EU greenhouse gas footprint target

Effectiveness and implementation study

CE Delft

Contents

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Summary

Background

The European Union has ambitious goals for the transition to a climate-neutral and resource-efficient economy. Current climate policy already contributes significantly to this, particularly by focusing on territorial emissions by means of the *location principle*: greenhouse gas emissions are attributed to the country where they are released. At the same time, however, emissions outside the EU that are linked to European consumption remain largely out of sight. A European **greenhouse gas footprint target** (hereafter: footprint target), which links emissions to consumption, provides an opportunity to identify and specifically address this impact.

This study examines how a footprint target can effectively contribute to the climate transition. Our focus is solely on reducing greenhouse gases (not on material use or the impact on biodiversity) associated with European consumption (not production). In addition to examining the strategic and policy benefits, we also considered the building blocks needed to achieve such a target. In the long term, these insights can be used in a plea to the European Commission to include a footprint target in future EU policy.

Key questions

This study is divided into two main questions:

1. **Is it effective to formulate a European footprint target?**
   In other words: how could such a target theoretically encourage cost-effective circular measures that contribute to the global climate target, accelerate the transition, reduce transition costs, promote (global) justice, and strengthen the EU's strategic autonomy?
2. **More specifically, how could a European footprint target be designed and embedded in current and future EU policies?**

Approach

To answer the research questions, we conducted a literature review of ex-ante evaluations of the effects of footprint targets. In addition, we conducted eight interviews with policy officials both in the Netherlands and at EU level (DG Clima, DG Environment, JRC) and with experts in the field of national footprints (Concito and Swedish policy officers).
To gain insight into the methodology, we spoke with the PBL Netherlands Environmental Assessment Agency (Planbureau voor de Leefomgeving, PBL). All parties interviewed are listed in Annex B.

Findings

Although a meticulously designed footprint target has advantages, there are important aspects that require further consideration during the development process. Based on the literature review and discussions with policy makers, we conclude that a European footprint target could be effective. It could encourage Member States to adopt policy measures aimed at reducing their footprint that would not otherwise have been taken. It could ensure broader responsibility for climate policy, make the risk of leakage more visible, encourage cost-effective measures at both national and global level, and act as a lever for national circular targets. In practice, national footprint targets are scarcely materialising. Member States have little incentive to reduce chain emissions, because the costs are borne locally while the benefits are distributed internationally. As a result, attempts in countries such as Sweden and Denmark have not been implemented.

Although an EU-wide target could partially solve this problem by encouraging joint efforts, the use of a footprint target does not seem to fit easily into the current policy architecture at this stage. The concept conflicts with the prevailing location principle on which existing climate reporting and responsibility are based. In addition, the addition of a footprint target (whether binding or not) increases the complexity of existing climate policy, which may not enhance its effectiveness in the short term. Further elaboration of the footprint target in policies should take into account the interpretation that a footprint target could be seen as interference in the trade policies of other countries, with a view to reducing emissions resulting from European consumption. Any elaboration should also take due account of the interpretation that a footprint target could imply limiting the consumption of EU citizens.

Methodologically, a footprint target can be concretised on the basis of existing methodology for measuring consumption footprints. Research institutes such as the PBL and Eurostat have extensive experience and data at their disposal, making it feasible to measure broad trends. Nevertheless, there are still methodological discussions that hinder implementation, including data accuracy, demarcation and attribution. In the long term, if the opportunity arises to establish a footprint target as a formal policy objective, it is essential that the method is widely supported and further harmonised.

Recommendation

We recommend a phased approach. In the short term, the policy can be advanced further with stepwise measures aimed at transparency and awareness. Efforts can be made to enhance the policy rationale and build a coalition of like-minded countries that work jointly to build support and develop practical implementation of a footprint target. An effort could also be made to incorporate guiding principles and explore non-binding targets in EU policy. This will ensure that a solid foundation is in place at such time as a window of opportunity arises for a (binding) target, enabling quick and effective decision-making.

In concrete terms, it is important to invest in a widely supported and robust measurement method that enables further harmonisation and refinement and provides a basis for additional policy. Clear communication about the target, scope and application of the footprint concept is important to prevent misunderstandings and create support.
In addition, we recommend seeking cooperation with like-minded Member States within the EU on this issue.

1 Introduction

1.1 Background and reasoning

Both Dutch and international climate policy focuses primarily on reducing greenhouse gas emissions stemming from point sources of national sectors. By focusing on sustainable and circular production and consumption chains, we can contribute towards limiting our greenhouse gas footprint, reducing emissions and limiting the demand for scarce raw materials. However, emission reductions that take place outside our national borders are not considered national reductions. Measures focused on a circular economy, which also tend to reduce chains abroad, often do not contribute to achieving our climate goals, even though they are desirable from an international climate perspective. The Climate Plan 2025-2030 (Ministerie van KGG, 2025) states that the government will explore how a new chain emission reduction target for the European Union could effectively contribute to policy focused on climate and raw materials transition. A target such as this could lead to more cost-effective measures being taken, including circular measures, which could result in a reduction in greenhouse gas emissions and limit global warming.

This study by CE Delft, commissioned by the Ministry of Infrastructure and Water Management (Ministerie van Infrastructuur en Waterstaat, I&W), explores one such European greenhouse gas footprint target.

1.2 Aims and research questions

The aim of the study is to explore how an EU greenhouse gas footprint target can effectively contribute to policies focused on climate and raw materials transition. In addition, it is also important to clarify which building blocks or components are required to shape an EU greenhouse gas footprint target and to use this insight in a plea to the European Commission to set such a target.

This study is divided into two sub-questions:

1. Is it effective to set an EU greenhouse gas footprint target? In other words, how can an EU greenhouse gas footprint target stimulate cost-effective circular measures that contribute to the global climate target, accelerate the transition, reduce transition costs, promote global justice, and enhance the EU's strategic autonomy?
2. How can an EU greenhouse gas footprint target be concretised and embedded in current and future European policy?

1.3 Limitations

This study focuses specifically on a European target for consumption-related greenhouse gas emissions, expressed in CO_2 equivalents (CO_2eq). The production footprint falls outside the scope of this study, as the climate benefits of this have already been investigated by (CE Delft, 2018). Where this report refers to 'footprint' or 'footprint target', this always refers to the consumption-related greenhouse gas footprint, unless otherwise indicated.

Other forms of footprints, such as material use or biodiversity impact, are not considered in this study. The exact level or reduction percentage of a possible EU footprint target, for example a 50% reduction in year X, is also not considered; this report focuses on the policy relevance, design and embedding of such a target, not on its quantitative details.

1.4 Overview

Section 2 outlines the general rationale for the study and experiences with the footprint principle. Section 3 explores the value of a footprint target. This provides the basis for Section 4, which addresses the design of an EU footprint target and further points for consideration during implementation. In Section 5, we draw conclusions and make recommendations for possible next steps.

2 The current status of footprint targets

This section presents the current status with regard to footprint targets. Current climate policy is based on the location principle, in other words emissions stemming from point sources in a country or region. This reduces the incentive to invest in emission reductions in the chain or abroad. A footprint target does provide that incentive. Footprints can be divided into consumption and production footprints. A footprint can be measured using input-output data and LCA data. The PBL and CBS publish national footprint figures for the Netherlands. Projects have also been set up in other countries (at least in Denmark and Sweden) to measure the footprint. The aim of these projects is to link the consumption footprint to a reduction target on a more local scale, focusing in particular on encouraging consumers to consume more sustainably. In this study we also focus on the consumption footprint.

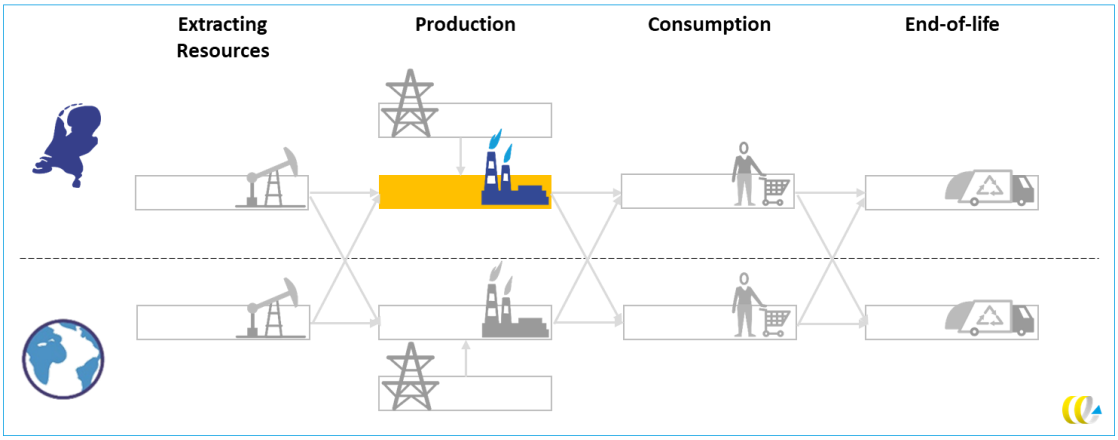
2.1 The location principle

The Paris Agreement sets international targets for reducing greenhouse gas emissions, with countries reporting on their contributions using the location principle. These contributions are laid down in Nationally Determined Contributions (NDCs): national targets for reducing emissions. For the European Union, this means a target of at least a 55% reduction in greenhouse gas emissions by 2030, compared to 1990 levels (EC, n.d.).

Figure 1 presents a simplified representation of the location principle applied to a single domestic industry. Under this principle, only greenhouse gas emissions occurring within the national borders of the territory are taken into account. This facilitates the allocation of emissions: ‘chimney emissions’ are relatively easy to measure and assign.

However, the location principle does not take into account emissions released during the extraction, production and import of raw materials or semi-finished products from abroad, nor does it take into account emissions that occur during consumption or waste processing outside the country of production. In other words, the location principle does not take into account the complexity of international chains.

Figure 1 – The location principle for production



This figure focusses on the production phase and therefore does not consider emissions from raw material extraction or from the consumption and waste phases (CE Delft, 2018).

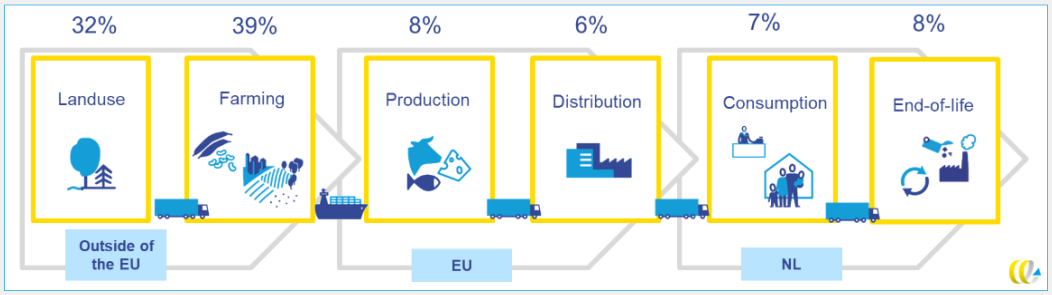
Policy based on the location principle focuses on emissions within a country's own territory. Emissions that occur outside national borders but are related to domestic consumption or production (known as indirect emissions) are not included. Emissions from imported goods are also not included, even though they may be the result of national economic activities. The location principle therefore only provides a limited picture of a country's actual climate impact.

Text box 1 – The food chain and the location principle

Illustrative example: the food chain and the location principle

In this example, we examine the incentives that climate targets based on the location principle provide for achieving greenhouse gas reductions in the food chain. The example has been simplified and is based on rough figures. When we consider a generic food chain from cultivation to processing, transport, sale, consumption and waste disposal, most greenhouse gas emissions occur at the beginning of this chain (Our World in Data, 2021). Hypothetically, it is quite possible that a large part of this chain for food consumed in the Netherlands is located outside the Netherlands, and therefore the greenhouse gas emissions are also generated outside the Netherlands. The potential climate benefits of policies aimed at reducing GHG emissions in the Netherlands are therefore limited to measures targeting sales and consumption, and the waste phase. In this example, 15% of greenhouse gas emissions are generated in the Netherlands.
One possible measure is to reduce food waste by consumers. Within the EU, measures could be taken in the processing and packaging stages. In total, less than a third of the emissions generated in Europe fall under the location principle.

Figure 2 – Overview of estimated CO_2-emissions for the value chain of agricultural products

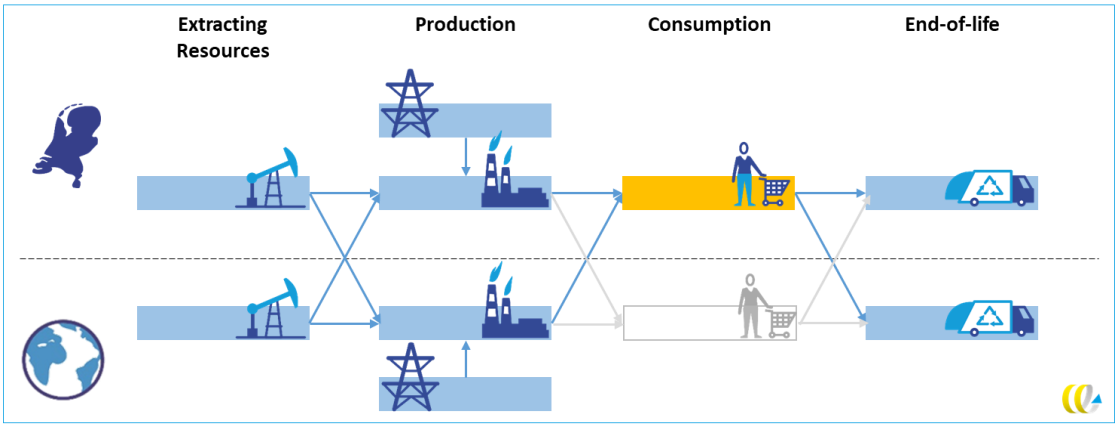


2.2 The footprint principle

The climate impact can also be illustrated using the footprint principle, which takes into account not only direct but also indirect greenhouse gas emissions. A distinction can be made between a consumption footprint and a production footprint. This study focuses on the consumption footprint, as presented in Figure 3.

In addition to direct national emissions, consumption also includes greenhouse gas emissions resulting from consumption in a country outside that country. The production footprint considers emissions across the entire (international) chain from the perspective of production. Emissions from earlier production stages (such as raw material extraction and transport) are also allocated to this production, even if these emissions are generated abroad. The main difference between this and the consumption footprint is that the production footprint also includes emissions from all production intended for consumption abroad (exports). This study focuses on the consumption footprint, which provides as complete a picture as possible of both direct and indirect emissions resulting from economic activities related to consumption in a region or country.

Figure 3 – The consumption footprint principle



Source: (CE Delft, 2018).

2.3 Experiences with a footprint target

Countries currently use the location principle as the basis for their climate targets, in accordance with the agreements set out in the Paris Agreement and the United Nations Framework Convention on Climate Change (UNFCCC). For many countries, the footprint is a well-known indicator and is often used for monitoring purposes. This is how Eurostat (2025) calculated the footprint for all 27 EU countries in 2022; the average footprint per European resident at that time was 10.7 tonnes of CO_2eq. Although the emphasis to date has been on monitoring, there are a number of initiatives at local and national level exploring how footprints can be translated into policy objectives. These initiatives are currently focused on the national level; formal implementation at EU level is still lacking. Some of these initiatives are explained in the following sections.

Denmark

In 2023, the Danish green think tank CONCITO published a report on the Danish consumption footprint based on the Getting the data right[1] project (Concito, 2023). In this report, they recommend proposing a 50% reduction in Denmark's consumption footprint with a view to achieving the targets of the Paris Agreement[2]. This recommendation was taken from the Danish Council on Climate Change (2023). The Danish Minister for Climate, Lars Aagaard, does not intend to adopt this recommendation for the time being and will continue to focus on reducing emissions through the location principle.
The Danish national climate policy therefore assumes that it is sufficient for each country to reduce its national emissions as much as possible. The Minister for Climate is primarily basing this approach on an analysis by two economists Fosgerau and Nesje (2025) from the University of Copenhagen. The central argument of the economists appears to be that a consumption-based target will shift the focus away from territorial objectives (see Section 3.3.1).

This would be contrary to the guiding principles set out in the Danish Climate Act (Danish Ministry of Climate Energy and Utilities, 2020). This states that the Danish climate targets must be achieved as cost-effectively as possible and that emission reduction measures must lead to domestic emission reductions while preventing emissions from being shifted abroad.

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[1] The Getting the data right project in Denmark developed the public BONSAI Climate Footprint Analyser, which enables policymakers to make informed decisions on climate mitigation. Aalborg University was responsible for developing the database, including using input-output data and LCA data.

[2] In Denmark, 13 tonnes of CO_2eq are emitted per person (figures for 2023). This means that with a reduction target of 50%, a Danish citizen may emit approximately 6.5 tonnes of CO_2eq. This target would reduce emissions per Danish citizen to the global average of 6 tonnes of CO_2eq. Nevertheless, according to the Paris Agreement, a citizen should emit an average of 3 tonnes of CO_2eq to remain within planetary boundaries. This means that a 50% reduction is necessary but not yet sufficient to comply with the Paris Agreement.

Sweden

In Sweden, the Stockholm Environment Institute (SEI) has developed the Consumption Compass (SEI, 2025a). This is an input-output data (EEIOA) based tool that uses the consumption footprint principle to assess the climate impact of Swedish households (SEI, 2025b). The tool is intended as an aid for local authorities to develop climate policies specifically aimed at reducing consumption-related emissions by citizens. The emphasis here is on behavioural change on the part of Swedish consumers, for example by consuming less or more sustainably, resulting in emission reductions elsewhere in the chain, both domestically and abroad.

Although there were earlier proposals to set a national footprint target in Sweden, this has not yet been included in national climate policy. The exact reason for the lack of political support has not been established[3], but it is obvious that there is reluctance to subject the economy to additional sustainability obligations. The issue of coordination also arises here: countries bear the costs of climate measures themselves, while the benefits are mainly realised internationally.

The Netherlands

In the Netherlands, consumption and production-related greenhouse gas footprints are calculated annually by the PBL Netherlands Environmental Assessment Agency (Planbureau voor de Leefomgeving, PBL) and Statistics Netherlands (Centraal Bureau voor de Statistiek, CBS) and published via the Compendium voor de leefomgeving (2025). These calculations use the multiregional input-output model (MRIO-FP), based on Eurostat's FIGARO database, supplemented with data on environmental pressure per region and industry.

The consumption footprint calculates the greenhouse gas emissions of total Dutch consumption (national final expenditure as defined in national accounts) in the Netherlands. The production footprint calculates the greenhouse gas emissions of total Dutch production destined for domestic final demand and companies and consumers abroad. In this report, we only discuss the consumption footprint.

The Dutch consumption footprint includes greenhouse gas emissions from the following sources (see also Figure 3):

- import of goods/services for consumers in the Netherlands;
- import of goods/services by Dutch producers for consumption in the Netherlands;
- Dutch producers catering for consumption in the Netherlands;
- consumers in the Netherlands.

[3] Personal communication with an employee of the Government Office (Swedish: Regeringskansliet).

The total footprint can be broken down into greenhouse gas emissions occurring within and outside the Netherlands, but also by product group (energy, meat, dairy, transport, furniture, clothing, etc.) and region of origin (Netherlands, EU-27, rest of Europe, China, US, Canada, Mexico, rest of the world). In addition, the consumption footprint can be allocated per inhabitant or per unit of GDP (Compendium voor de leefomgeving, 2025).

The footprints calculated by the PBL are already used in the Integral Circular Economy Report (ICER). According to PBL, this methodology also appears suitable for calculating, analysing and monitoring a potential EU footprint target. In the ICER 2025, the effects of specific policy measures are not expressed in terms of footprints.

2.4 Conclusion

Current climate policy is based on the location principle, in other words emissions stemming from point sources in a country or region. This reduces the incentive to invest in emission reductions in the chain or abroad. A footprint target does provide that incentive. In the EU (Eurostat), the Netherlands, Sweden and Denmark, initiatives are already underway to measure this footprint at the country level, or at the household, product or sector level. In Sweden and Denmark, there have been discussions about incorporating a footprint target into national policy, but there appears to be insufficient support for this.

3 Value of a footprint target

In this section, we discuss the value of a footprint target. We note that a footprint target can theoretically be effective if it encourages the EU, Member States or regions to adopt additional climate policies that would not have been adopted without such a target.

At national level, there is often a lack of incentive to reduce the footprint, because the costs are borne locally while the benefits are spread globally. An EU-wide target helps to overcome this coordination problem: Member States contribute collectively to reductions, which reduces unfair burden sharing and competitive disadvantages. It reveals chain emissions that are currently invisible, supports circular policies and strengthens support for measures that extend beyond national borders. Practical examples of circular measures, such as extending the lifespan of mobile phones, also demonstrate that footprint policies can be both climate-effective and economically attractive, provided they are supported by appropriate instruments.

At the same time, it is a politically and institutionally sensitive issue to introduce an additional guidance principle alongside the location principle, as this deviates from the usual approach whereby countries are only held responsible for emissions within their own borders. For example, there is doubt about the added value of a footprint target alongside existing climate targets. This is considered unnecessarily complex and could be regarded as disruptive. This leads to tensions within the European policy framework, as it can be interpreted as interference in foreign climate policy or restricting domestic consumption.

3.1 When is a footprint target effective?

Simply setting a target does not in itself lead to a reduction in greenhouse gas emissions. To be truly effective, a target must encourage Member States to adopt policy measures that contribute to achieving the target. A precondition for this is that the target has sufficient status (preferably binding, with possible sanctions for failure to achieve the target). In Text box 2, an illustrative example is used to explain how a footprint can generate more traction for chain policy. Circular and chain policies are already being implemented by governments and the EU. For example, the chain emission target stipulated in the European Renewable Energy Directive (RED III).[4] In addition, European Member States are investing in international climate finance, part of which is intended to

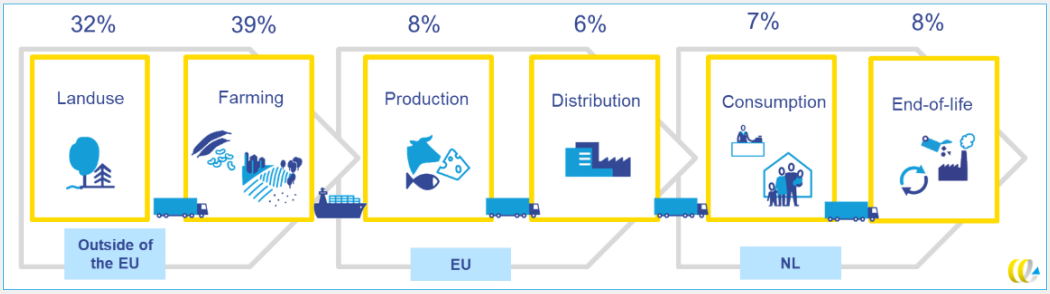
[4] RED III includes an ambition to achieve 29% renewable energy or a 14.5% reduction in chain emissions by 2030 for transport.

achieve emission reductions in third countries. A footprint target can encourage the adoption of additional policy measures that would otherwise lack sufficient support.

Text box 2 – Illustrative example: the food chain and the location principle versus the footprint principle

Text box 1 showed that less than a third of emissions fall within the scope of EU climate policy.

Figure 4 – Overview of estimated CO_2-emissions for the value chain of agricultural products



A much larger proportion of emissions outside the EU are caused by land use, livestock farming and the production of animal feed. Looking at the total footprint, the greatest climate gains can be achieved by reducing local greenhouse gas emissions elsewhere in the chain, but outside the Netherlands and the EU.

One possible intervention to reduce greenhouse gas emissions throughout the chain is to partially switch from animal to plant-based proteins. This could be achieved through campaigns or standards for supermarkets, for example. On average, approximately 6 kilograms of plant protein are needed to produce 1 kilogram of animal protein, and completely replacing meat and dairy with plant-based products reduces greenhouse gas emissions by 47% and land use by 41-50%[5]. If these greenhouse gas emissions occur mainly outside the Netherlands, any Dutch policy to switch to more plant-based proteins will mainly have an impact on indirect greenhouse gas emissions outside the Netherlands. A footprint makes the effects of efforts to reduce chain emissions visible.

3.2 Advantages of a footprint target

This section elaborates on four arguments that support the effectiveness and desirability of a footprint target.

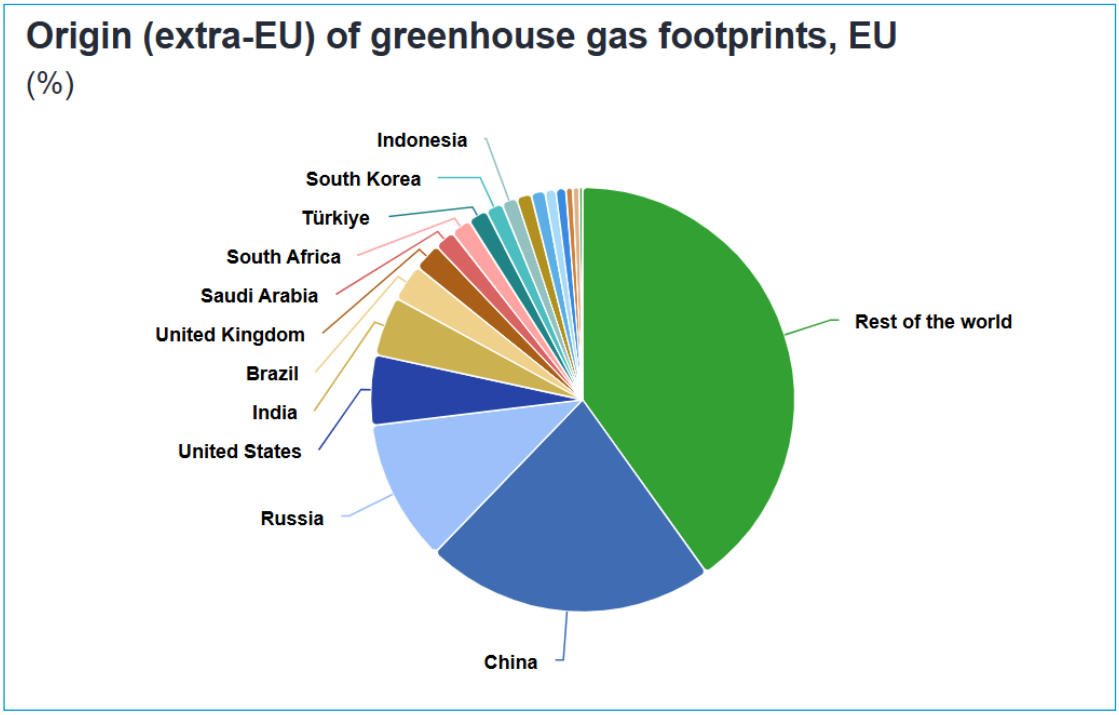
3.2.1 Broader responsibility for climate policy

In 2022, approximately 39% of greenhouse gas emissions for European consumption and production took place outside the EU (Eurostat, 2025). This means that the location principle does not take into account slightly less than half of the greenhouse gas emissions for which the EU can be held responsible (see Text box 1). This accounts for approximately 22% of emissions in China, 11% in Russia, 5% in the US and 40% in

[5] Sustainability protein transition - Protein Trends

non-G20 countries. Compared to 2021, emissions from China and the US increased by 14 and 27% respectively, while those from Russia decreased by 12% (Eurostat, 2025).

Figure 5 – Sources of the greenhouse gas emissions in the EU footprint, 2022



Source: (Eurostat, 2025).

It can be argued that if every country adhered to the Paris Agreement, they would all would be committed to reducing emissions and greening production. Emissions from all countries would then decrease, which would result in a reduction in the footprint of the Netherlands or the EU. In this case, there would be no need to focus on foreign chain emissions. However, it seems overly optimistic to assume that every country will implement the climate policy prescribed by the Paris Agreement to the same extent.

In its Emissions Gap Report 2024, UNEP (2024) has documented that the sum of the national climate targets of all countries in the world is not enough to bring us anywhere near the 1.5-degree target. When looking beyond the policies that have been proposed and focusing solely on the climate policies that have actually been adopted by individual countries, the 1.5-degree target seems even further out of reach. Moreover, although the Paris Agreement is a binding international treaty, countries can withdraw from it.
The second largest emitter in the world, the United States, has withdrawn from the Paris Agreement. Therefore, the assumption that every country will implement the climate policy prescribed by the Paris Agreement to the same extent seems overly optimistic (Weidema & Lilleøre, 2025).

In addition, there is some debate as to whether all countries have an equal responsibility to reduce emissions. While climate policy is generally based on emissions within national borders (the location principle), the footprint principle points to a different distribution of responsibility. For example, the Netherlands and the European Union have a relatively large consumption footprint. Research shows that the average Dutch lifestyle has an ecological impact worldwide that is equivalent to the use of approximately 3.6 Earths, if everyone on Earth lived like this (Ministerie van I&W, 2023). For the average EU consumer, this equates to 2.8 Earths (WWF, 2019). This implies a greater responsibility to contribute to global solutions compared to countries with a lower consumption footprint.

3.2.2 Encouraging cost-effective policies at global level

Current climate policy is based on territorial emissions, with reduction targets applying to greenhouse gases emitted within national borders. Within this framework, countries aim to achieve the greatest possible reduction in CO_2 emissions at the lowest possible social cost, but only within their own territory. Although this is rational from a national perspective, it does not necessarily lead to the most cost-effective outcome on a global scale.

From a global economic perspective, it is more efficient to deploy climate resources where the greatest emission reductions per euro can be achieved. A footprint approach – which also takes into account emissions from international production chains – shifts the focus from ‘where are emissions generated?’ to ‘where are they caused?’. This creates an incentive for countries and regions to contribute to emission reductions outside their own borders if this is more effective in both social and economic terms.

Text box 2 provides an example that highlights that, due to globalisation, the footprint of a consumer good (such as agricultural products) mainly falls outside the country where it is ultimately used. This means that a significant proportion of the reduction potential lies in sectors or regions over which the Netherlands or the EU can exert indirect influence. By placing this broader chain perspective at the heart of policy-making, a footprint target could encourage countries to invest strategically in reduction measures along the entire value chain, including where they are relatively inexpensive and have a significant impact.

3.2.3 It could stimulate circular measures that also yield economic benefits for the Netherlands.

An EU footprint target could also stimulate national circular measures that deliver both climate gains and economic benefits, but only if these measures have an impact on the chain from outside the EU to the Netherlands. Policies could be developed on this basis, for example aimed at extending the lifespan of products through repair and reuse (see Text box 3). This would result in lower emissions, more local jobs, savings for households and less pressure on raw material extraction and production outside the EU, where the environmental impact is often greatest.

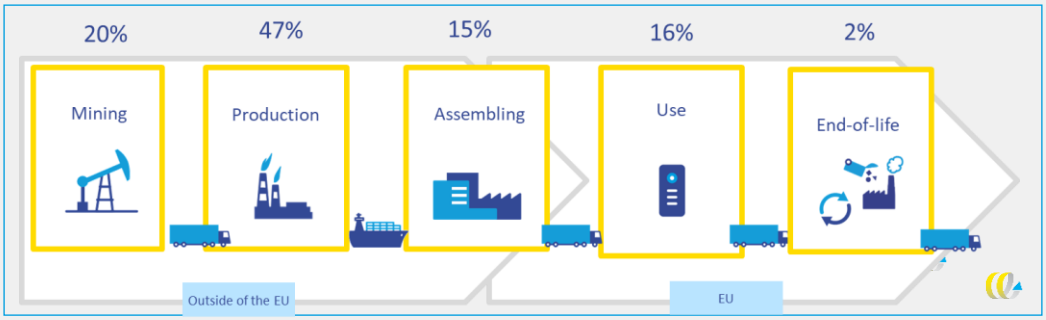
Text box 3 – Example of lifespan extension

Circular policy measures aimed at extending the lifespan of products – such as a mandatory share of second-hand or refurbished goods, reduced VAT rates on repairs and incentives for reuse – contribute to the objectives of an EU footprint policy. A study by CE Delft (2025) into extending the lifespan of electronic devices distinguishes the following effects:

1. **Increased added value and the creation of extra jobs for the Dutch economy**
   For the production of new devices, the largest part of the value chain takes place outside the Netherlands. As a result, purchases of new products generate relatively little economic activity or employment within the Dutch economy. Repair and reuse, on the other hand, usually take place locally, thereby contributing directly to domestic added value.
2. **Savings for households**
   By repairing devices such as mobile phones instead of replacing them, consumers save on purchase costs and extend the service life of their products.
3. **Raw material savings and lower climate impact**
   Longer use of electronic devices leads to less demand for new products, resulting in savings in raw materials and a lower climate impact. This is particularly relevant given the growing geopolitical dependence on critical raw materials.

A Life Cycle Assessment (LCA) of the Fairphone 5 mobile phone carried out by the Fraunhofer Institute shows that 78% of greenhouse gas emissions over the entire life cycle occur during the production of the phone, which mainly takes place in China (Sánchez et al., 2024). Transport to Europe and telephone use account for 7% and 16% of total greenhouse gas emissions, respectively.

Figure 6 – Overview of estimated CO_2-emission in the value chain of a Fairphone



A Fairphone 5 lasts an average of three years and emits ~42 kg CO_2eq across the entire chain (this mainly concerns the extraction of materials, production and use of the Fairphone). When a completely new mobile phone is purchased due to defects or end of life, this costs the consumer around €599 and emits another 42 kg of CO_2 in order to be able to use a phone for another three years (Fairphone, n.d.). However, replacing the broken parts (display €99, battery €40) significantly reduces the cost to the consumer and leads to a 40% reduction in CO_2eq emissions. These emissions mainly occur outside the EU, because the components are manufactured outside the EU. The Fairphone was designed with the aim of making it easy to replace broken parts. Increasing the repairability of mobile phones or other household appliances clearly has the desired impact on a footprint, but to enable repair, products must be designed according to 'design for repair' principles. In addition to the labour required for the repair (in the Netherlands), innovation is also needed to design other products in a circular manner or according to 'design for repair' principles. This is a role that is/can be effectively fulfilled in the Netherlands.

As such, an EU footprint target could serve as a lever for achieving national circularity targets (see Text box 4). It is important to note, however, that some circular measures such as encouraging repairs already have clear benefits for society. Although this is also the case without a footprint target, a footprint target can serve as an extra incentive to implement such circular policies.

Text box 4 – Strengthening national circular targets

The National Circular Economy Programme 2023–2030 (NPCE) presents concrete targets and policy directions for making the Dutch economy circular (Ministerie van I&W, 2023). An EU footprint target could reinforce these targets by providing insight into chain emissions and creating policy scope for interventions beyond national borders.

1. **Reducing raw material use (narrow the loop)**
   The National Raw Materials Strategy (Nationale Grondstoffenstrategie) aims to increase the security of supply of critical raw materials in the medium term. As a result of the energy transition and geopolitical tensions, strategic autonomy in raw material chains is becoming increasingly important. At the same time, the negative impact of extraction and processing on people and the environment must be limited.

2. **Substitution**

   The NPCE aims to increase the use of renewable raw materials, including both secondary (recycled) materials and sustainably produced bio-based raw materials. This underpins the reduction in raw material use (narrow the loop) as formulated above.

3. **Extending the lifespan (slow the loop)**

   An important goal of the NPCE is to extend the lifespan of products and components through reuse, repair and refurbishment, among other things. A qualitative target has been formulated for 2030 to maximise the promotion of longer lifespans.

4. **High-quality processing (close the loop)**

   For municipal waste, a recycling target of 55% by 2025 and 60% by 2030 applies, in line with the EU Waste Framework Directive. In addition, the proportion of material recovery that can be considered realistic and ambitious is being studied. A footprint target can encourage studies (LCAs) that show when recycling leads to emission reductions

   – for example, when high-quality separation and processing prevent the need for new raw materials.

Figure 7 – Example of extending the lifespan of mobile phones and the associated CO_2 reduction

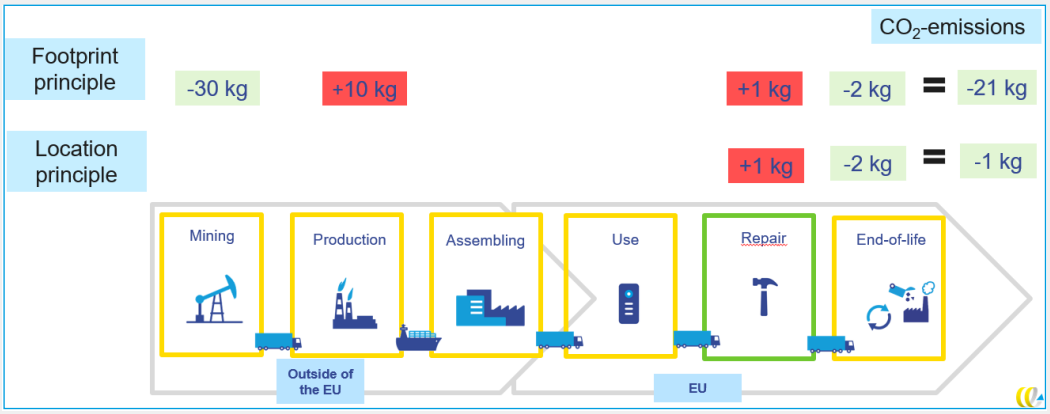


Figure 7 demonstrates that the footprint principle provides a stronger incentive to take circular measures. Extending the lifespan of mobile phones through repair only yields minor climate benefits in the EU (location principle). There will be a slight increase in CO_2 emissions as a result of carrying out the repairs, but a small proportion of the CO_2 emissions released during waste processing will be avoided. Outside the EU, however, there is a greater reduction in CO_2 emissions because a large proportion of CO_2 emissions from raw material extraction are avoided because only one component needs to be produced instead of a new phone. If the location principle is applied, then this climate benefit falls outside the scope; if the footprint principle is applied, however, this climate benefit is relevant. The footprint principle therefore provides a stronger incentive to encourage repairs.

3.2.4 Carbon leakage is presented more clearly

Focusing solely on the location principle may mean that polluting production does not become more sustainable but simply moves abroad (carbon leakage). Firstly, this is bad for the climate because a regional or national reduction in emissions is irrelevant if global emissions remain the same. It makes no difference to the climate where emissions occur. A footprint target encourages monitoring of emissions throughout the entire chain, thereby preventing leakage effects and providing a clearer picture compared to the location principle. When used together, the location principle and the footprint principle can reveal each other's blind spots.

Secondly, the leakage effect refers to the relocation of industry, and therefore jobs, that could undermine the EU's competitive position and strategic autonomy. However, strategic autonomy is a term that requires some nuance, because whether it is a benefit depends on both the product and the sector. The footprint target could encourage general protectionism without addressing specific supply chains where strategic autonomy is important (Van Bergeijk, 2024).

3.3 Disadvantages of a footprint target

In this section, we elaborate on the main arguments that cast doubt on the desirability of an EU footprint target. In Section 4, we return to focus points with regard to the methodology and preconditions for a footprint target.

3.3.1 Conceptual disadvantages

Added value

There are also doubts about the added value of a footprint target alongside existing climate policy. Critics argue that a consumption-based target will shift the focus away from territorial objectives (Fosgerau & Nesje, 2025). This is because climate policy has a coordination problem: climate measures mainly cost money for the country implementing them, but the benefits are spread globally. Countries therefore tend to hope that other countries will also bear their share of the costs by implementing climate policies to the same extent.

The crucial question is therefore whether a consumption-related target will actually strengthen or undermine global coordination. It is not sufficient to simply state that a consumption-related target reduces the footprint. According to economists, this proposal stems from a lack of confidence in the Paris Agreement and is therefore undermining it. Even if other countries follow suit with consumption-related targets, this will require considerable efforts beyond the Paris Agreement. These efforts could be better utilised to reinforce existing agreements.

Methodology

There are also methodological doubts. A footprint target is estimated using top-down methods based on national accounting and trade data. These figures are broadly accurate, but not at product level. For example, only 163 branches of industry are distinguished (Fosgerau & Nesje, 2025). The precise CO_2 content of specific goods is difficult to determine. It appears from interviews that, for example, the specific energy mix used by countries outside the EU for the production of goods is difficult to ascertain. The methodology therefore provides only a rough indication. This would also result in policy measures being overly broad and result in high social costs. In fact, based on a footprint target, non-specific restrictions could be imposed on trade without effectively reducing CO_2 emissions. It is therefore essential that accurate incentives are used to make the transition as painless as possible. Regulation via a consumption-related target counteracts this.

The target provides limited incentive to take action

A target can provide direction for policy development, but does not in itself guarantee behavioural change or policy shifts. As long as a target is not accompanied by concrete instruments, its impact will remain limited. An important prerequisite for this is that the target and the instruments are compatible with economic reality.

In practice, we see that many materials with high greenhouse gas intensity, such as metals, are largely imported and not extracted within the EU. For these goods, the current system lacks sufficient incentives to take action based on their CO_2 impact, even though clear economic incentives already exist in some markets. For example, there is currently a clear economic incentive for recycling metal. Current instruments (EU ETS) also provide an incentive for circularity of locally extracted materials, such as cement. There are also sectors where a market for low-carbon alternatives is still insufficiently developed. Plastic recycling is one example of this. Further development of policy instruments seems more effective in this regard, such as stimulating the supply of plastic recycling and stimulating demand with a mandatory recycled content requirement. A footprint target without such instruments offers little concrete scope for action by market players.

3.3.2 Political drawbacks

The added value of a footprint target is not always recognised: national governments and sectors already have a range of policy instruments and targets at their disposal, which means that an additional target may be perceived as redundant or complex.
In the worst-case scenario, a footprint target could even lead to political resistance and be used to call into question the existing system for territorial emissions. Without broad support, there is a risk that the proposal will sow division rather than create synergy.

In addition, a footprint target could also lead to tensions within European policy.
On the one hand, it implies interference in the foreign policy of other countries with a view to reducing emissions resulting from European consumption. On the other hand,

it encourages the interpretation that EU citizens' consumption itself should be restricted. The first approach could put pressure on trade relations, while the second is politically sensitive and generally difficult to justify to citizens and policymakers within the EU.

3.4 Conclusion

A footprint target can be effective if it leads to additional climate policy that would otherwise not be implemented. At the national level, there is often a lack of incentive to reduce chain emissions, because the costs are borne locally while the benefits are spread globally. An EU-wide target would overcome this coordination problem and promote fair burden sharing. It would reveal hidden emissions, support circular policies and strengthen support for cross-border measures.

At the same time, it would create tension because it deviates from the usual location principle. This raises doubt about the added value of a footprint target alongside existing climate targets. This is considered unnecessarily complex and could be regarded as disruptive. This leads to tensions within the European policy framework, as it can be interpreted as interference in foreign climate policy or restricting domestic consumption.

4 Design and implementation of a footprint target

This section explores the potential integration of footprint targets into the current policy architecture. In the short term, the added value lies mainly in taking specific follow-up steps in the areas of transparency, awareness and possibly the formulation of non-binding targets. At the same time, with a view to a possible future window of opportunity, it is desirable to prepare a conceptual outline of a footprint target so that swift and well-founded action can be taken if the opportunity arises.

This study identifies various focal points within the existing policy architecture that provide a basis for further policy development on the footprint. Examples include the revision of the EU Bioeconomy Strategy, the upcoming Circular Economy Act and the Environmental Action Plan. More operational instruments, such as quarterly reports based on the Swedish model and the incorporation of guiding principles, also provide opportunities to embed the footprint in policy without immediately opting for a binding target.

In addition, this study identifies a number of points for consideration in the design of a footprint target, should a window of opportunity arise in the future. This includes translating the objectives into national targets, determining the type of target and identifying the desired policy options.

These insights provide direction for a phased approach, focusing in the short term on raising awareness and exploring policy options, while working towards a more broadly supported and policy-effective target in the longer term.

4.1 The footprint target and current policy architecture

Although a footprint target may have added value, the key question remains whether – even if politically feasible – a footprint target would be effective within the current policy architecture. The addition of a footprint target, whether binding or not, increases the complexity of existing climate policy, which may not enhance its effectiveness in the short term.

Moreover, such a target raises politically sensitive interpretations: it could be seen as interference in the trade policy of producing countries or as regulating the consumption behaviour of EU citizens. Both interpretations could put pressure on social and diplomatic acceptance. Apart from this political feasibility, the effectiveness of a footprint target is limited as long as it is not supported by appropriate policy instruments.

In the short term, it is therefore better to look at measures aimed at transparency, awareness and perhaps non-binding targets. This enhancement is best achieved through a coalition of like-minded countries in order to strengthen support for and the practical implementation of a footprint target. In the long term, it is valuable to have a conceptual elaboration of a footprint target on hand for when a window of opportunity arises. Such an opportunity requires quick decision-making.

This study identifies various policy levers that could guide the further development of the footprint perspective. Certain elements within the existing policy architecture offer opportunities to gradually embed the footprint without immediately opting for a binding target. The following sections will explain these options in more detail.

4.1.1 Guiding principles

Following Denmark's example, it is possible to examine whether similar guiding principles as set out in the Danish Climate Act could be incorporated. This legally establishes that climate targets must be achieved in a cost-effective manner and that emission reduction measures must not lead to emissions being transferred abroad. This enshrines in law that a reduction in territorial emissions does not entail an increase in the footprint (Ministry of Environment of Denmark, 2020).

At European level, there is no comparable provision within the Climate Act. However, there are implicit points of reference. For example, European Climate Law does not contain any specific provisions or guiding principles to prevent the transfer of emissions abroad, but carbon leakage is a focus point in the policy of the EU Emissions Trading System (EU ETS). It is for this reason that measures, such as CBAM, are being taken. The incorporation of comparable guiding principles would address the risk of carbon leakage.

Text box 5 –Incorporating guiding principles

Incorporating guiding principles

In practice, if the EU wishes to incorporate guiding principles for *the prevention of carbon leakage* or *cost-effective global climate gains*, for example, there are three possible routes, each with its own implications and political sensitivities:

1. **Amending legislation**
   Guiding principles can be legally enshrined in existing or new EU regulations, such as the European Climate Law or the upcoming Circular Economy Act. This provides legal certainty, but requires approval from both the European Council and the European Parliament.
2. **Inclusion in strategic frameworks**
   Principles can be incorporated into policy strategies such as the 8th Environment Action Programme, the Bioeconomy Strategy or Council conclusions. This is politically more realistic and faster.
3. **Integration through monitoring or subsidy rules**
   Principles can be embedded as assessment criteria in implementation frameworks, such as indicators, reporting obligations or access to EU funding. This ensures functional anchoring without any legislative changes. The current Corporate Sustainability Reporting Directive (CSRD) is a good example of this.

4.1.2 European Climate Targets for 2040

On 2 July 2025, the European Commission presented its new climate target for 2040. In addition to being an important amendment to European Climate Law, this proposal is important with regard to updating the European NDC under the Paris Agreement (EC, 2025a). While an emissions reduction target of 90% is proposed, in line with previous announcements by the Commission, it remains uncertain whether there is sufficient political support for this. In this light, the likelihood of an additional footprint target being included in this package is low. The introduction of such a target deviates from current policy and is likely to meet with considerable resistance.

At the same time, Member States have the opportunity to take a position on this proposal, thereby bringing the issue to the fore. We recommend only advocating for the inclusion of a footprint target in European Climate Law if there appears to be support for this from a significant number of other Member States. In doing so, a strategic assessment must also be made as to whether input focused on a footprint target would unnecessarily complicate and/or delay negotiations on the 2040 climate target. There are currently time constraints to reach an agreement before COP30 in Belém. Given that a footprint target is not in line with existing international climate architecture, introducing it could potentially undermine the efforts of ambitious Member States advocating for the rapid adoption of the 2040 target. The reactions to the 2040 climate target can serve as an indication in the search

for like-minded Member States. This can be used to build a coalition of the willing in the longer term.

4.1.3 EU Bioeconomy Strategy

A review of the EU Bioeconomy Strategy is currently underway and is expected to be presented at the end of 2025 (EC, 2025b). This strategy provides the policy framework for promoting a sustainable, circular bioeconomy in the EU. The review provides an opportunity to incorporate the footprint as an additional indicator and control mechanism within bioeconomy policy.

4.1.4 Environmental Action Plan

A footprint target is probably most closely aligned with the Environmental Action Plan (EAP). The primary objective of the EAP is:

"…that by 2050 at the latest, people live well, within the planetary boundaries in a well-being economy where nothing is wasted, growth is regenerative, climate neutrality in the Union has been achieved and inequalities have been significantly reduced (EU, 2022)."

Based on this objective, this EAP has formulated six interrelated themes to focus on until 31 December 2030, such as climate mitigation and adaptation, the circular transition, reducing pollution, protecting and restoring biodiversity, and reducing the environmental and climate impact of production and consumption.

To achieve these objectives, Member States and regional and local authorities are explicitly called upon to significantly reduce the Union's material and consumption footprint in order to bring it within the limits of the planet as soon as possible, "including by introducing reduction targets for 2030 where appropriate" (EU, 2022).

Although this provides a strong substantive basis for further policy development on a footprint target, it must also be recognised that the EAP does not have legally binding status. It is a policy framework and strategic action programme, not a legislative instrument. The EAP cannot therefore impose binding targets or obligations on Member States. In practice, the EAP plays a signalling and coordinating role within the European policy architecture, but its actual implementation in legislation and regulations depend on separate European and national decision-making processes.

4.1.5 Circular Economy Act

The announced Circular Economy Act (CEA), which is expected to be presented by the European Commission in 2026 under the leadership of DG ENV, also provides a link to the footprint. It is likely that the CEA will build on the Ecodesign for Sustainable Products Regulation (ESPR), which introduces a new policy framework for product sustainability in the EU.

The Ecodesign legislation uses digital product passports to provide manufacturers and consumers with insight into relevant circularity and sustainability characteristics. A footprint can be aligned with this by linking specific requirements to greenhouse gas emissions across the entire life cycle of products, including emissions generated in international supply chains. This will allow the CEA to manage not only material flows but also the climate impact of European consumption.

4.1.6 Quarterly reports on the European footprint

To gain a better understanding of the development of greenhouse gas emissions resulting from European consumption, the European Union could consider following Sweden's example and publishing regular (preferably quarterly) reports on its greenhouse gas footprint. In Sweden, the Statistics Bureau (SCB) publishes quarterly figures on emissions by economic sector, based on environmental accounts. These reports provide policymakers with up-to-date and policy-relevant insights into emission trends, for example in households, transport and industry (SCB, 2024). Although the Swedish report focuses on territorial emissions and production-based emission calculations, a similar publication for consumption-based emissions should be possible (SCB, 2025).

A similar approach at EU level, with an explicit focus on consumption-related emissions, would provide valuable policy information. Such quarterly reports can serve as a policy feedback mechanism and contribute to transparency, policy coherence and strategic adjustments within European climate policy.

4.2 Methodological feasibility

For a footprint target, and an information tool, the calculation method must be methodologically feasible and politically supported. The current approach to territorial emissions is widely accepted and institutionally embedded, while calculating and allocating chain emissions across borders is considerably more complex. As a result, the addition of a footprint approach is often seen as difficult to implement or burdensome within the current policy framework. The feasibility of measuring, monitoring and evaluating the footprint must remain minimal in terms of the administrative burden for planning agencies or similar organisations. In addition, sector-level guidance must also take into account the availability of data and the administrative burden on businesses.

Current methods for calculating footprints – such as input-output analyses and chain analysis models – offer a useful starting point. The interpretation of footprints, and therefore the insights gained, does depend in part on the calculation method chosen. Although there is some consensus among model developers about the approach, the debate continues. Differences can therefore be expected in analyses that use an attribution or consequence approach, or between 'traditional' Consumption-Based Accounting (CBA) and Trade/Technology-Adjusted CBA (TCBA). Such differences would be analyses in which emissions from imports are recorded positively on the balance sheet

and emissions from exports negatively, and the carbon intensity of specific industries is also taken into account (Kander et al., 2015).

A recurring argument against a footprint target is that if all countries meet their national climate targets, this will automatically reduce imported emissions. In terms of quality, it can be said that, in practice, many countries do not yet have a national climate policy that is in line with the 1.5 or 2 degree target and that there is therefore no balance between emissions imports and exports (Climate Action Tracker, 2025). In addition, it is unclear how much responsibility (what share of the pie) different countries should bear in reducing greenhouse gas emissions. It is currently impossible to provide clear, quantitative and widely accepted substantiation, as this depends on the calculation method used.

For this reason, an alternative approach has been deliberately chosen within international climate policy, as laid down in the Paris Agreement. Instead of a global allocation of tasks, countries have agreed to set their own climate targets through Nationally Determined Contributions (NDCs) (UNFCCC, n.d.). These NDCs are based on the principle of "common but differentiated responsibilities and respective capabilities" (CBDR-RC), whereby each country contributes according to its own capabilities. There is no imposed allocation of reduction efforts across countries, but rather a process of periodic upgrading: every five years, countries must review their NDCs and make them more ambitious. This is called the ratchet mechanism and it is intended to lead to increasingly vigorous global action without the need for agreement on the precise allocation of emission reductions. This system increases the political feasibility of international cooperation.

A first version of the methodology does not need to be fully developed. The aim is to create a workable and explainable starting point that forms the basis for guidance, policy-making and subsequent refinement. The methodology can be further refined as experience and data quality improve. This strikes a balance between methodological soundness and practical applicability, ensuring that a footprint target can actually be applied to policy processes and can be followed by Member States and other stakeholders.

4.3 Format of the footprint target

In the short term, the added value lies mainly in improving the provision of information about the footprint and evaluating and guiding current policy based on its impact on the footprint. If a window of opportunity arises in the longer term for the implementation of a footprint target, there are a number of aspects to consider. In this section, we identify three aspects related to the format of the target that are relevant when developing it further.

4.3.1 Translation into a national target

To date, although the footprint of many countries is known and there are recommendations to adopt additional national targets (as in Denmark), no such target has been formally adopted anywhere. At national level, there is often insufficient incentive to address the reduction of the footprint in addition to reducing territorial emissions through the location principle. This is because climate measures usually entail local costs, while the benefits are felt globally. An EU-wide target could partly overcome this coordination problem. Member States will then know that their efforts are not only having an impact at national level, but are also contributing to a joint reduction at European level. This reduces the risk of countries lagging behind for fear of a competitive disadvantage compared to other Member States. A joint approach also boosts the EU's international market power, making it easier to apply sustainability requirements to imported products and reducing the risk of carbon leakage.

However, an EU-wide target requires a solid basis in terms of measurability and comparability. Whereas territorial emissions have been calculated in a uniform manner fordecades, measuring a footprint is more complex and less methodologically embedded. Although Eurostat publishes footprints at Member State level and countries such as Sweden and Denmark are developing additional insights at regional or sector-specific level, there are still considerable differences in approach and depth between these initiatives. For the introduction of an EU footprint target, it is therefore crucial that a widely supported, transparent and reproducible calculation method is available. Eurostat's existing methodology provides a useful starting point for this, but further refinement such as by product group or region is needed for national implementation and policy guidance. This requires not only methodological choices, but also improvements in the availability and quality of underlying data. Further development of the EU target could actually contribute to standardising these measurement practices and consequently to robust implementation.

In international climate policy (Paris) and current European climate policy, climate targets have been translated into national targets. In theory, a footprint target could be set for the entire EU. However, for the perspective for action by Member States, it is important that a national translation is also made. A national footprint target enables Member States to develop specific policies (for example, in sectors where the footprint is relatively large), monitor them and make adjustments. It also compels all Member States to take action and thus prevents free riding.

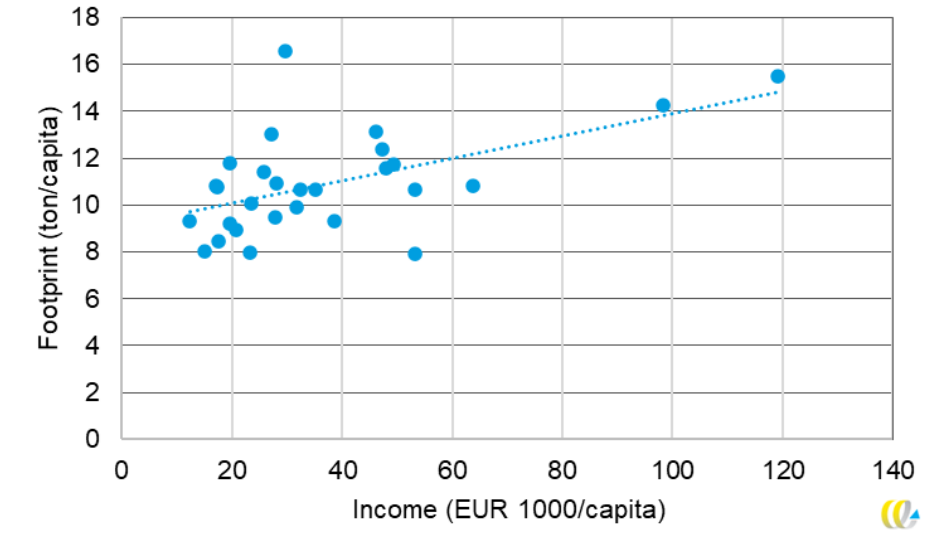
4.3.2 Definition options for a footprint target

The definition of the target will affect which countries need to make the greatest effort. We distinguish between three options:

- A relative target: This means, for example, that the footprint in year y must be reduced by x%. Countries with a large footprint are therefore required to reduce their emissions more than those with a small footprint.
- An absolute target for reduction: This means, for example, that all Member States must reduce their footprint by x kg in year y. Every country must make the same absolute effort. This may be easier for countries with a large footprint that have made little effort so far, than for countries that have already reduced their footprint as a result of making extra efforts.
- In the case of an absolute target focusing on a remaining footprint, that footprint must remain within planetary boundaries (3 tonnes per capita) in year y. Countries with a relatively small footprint therefore need to make the least effort.

Figure 8 highlights the consequences of the different ways of setting targets with regard to three countries (Cyprus, large footprint; the Netherlands, average footprint; Sweden, low footprint). We also note that there is a moderately positive correlation between income and footprint among EU countries: on average, poorer countries have smaller footprints than richer countries, but there are exceptions. This can be seen in Figure 8.

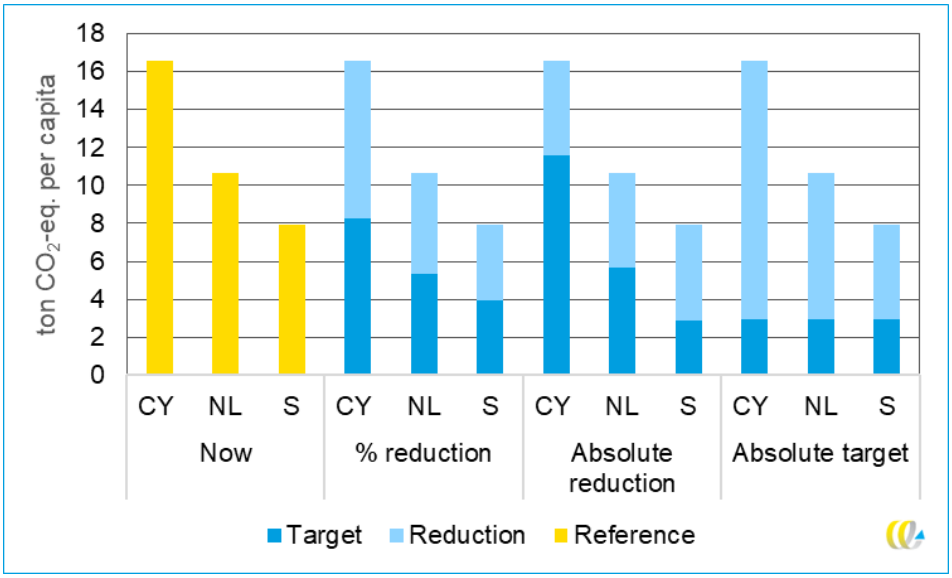
Figure 8 – Correlation between income and footprint, EU Member States, 2022



Source: (Eurostat, 2025) (CBS, 2023).

Geographical conditions also play a role, such as an isolated location (Cyprus: relatively low income, large footprint) or the availability of sustainable energy sources (Sweden: relatively high income, small footprint). These differences are also taken into account in current EU policy. For example, the targets for non-EU ETS emissions (Effort Sharing Regulation) are stricter for richer countries than for poorer countries (EC, 2025c). The NDC system also takes into account differences between countries.

Figure 9 – Illustrative visualisation of final targets

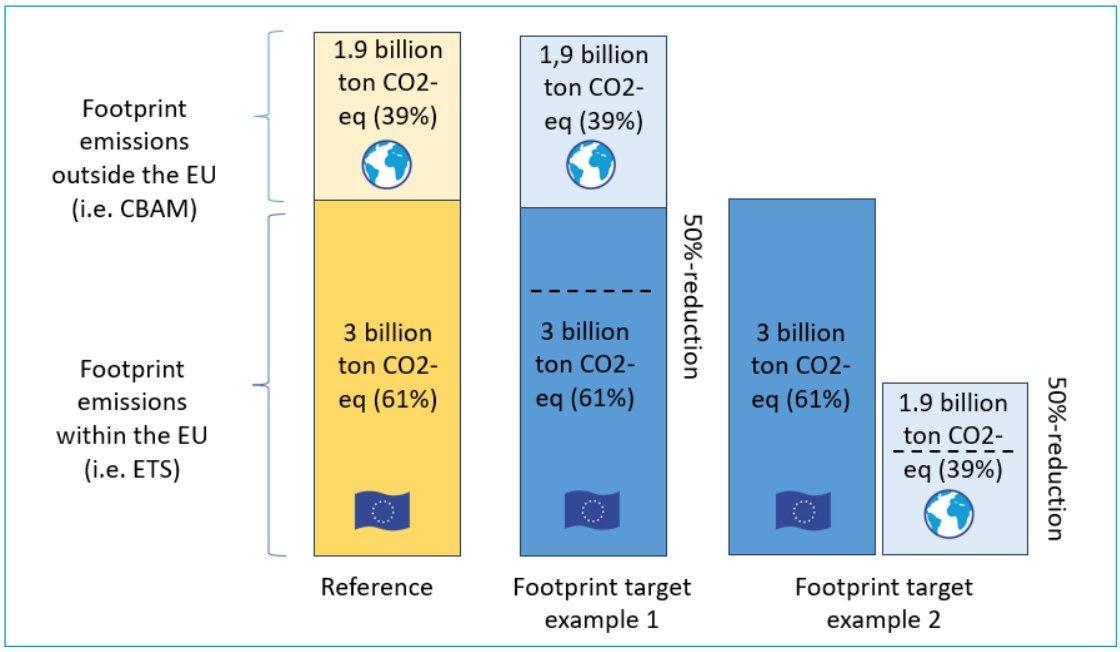


4.3.3 Guidance options for a footprint target

When formulating a footprint target, it is important to clarify exactly what counts as a reduction in the footprint. For example, halving the total footprint can be achieved in various ways: through further emission reductions within the EU or by making production chains outside the EU more sustainable. The way in which the demarcation is made – for example, how the line is drawn between location-based and footprint-based emissions – has direct policy implications.

Figure 10 shows that 39% of current EU footprint emissions are emitted outside the EU and 61% within the EU. As can be seen in the bar chart in footprint example 1, a 50% reduction in the footprint can be achieved by reducing emissions that are deposited *within the EU*. These emissions are currently already being reduced through current climate policies, such as the EU ETS. The added value of a footprint target lies precisely in encouraging emission reductions that are not yet receiving sufficient attention within current policy, namely emissions *outside the EU* but which are attributable to European consumption. To achieve this, it is important that the target in footprint example 1 is ambitious enough to also cover emissions that are deposited outside the EU. It is also possible to formulate a footprint target in such a way that it only focuses on emissions that are deposited outside the EU, as in footprint example 2.

Figure 10 – Examples of footprint targets and their effect on impact in the chain (within or outside the EU), 2022



Source: (Eurostat, 2022).

In addition, it is important that a footprint target is accompanied by an economic effect. This is the only way to ensure that the target is effective in policy terms: it must not only provide direction for emission reductions in global chains, but also actually stimulate behaviour, market forces and innovation. A binding target generally creates a stronger incentive to take policy measures than a non-binding target or indicator, which contributes to more effective policy. Without economic incentives, the likelihood of social and political support is low.

The economic impact depends on how the policy is structured, in other words, the policy mix. Although each mix delivers climate benefits, the economic effects vary. For instance, standardisation ensures that producers outside the EU invest in sustainability, which is reflected in the price for EU consumers. Climate financing aimed at increasing the sustainability of production outside the EU results in climate benefits, but places the costs mainly on the EU (Klein, 2024)[6]. On the other hand, policies aimed at extending the lifespan of products can yield considerable economic benefits for EU consumers (see Text box 3).

[6] Climate financing regulated under the Paris Agreement amounts to 100 billion dollars per year until 2030 and at least 300 billion from 2025 onwards.

4.4 Conclusion

In the short term, the footprint policy can be further advanced with steps aimed at transparency, awareness and perhaps non-binding targets. In the long term, it is valuable to have a conceptual elaboration of a footprint target on hand for when a window of opportunity arises. Such an opportunity requires quick decision-making.

That is precisely why this exploratory study into the footprint target has identified a number of starting points within the current policy architecture and highlighted a number of focus points in the design of such a target. These starting and focus points are relevant from a long-term perspective.

5 Conclusions and recommendations

Current European climate policy, which is focused on the location principle, does not provide sufficient incentive to reduce chain emissions outside Europe. Current policy focuses on territorial greenhouse gas emission targets. The advantage of this is that it gives countries the most control over emissions within their own territory. It is also easier to measure emissions using the location principle than using the footprint principle. However, policies based on this location principle provide an incentive to relocate production to countries with less stringent climate policies. As a result, it does not provide any incentive to reduce emissions earlier in the chain. This does not necessarily reduce global emissions.

An EU greenhouse gas footprint target would ensure that such broader responsibility is taken and contribute more effectively to reducing global CO_2 emissions. A footprint target makes the risk of leakage effects more transparent and therefore limits these effects. In addition, a footprint target encourages cost-effective measures at both national and global level, such as promoting repairs. In this way, the footprint target acts as a lever for national circular targets.

Due to coordination issues, national footprint targets are not gaining traction. At national level, there is often a lack of incentive to address the reduction of the carbon footprint, in addition to reducing territorial emissions through the location principle. This is because climate measures usually entail local costs, while the benefits are felt globally. As a result, countries that had previously explored national footprint targets did not proceed to actual implementation (Sweden and Denmark). An EU-wide target could partly overcome this coordination problem. Member States will then know that their efforts are not only having an impact at national level, but are also contributing to a joint reduction at European level.

Theoretically, a footprint target can contribute to more effective climate policy, provided that it leads to additional measures that would not otherwise be implemented. At national level, there is often a lack of structural incentives to tackle chain emissions, as the costs are borne locally while the benefits manifest themselves at global level. An EU-wide target could resolve this coordination issue by making emissions that are currently overlooked visible and thereby contributing to a fairer distribution of efforts. It also aligns with circular policy objectives and can generate public support for

international measures. At the same time, the concept conflicts with the prevailing location principle on which existing climate reporting and responsibility are based, which could create political and methodological friction. Therefore, for the time being, the use of a footprint target does not seem to fit easily within the current policy architecture.

A carbon footprint provides insight into international chain emissions; an associated target creates the incentive to develop policy instruments that can actually reduce the footprint. Insight into the carbon footprint strengthens the motivation to implement chain policy and enables stakeholders with this insight to take action to reduce these emissions efficiently. A footprint target is consistent with broader EU objectives such as planetary boundaries, the circular economy and sustainable production and consumption chains. The link between insight and target provides a policy and economic incentive to reduce chain emissions.

By focusing on policy instruments rather than the target, objections can be mitigated. Targeted reinforcement of existing and new policy instruments, such as improving price incentives, stimulating demand for circular alternatives and making the footprint impact of policy more explicit, offers scope for action without directly interfering in foreign emissions or imposing restrictions on consumption. This creates a policy approach that is more in line with economic and political realities, while at the same time effectively contributing to reducing the greenhouse gas footprint.

Concrete steps can already be taken towards a footprint policy. One option is to incorporate guiding principles and explore non-binding targets, thereby promoting transparency, awareness and policy direction. These steps are well aligned with broader EU objectives, such as respecting planetary boundaries, the transition to a circular economy, and making production and consumption chains more sustainable, as set out in programmes such as the Environmental Action Plan and the Circular Economy Act.

There is a robust methodological basis, but yet no complete consensus on measurement methods. Organisations such as the PBL and Eurostat have been publishing data on consumption-related emissions for many years. However, there is still no complete consensus at EU level on measurement methods, partly due to differences in data accuracy, demarcation and calculation principles. These differences are currently surmountable because the footprint is mainly used as an indicator. However, setting a formal target would increase the need for further harmonisation and clarification.

Various design choices are relevant for concrete policy embedding. For instance, it is desirable to translate the EU target into national targets, because most policy instruments are implemented at national level. A national translation makes it possible to develop and adjust specific policies. The choice between a relative or absolute target also has consequences for the allocation of efforts between Member States. The level of ambition also determines the extent to which reductions outside the EU are encouraged.

Recommendation

We recommend a phased approach. In the short term, the policy can be advanced further with step-wise measures aimed at transparency and awareness. Efforts can be made to enhance the policy rationale and build a coalition of like-minded countries that work jointly to build support and develop practical implementation of a footprint target. An effort could also be made to incorporate guiding principles and explore non-binding targets in EU policy. This will ensure that a solid foundation is in place as soon as a window of opportunity arises for a binding target, enabling quick and effective decision-making.

Invest in the further development of a widely accepted measurement method. The current methodology provides a solid basis, but setting a formal objective will increase the need for further harmonisation and clarification. Current techniques provide a general overview of emissions per country or sector and are therefore valuable for monitoring and trend analysis, but are not suitable for guiding individual companies. However, a robust methodology does reveal which part of the emissions originate outside the EU, thereby providing starting points for additional policy measures to be taken in addition to existing instruments such as the EU ETS. The PBL can play a role in the further development of the methodology from the Netherlands.

Invest in clear communication about the concept. The study shows that the idea of a footprint target evokes different images among policymakers and consumers, which can lead to confusion or resistance. For instance, it is often unclear whether the target is aimed at individual consumption or at systemic change in supply chains. There is also confusion about whether this concerns greenhouse gas emissions, material use, or both. A clear explanation of the target, scope and application of the concept is crucial in order to create support and enable a substantive discussion.

Actively seek cooperation with like-minded Member States. This makes it more likely that the European Council and European Commission will wish to pursue this issue further in the long term. Denmark and Sweden may be interesting countries to start with due to their previous efforts in this area.

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A Overview of EU policy

There are currently several developments underway at European level to stimulate the circular economy. Table 1 provides a non-exhaustive overview of current and future European climate policy. The most important policy initiatives include the Ecodesign for Sustainable Products Regulation (ESPR) and the Packaging and Packaging Waste Regulation (PPWR), which focus on sustainability requirements for products. The End of Life Vehicles Regulation also contains a proposal for a mandatory minimum percentage of recycled plastic in new vehicles. This can serve as an example to encourage standardisation at product level and thereby contribute to circular targets.

Table 1 – Overview of European policy framework with an impact on territorial and chain emissions

Instrument	Scope	Purpose	Status	Supervision and enforcement
EU Emissions Trading System (EU ETS)	Greenhouse gas emissions from the electricity sector, industry, aviation and maritime transport in ETS countries.	55% emission reduction by 2030; no more rights by 2040.	Current policy.	National (Dutch Emissions Authority (Nederlandse Emissieautoriteit)).
European Union Emissions Trading System 2 (ETS II)	Greenhouse gas emissions from mobility, the built environment and opt-in for agriculture in ETS countries.	42% emission reduction in 2005-2030.	Operational in 2027.	National (Dutch Emissions Authority (Nederlandse Emissieautoriteit)).
Carbon Border Adjustment Mechanism (CBAM)	Provisional: iron and steel, aluminium, fertilisers, electricity, hydrogen and cement from non-ETS countries.	Parties outside the ETS must pay a levy on CO_2 emissions to protect EU industry.	Commenced in 2023, levy effective from 2026.	
Renewable Energy Directive III (RED III) (Energy for transport)	Greenhouse gas emissions across the chain, mobility, global chain.	14.5% reduction in greenhouse gas intensity in the transport sector through the use of HE or at least 29% HE in the mobility sector.	From 2026.	National (Dutch Emissions Authority (Nederlandse Emissieautoriteit)).

Instrument	Scope	Purpose	Status	Supervision and enforcement
Corporate Sustainability Reporting Directive (CSRD)	'Sustainability issues' of large companies.	Encouraging companies to move towards sustainable investments.	Uncertain, postponed until 2027.	Dutch Authority for the Financial Markets (Autoriteit Financiële Markten, AFM) (listed companies).
Corporate Sustainability Due Diligence Directive (CSDDD)	Requirement for large companies to conduct thorough investigations into the impact on human rights and the environment throughout their entire value chain.	Identify, prevent and eliminate negative effects.	Expected in 2026.	
Ecodesign (Ecodesign for Sustainable Products Regulation, ESPR)	Ecological requirements (sustainability, repairability, recyclability) for the design of steel, aluminium, clothing, furniture, tyres and mattresses.	Currently: primarily focused on energy efficiency. Future: potentially more focused on circularity.	Long term: product information (Digital Product Passport), recycled content and availability of spare parts.	Human Environment and Transport Inspectorate (Inspectie Leefomgeving en Transport, ILT)
Packaging and Packaging Waste Regulation	Circular requirements for packaging on the European market (deposit, use of recycled materials).		Regulation has been adopted.	
End of Life Vehicles Directive (ELV)	Circular requirements for new cars on the European market (reuse, recycling, recovery).		Under negotiation with the European Commission.	
Critical Raw Materials Act (CRMA)	Ensuring the security of supply of critical raw materials.	Maximum 10% of strategic raw materials of annual consumption within the EU. 65% strategic raw materials from a single third country, 40% processing within the EU, 25% recycled within the EU.	Act has been in force since May 2024.	

B Parties interviewed

Table 2 – Overview of parties interviewed

Organisation	Name	Date
PBL Netherlands Environmental Assessment Agency (Planbureau voor de Leefomgeving, PBL)	Daan in 't Veld, Mark Roelfsema, Corjan Brink	6 May 2025
Concito Denemarken	Charlotte Louise Jensen	20 May 2025
EPA Sweden (Naturvårdsverket) *Swedish Environmental Protection Agency*	Björn Spak	3 June 2025
Ministry of Agriculture, Fisheries, Food Security and Nature (Ministerie van Landbouw, Visserij, Voedselzekerheid en Natuur, LVVN) and Ministry of Climate Policy and Green Growth (Ministerie van Klimaat en Groene Groei, KGG)	Ralph Brieskorn (KGG), Sarah Sijsen (LVVN), Paul Boeding (KGG)	5 June 2025
JRC	Jesús Marie Alquézar Sabadie	10 June 2025
DG CLIMA	Quentin Dupriez and Marie Le Mouel	17 June 2025
DG ENV	Florian Flachenecker	15 July 2025