a).

Assist the sharing of knowledge and lessons learned, as well as capacity building

Through development cooperation and trade and investment promotion, LMICs could be supported in developing and implementing their national circular economy strategies and adapt to changing trade flows and product requirements (Ashraf and Van Seters, 2021; Barrie and Schröder, 2021; WBCSD, 2021).

This includes sharing lessons learned in development and implementation of Dutch circular economy plans. The short-term focus could be on policy reform to create an enabling policy environment for more circular and inclusive approaches and to avoid potential negative impacts (Preston et al., 2019). Medium and long-term focus could be on skills, technology and infrastructure (IRP, 2018). Support can also relate to the identification of the required skills, as this knowledge is lacking in many countries and regions (ILO, 2018; Circle Economy, 2020; IISD and SITRA, 2020). A knowledge platform, as proposed in Section 4.2, can aid such sharing of knowledge and experience. There can also be a role for the private sector, social partners and academia in skills development (Ashraf and Van Seters, 2021).

Another area of support is the strengthening collection, sorting and recycling infrastructure in LMICs, as significant investments in proper waste management are needed (PACE, 2021c, b, a). Development banks can play a role by providing seed funding or engaging in blended finance, which combines grants and loans for infrastructure development. This relates to both planning and the facilitation of investments. It is important to create incentives to guarantee long-term economic viability of waste management systems and infrastructures, for example through the establishment of an Extended Producer Responsibility Scheme. Technical support and access to finance can incentivise companies to adopt more circular business models.

Finally, stakeholders in LMICs can also be supported through capacity building programmes to be more effectively included in international processes (Ashraf and Van Seters, 2021). More broadly speaking, the discussions about the circular economy at EU level, such as in

current and future FTAs, and international level, such as the World Trade Organization, should also take account of the interests and concerns of LMICs (UNEP and IRP, 2020; Blot and Kettunen, 2021). This also includes involving stakeholders from LMICs in development and harmonisation of circular economy standards (Ashraf and Van Seters, 2021), as discussed in Section 4.2.

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