

# Eco-Innovation Country Profile 2022: Sweden

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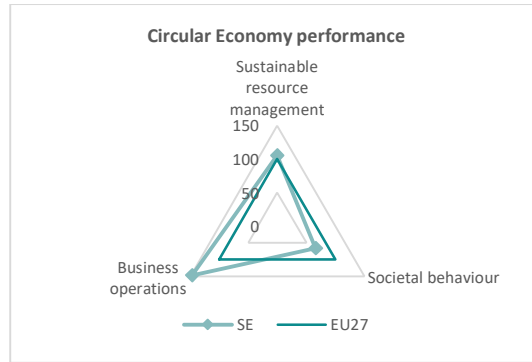
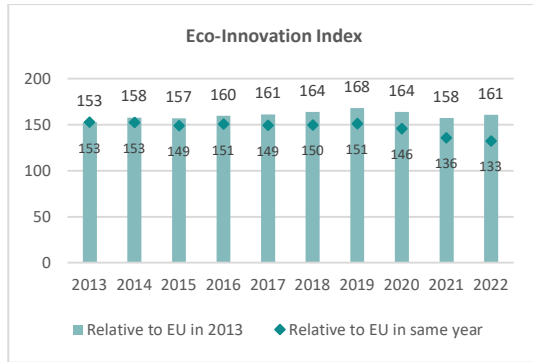
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### One-page country profile summary



Sweden belongs to the Eco-Innovation Leaders group. Over time, performance relative to the EU has decreased. Sweden performs on average across the three circular economy (CE) dimensions above the EU average.



Indicator performance	Policy aspects
<p>Sweden's relative strengths are in eco-innovation outputs, and its relative weaknesses are in resource efficiency outcomes. the strongest performing eco-innovation indicators are eco-innovation-related academic publications and GHG emissions productivity. The weakest performing eco-innovation indicators are material productivity and government environmental and energy R&amp;D appropriations and outlays.</p> <p>Sweden's performance on CE indicators shows relative strength in business operations and relative weakness in societal behaviours. The strongest performing CE indicators are the number of eco-labelled products and services and material footprint: domestic material consumption. The weakest performing CE indicators are the share of employees in the repair of computers and personal and household goods and resource productivity. <i>See Annex II and III for more details.</i></p>	<p>Sweden has a range of initiatives to support eco-innovation and circular economy. The National Strategy for Circular Economy and Action Plan for Circular Economy, sets the overall targets and measurements for circular economy in Sweden. The focal points for the transition include sustainable production and design, sustainable consumption, non-toxic and circular material cycles, and the promotion of innovative and circular business models. Strategies, action plans, and producer responsibility have been introduced in a variety of sectors.</p> <p>Circularity and innovation have gained increased momentum in regulation and also in the private and civil sector. Swedish consumers demand sustainable products, and businesses finds ways to implement new business models. But major challenges for Sweden are the lack of knowledge of funding opportunities, the vast material consumption, and the industries that are difficult to transit, such as forestry and mining.</p>

Eco-Innovation Index	Country performance (normalised score)	Relative to EU in 2022 (EU=100)
Inputs	0.744	135.3
Activities	0.544	163.5
Outputs	0.832	201.2
Resource efficiency outcomes	0.430	117.7
Socio-economic outcomes	0.603	144.2
Circular economy indicators	Country performance (normalised score)	Relative to EU in 2022 (EU=100)
Sustainable resource management	0.469	105.6
Societal behaviours	0.290	66.0
Business operations	0.553	146.9

## Executive summary

Sweden has scored 161 in the overall Eco-Innovation Index, making it one of the eco-innovation frontrunners. The country scores above average in sustainable resource management and business operations, but below in societal behaviours.

Circular economic developments in Sweden are primarily driven by the National Strategy for Circular Economy and the National Action Plan. The strategy and action plan set targets and measurements for most of the focal sectors in the EU's Circular Economy Action Plan (CEAP), including, textiles, plastics, bio-based raw material, food, construction, and critical minerals. Circular economy is also important in the consumption of goods, both public and private. 68% of all Swedes find sustainability important when buying goods, and green public procurement (GPP) has become important in the 2022 budget. Furthermore, circular business models are a part of public strategies, to accelerate the transition.

The large attention for circular economy is one of Sweden's most important drivers for eco-innovation and circular economy. However, the lack of information for business funding opportunities is a challenge for the creation of innovative and circular business models. Furthermore, the large forestry and mining industries makes circular waste management difficult.

The policy landscape for circular economy and eco-innovation is influenced by the overall strategy and action plan, and a national waste management plan, sector specific plans, and producer responsibility have all been developed. Different measurements have been made, including new plastic products that shall consist of 30% recycled plastic by 2030, a ban on single-use plastic products (from January 2022) the new 'Act on Climate Declarations' for new buildings will apply in 2022, and the reduction of food waste by 20% from 2020-2025.

As a response to the COVID-19 pandemic, the Recovery and Resilience Facility was developed to mitigate the economic and social impact of the pandemic in Europe. Sweden has gained EURO 3.3 billion in grants and has developed a plan where 44% will support climate objectives. The plan consists of five focus areas with the first area deals with green transition. However, the focus on circular economy in the Swedish Recovery and Resilience Plan is limited. The Plan mainly focus on reducing CO<sub>2</sub> emissions, creating jobs, housing, and digitalisation.

## 1.0 Introduction

Sweden has long been a leader in both innovation and circularity. In the 2021 innovation scoreboard<sup>1</sup>, Sweden ranked first and was defined as an Innovation Leader. Sweden is also an eco-innovation leader and ranked fourth in the latest eco-innovation index<sup>2</sup>.

Sweden is known for setting ambitious goals for sustainability, and the overall generation goal is to be net zero in 2045<sup>3</sup>, which require ambitious targets and real action. In 2017, the Government published targets and measurements in the Agenda 2030 plan<sup>4</sup>, and in the later years, plans towards circularity have been developed. Eco-innovation and circular economy have long been a key element in Swedish policies and in 2020 and 2021, the first Circular Economy Strategy and Action Plan were developed respectively. Other strategies addressing textiles, plastic, and construction have also been developed, addressing sectors important for a circular transition.

But Sweden also faced challenges for the transition and innovation, especially regarding businesses' lack of financial knowledge needed for eco-innovation and the mining and forestry industries. Furthermore, as a western economy, Sweden consumes more than twice the global average, mainly from virgin materials<sup>5</sup>.

This report will examine the current Swedish policies, drivers, and challenges for circular economy and eco-innovation. Firstly, circular economy developments will be examined through circularity across the board, consumers, and business models. Secondly, drivers and challenges for Sweden in the transition to a circular economy will be discussed. Thirdly, the political landscape towards circular economy will be presented, and lastly, the Swedish Recovery and Resilience Plan in relation to circular economy will be explored.

## 2.0 Circular economy developments

### 2.1 Circularity across the board (system)

Sweden is a frontrunner in innovation and circular economy and over the last decade, Sweden has been one of the highest-ranking countries. Circular economy and innovation are important sectors for the Swedish parliament and society. Over the past years, strategies for circular economy for specific sectors have been developed, including for the plastic sector. In 2020, Sweden's first overall circular economy strategy was developed based on four overall focus areas:

1. Circular economy through sustainable production and product design
2. Circular economy through sustainable ways of consuming and using materials, products, and services
3. Circular economy through non-toxic and circular material cycles

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<sup>1</sup> European Commission (2021). European Innovation Scoreboard 2021. Available at: [https://ec.europa.eu/info/research-and-innovation/statistics/performance-indicators/european-innovation-scoreboard\\_da](https://ec.europa.eu/info/research-and-innovation/statistics/performance-indicators/european-innovation-scoreboard_da)

<sup>2</sup> Rooijen et al. (2020). Eco-innovation in Sweden – EIO Country Profile 2018-2019. Available at: [https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio\\_country\\_profile\\_2018-2019\\_sweden.pdf](https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio_country_profile_2018-2019_sweden.pdf)

<sup>3</sup> The government (2017). Miljömålen – med sikte på framtiden. Available at: <https://data.riksdagen.se/fil/EDA7C87D-9121-4D0D-A03E-DC33C06E745A>

<sup>4</sup> Government Offices of Sweden (n.d.). The Global Goals and the 2030 Agenda for Sustainable Development. Available at: <https://www.government.se/government-policy/the-global-goals-and-the-2030-Agenda-for-sustainable-development/>

<sup>5</sup> Re:Soruce, RISE & Circle Economy (2022). The Circularity Gap Report, Sweden. Available at: [https://assets.website-files.com/5e185aa4d27bcf348400ed82/626124457db2486d75762e49\\_20220421%20-%20CGR%20Sweden%20-%20report%20web%20-%2020210x297mm\\_compressed.pdf](https://assets.website-files.com/5e185aa4d27bcf348400ed82/626124457db2486d75762e49_20220421%20-%20CGR%20Sweden%20-%20report%20web%20-%2020210x297mm_compressed.pdf)

Circular economy as a driving force in the business sector and other actors through measures to promote innovation and circular business models

Sweden has additionally developed a circular economy action plan with a core initiative to support the transition to long lasting products and to extend the eco-design directive<sup>6</sup>. The national Agenda 2030 action plan<sup>7</sup> is also still an important part of the Swedish national policies for circular transition. In 2021, the national action plan for circular economy was released, containing targets and measurements for the circular transition, based on the circular economy strategy.

## 2.2 Focus on empowering consumers

According to the National Strategy for Circular Economy<sup>8</sup>, two-thirds of Swedes' emissions come from households, making it an important sector for innovation and circularity. The COVID-19 pandemic and the general sustainable mindset have increased the importance of sustainability to Swedish consumers<sup>9</sup>. According to a study made by Stena Recycling, 8 out of 10 believe it is important or very important for manufacturers to use recycled materials in their products, and 4 out of 10 thinks it should be illegal to produce products that are not recyclable<sup>10</sup>. Circular economy is therefore important for Swedish consumers, and the parliament has encouraged this tendency. In 2016, a Strategy for Sustainable Consumption<sup>11</sup> was developed with the aim to contribute to environmentally, socially, and economical sustainable consumption.

In the national strategy for circular economy<sup>12</sup>, focus area 2 is about sustainable ways of consuming and using materials. The Government wishes to contribute to this by improving information, reviewing sharing economy, and contributing to circular business models.

Sweden also wishes to accelerate the circular transition through green public procurement (GPP), and in the national strategy for public procurement from 2016<sup>13</sup>, it is stated that Sweden should be at the forefront in GPP. Public procurement in Sweden adds up to almost SEK 800 billion a year<sup>14</sup>, and GPP will consequently have a genuine impact on the circular transition and eco-innovation. The Swedish

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<sup>6</sup>The Government Offices of Sweden (2020). En ny handlingsplan för den cirkulära ekonomin. Available at: <https://www.regeringen.se/faktapromemoria/2020/04/201920fpm-28/>

<sup>7</sup>The Government Offices of Sweden (n.d.). Agenda 2030 och de globala målen för hållbar utveckling. Available at: <https://www.regeringen.se/regeringens-politik/globala-malen-och-agenda-2030/>. Last assessed 18/05/2022

<sup>8</sup>The Government Offices of Sweden (2020). Circular economy – Strategy for the transition in Sweden. Available at: <https://www.government.se/4ad42c/contentassets/d5ab250cf59a47b38feb8239eca1f6ab/circular-economy--strategy-for-the-transition-in-sweden>

<sup>9</sup>Sandberg, David (2021). Swedish Consumer Sentiment 2021. Available at: <https://www.bcg.com/en-nor/publications/2021/swedish-consumer-sentiment-report>

<sup>10</sup> Stena Recycling (2022). NEW SURVEY: 4 MILLION SWEDES WANT PRODUCTS MADE FROM RECYCLED MATERIALS. Available at: <https://www.stenarecycling.com/news/new-survey-4-million-swedes-want-products-made-from-recycled-materials/>

<sup>11</sup>Ministry of Finance (2016). Strategy for sustainable consumption. Available at: <https://www.government.se/4a9932/globalassets/government/dokument/finansdepartementet/pdf/publikationer-infomtri-rapporter/en-strategy-for-sustainable-consumption--tillganglighetsanpassadx.pdf>

<sup>12</sup> The Government Offices of Sweden (2020). Circular economy – Strategy for the transition in Sweden. Available at: <https://www.government.se/4ad42c/contentassets/d5ab250cf59a47b38feb8239eca1f6ab/circular-economy--strategy-for-the-transition-in-sweden>

<sup>13</sup>Ministry of Finance (2016). National Public Procurement Strategy. Available at: <https://www.government.se/4aba88/contentassets/9ec42c71c00442a39d67169d3c25faed/national-public-procurement-strategy.pdf>

<sup>14</sup>Ministry of Enterprise and Innovation (2022). The Swedish Government leads the way on climate-smart, circular procurement. Available at: <https://www.government.se/articles/2022/02/the-swedish-government-leads-the-way-on-climate-smart-circular-procurement/>

Government has decided to focus one of the tasks in the 2022 budget to the National Agency for Public Procurement to strengthen and develop public procurement<sup>15</sup>. The proposal states that government agencies need to procure products and services that are less toxic, more circular, and fossil-free.

### 2.3 Focus on circularity in production processes and circular business models

Circular production processes and business models are central points in the Swedish national circular economy strategy. Under focus area 1, Sweden wishes to achieve a circular transition through sustainable production and product design. The main measures include promoting clear and accessible information, encouraging the use of non-toxic recycled materials, developing economic instruments based on the 'polluter pays' principle, and steering towards reusable products with long lifespan. Focus area 2 also contributes to circular business models, aiming to make it profitable for business owners to share, repair, and reuse products. The main focus area for business models is focus area 4, where circular economy is seen as a driver for the business sector by promoting innovative and circular business models.

In the Swedish Smart Industry Strategy from 2016<sup>16</sup>, innovation and circular economy are seen as important competitive factors for Swedish industry. The strategy states that the public sector has an important role, as regulatory frameworks, R&D, and procurement can promote a circular transition.

Various businesses in Sweden are already in the process of transitioning to more circular business models. An example of this is the Swedish sharing platform for tools and other equipment, 'Hygglo'<sup>17</sup>. The platform makes it easy to rent tools and equipment that most of the time sits on a shelf or in a storage room. Hygglo facilitates rental of tools between the platform users and makes sharing economy possible.

Another example is the Swedish fashion brand 'Filippa K', who creates long lasting garments made of recycled materials. Furthermore, the brand has established a second-hand shop where customers can sell and buy used clothes<sup>18</sup>.

## 3.0 Drivers and challenges to a circular economy

Sweden has strong ambitions to achieve sustainable growth and eco-innovation. Such goals have been set in the Swedish Agenda 30<sup>19</sup> plan and Strategy for Circular Economy<sup>20</sup>. The Strategy for Circular Economy has been a driver for more initiatives and measurements for the circular transition and eco-innovation. Especially plastic has been under transition and is also driven by EU regulations. Furthermore, Sweden still has a competitive advantage due to the access to natural resources and capacity to produce renewable energy. Sweden has an overall increased focus on sustainability and circular transition in the public, private,

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<sup>15</sup> Ministry of Enterprise and Innovation (2022). The Swedish Government leads the way on climate-smart, circular procurement. Available at: <https://www.government.se/articles/2022/02/the-swedish-government-leads-the-way-on-climate-smart-circular-procurement/>

<sup>16</sup> Ministry of Enterprise and Innovation (2016). Smart Industry – a strategy for new industrialization for Sweden. Available at: [https://www.government.se/498615/contentassets/3be3b6421c034b038dae4a7ad75f2f54/nist\\_statsformat\\_16042\\_0\\_eng\\_webb.pdf](https://www.government.se/498615/contentassets/3be3b6421c034b038dae4a7ad75f2f54/nist_statsformat_16042_0_eng_webb.pdf)

<sup>17</sup> Hygglo (n.d.). Available at: <https://www.hygglo.se/>

<sup>18</sup> Filippa K (n.d.). Available at: <https://www.filippa-k.com/en/sustainability>

<sup>19</sup> Sveriges Miljömål (n.d.). Available at: <https://www.sverigesmiljomal.se/> Last accessed: 05.11.22

<sup>20</sup> The Swedish Environmental Department (2020). Cirkulär ekonomi – strategi för omställningen i Sverige. Available at: [https://www.regeringen.se/4a3baa/contentassets/619d1bb3588446deb6dac198f2fe4120/200814\\_ce\\_webb.pdf](https://www.regeringen.se/4a3baa/contentassets/619d1bb3588446deb6dac198f2fe4120/200814_ce_webb.pdf)

and civil sectors<sup>21</sup>. According to the performance indicators, Swedish businesses are pioneers in circular and innovative business models.

Sweden also has a driver in R&D and investments. IVL Swedish Environmental Research Institute conducts research on resource efficiency and circular flows, creating a knowledge base and industry collaboration promoting circular economy<sup>22</sup>. Vinnova is the Swedish innovation agency that aims to strengthen the innovation capacity in Sweden while contributing to sustainable growth. Approximately SEK 3 billion is invested in research and innovation every year, and since the authority has the Sustainable Development Goals as a basis for their work, sustainable investments are in focus. Circular economy is promoted specifically through some of Vinnova's investment areas, including "Climate neutral and circular production" and "Resource efficient and resilient value chains"<sup>23</sup>. Another actor that provides funding for sustainable activities is the Swedish foundation for Strategic Environmental Research (Mistra). Mistra provides funding for circular economy innovation through programmes such as REES (Resource-Efficient and Effective Solutions), Closing the Loop and Innovation 23<sup>24</sup>.

Even though Sweden scores above average on R&D in the eco-innovation performance indicators, the country scores below on information available that can help access finance for circular economy (in SME's). This has been a challenge for years, making it difficult for businesses to know the finance opportunities when wanting to develop innovative business models<sup>25</sup>. Sweden has set one of the most ambitious goals, to become net zero in 2045, but according to the Circularity Gap Report<sup>26</sup>, Sweden has focused on energy transition, failing to reduce Sweden's large material footprint. Furthermore, some of Sweden's strongest industries (forestry and mining) are barriers for the circular transition, as these industries generate about 90% of the total Swedish waste composition<sup>27</sup>. These industries fall behind in the circular transition and therefore lack in circular business models. Furthermore, especially the mining industry is placed in remote areas in the North, making recycling economically difficult. These industries are also known for being unsustainable due to limited resources being depleted (mining)<sup>28</sup> and the negative impact on biodiversity<sup>29</sup>.

About one fifth of the Swedish GDP is represented by public procurement, but the potential to use this opportunity to boost the circular transition is not fulfilled. Even though measurements have been made for

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<sup>21</sup>Svensk Handel (2021). Svensk Handels hållbarhetsundersökning. Available at: <https://www.svenskhandel.se/globalassets/dokument/aktuellt-och-opinion/rapporter-och-foldrar/hallbar-handel/svensk-handels-hallbarhetsundersokning-2020-21.pdf>

<sup>22</sup>Swedish Environmental Research Institute (2022). We create resource-efficient, non-toxic and circular flows. Available at: <https://www.ivl.se/english/ivl/our-offer/our-focus-areas/circular-flows.html>

<sup>23</sup>Vinnova (2022.). Sustainable industry. Available at: <https://www.vinnova.se/en/m/sustainable-industry/>

<sup>24</sup>Mistra (n.d.). Forskning. Available at: <https://www.mistra.org/forskningsprogram>

<sup>25</sup>Rooijen et al. (2020). Eco-innovation in Sweden – EIO Country Profile 2018-2019. Available at: [https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio\\_country\\_profile\\_2018-2019\\_sweden.pdf](https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio_country_profile_2018-2019_sweden.pdf)

<sup>26</sup>Re:Suruce, RISE & Circle Economy (2022). The Circularity Gap Report, Sweden. Available at: [https://assets.website-files.com/5e185aa4d27bcf348400ed82/626124457db2486d75762e49\\_20220421%20-%20CGR%20Sweden%20-%20report%20web%20-%20210x297mm\\_compressed.pdf](https://assets.website-files.com/5e185aa4d27bcf348400ed82/626124457db2486d75762e49_20220421%20-%20CGR%20Sweden%20-%20report%20web%20-%20210x297mm_compressed.pdf)

<sup>27</sup>Re:Suruce, RISE & Circle Economy (2022). The Circularity Gap Report, Sweden. Available at: [https://assets.website-files.com/5e185aa4d27bcf348400ed82/626124457db2486d75762e49\\_20220421%20-%20CGR%20Sweden%20-%20report%20web%20-%20210x297mm\\_compressed.pdf](https://assets.website-files.com/5e185aa4d27bcf348400ed82/626124457db2486d75762e49_20220421%20-%20CGR%20Sweden%20-%20report%20web%20-%20210x297mm_compressed.pdf)

<sup>28</sup>European Commission (2015). Eco-mining lessens environmental impact. Available at: <https://ec.europa.eu/research-and-innovation/en/horizon-magazine/eco-mining-lessens-environmental-impact>

<sup>29</sup>Orange (2021). Sweden's green dilemma: can cutting down ancient trees be good for the Earth?. Available at: <https://www.theguardian.com/environment/2021/sep/25/swedens-green-dilemma-can-cutting-down-ancient-trees-be-good-for-the-earth>

GPP, the full potential is yet to be applied. This is due to different parameters, but knowledge gaps also hinder public purchasers<sup>30</sup>.

## 4.0 Policy landscape towards circular economy in Sweden

Sweden has a range of policies towards the circular economy, including:

- ▶ Circular Economy – Strategy for the transition in Sweden<sup>31</sup>
- ▶ Action Plan for Circular Economy (2020)<sup>32</sup>
- ▶ Action Plan for Plastic (2022)<sup>33</sup>
- ▶ Action Plan Agenda 2030<sup>34</sup>
- ▶ Swedish National Waste Management Plan (2018-2023)<sup>35</sup>
- ▶ National Food Strategy<sup>36</sup>
- ▶ Extended producer responsibility for various product types<sup>37</sup>

Sweden is known for having defined goals for circular economy and eco-innovation<sup>38</sup>. Agenda 2030 is the core of Swedish environmental policies, and since 2017, measurements are linked to relevant Agenda 2030 objectives.

The Swedish Circular Economy Strategy sets out long-term measurements for the sustainable transition, which is an important step towards Sweden's goal to be the first fossil-free welfare nation. The strategy consists of four areas where design, production, use, and end-of-life are primary drivers for transitioning to a circular economy. The most essential parts of the strategy and measurements are already highlighted in the previous report, but since 2020, different measurements and action plans have been implemented and developed. The overall aim of the strategy is to steer towards a society where circular economy is a core value. In January 2021, the government presented an 'Action Plan for Circular Economy' consisting of

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<sup>30</sup> Re:Source, RISE & Circle Economy (2022). The Circularity Gap Report, Sweden. Available at: [https://assets.website-files.com/5e185aa4d27bcf348400ed82/626124457db2486d75762e49\\_20220421%20-%20CGR%20Sweden%20-%20report%20web%20-%20210x297mm\\_compressed.pdf](https://assets.website-files.com/5e185aa4d27bcf348400ed82/626124457db2486d75762e49_20220421%20-%20CGR%20Sweden%20-%20report%20web%20-%20210x297mm_compressed.pdf)

<sup>31</sup>The Government Offices of Sweden (2020). Circular economy – Strategy for the transition in Sweden. Available at: <https://www.government.se/4ad42c/contentassets/d5ab250cf59a47b38feb8239eca1f6ab/circular-economy--strategy-for-the-transition-in-sweden>

<sup>32</sup>The Government Offices of Sweden (2020). En ny handlingsplan för den cirkulära ekonomin. Available at: <https://www.regeringen.se/faktapromemoria/2020/04/201920fpm-28/>

<sup>33</sup>The Government Offices of Sweden (2022). Sveriges handlingsplan för plast - en del av den cirkulära ekonomin. Available at: <https://www.regeringen.se/rappporter/2022/02/sveriges-handlingsplan-for-plast/>

<sup>34</sup>The Government Offices (2018). Handlingsplan Agenda 2030 – 2018-2020. Available at: <https://www.regeringen.se/49e20a/contentassets/60a67ba0ec8a4f27b04cc4098fa6f9fa/handlingsplan-agenda-2030.pdf>

<sup>35</sup>Naturvårdsverket (2020). Att göra mer med mindre. Available at: <https://www.naturvardsverket.se/om-oss/publikationer/6900/att-gora-mer-med-mindre/>

<sup>36</sup>The Government Offices of Sweden (2017). A National Food Strategy for Sweden – more jobs and sustainable growth throughout the country. Available at: <https://www.government.se/information-material/2017/04/a-national-food-strategy-for-sweden--more-jobs-and-sustainable-growth-throughout-the-country.-short-version-of-government-bill-201617104/>

<sup>37</sup>Naturvårdsverket (n.d.). Producentansvar. Available at: <https://www.naturvardsverket.se/vagledning-och-stod/producentansvar/>

<sup>38</sup>Rooijen et al. (2020). Eco-innovation in Sweden – EIO Country Profile 2018-2019. Available at: [https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio\\_country\\_profile\\_2018-2019\\_sweden.pdf](https://ec.europa.eu/environment/ecoap/sites/default/files/field/field-country-files/eio_country_profile_2018-2019_sweden.pdf)

more than a hundred measures for the circular transition in industries, material supply, technology development, and waste management.

### Plastic

One of the prioritised focus areas is plastic where toxic free plastic circuits and implementation of the single-use plastic directive are key measures.

In 2022, the government decided on an 'Action Plan for Plastic'. The plan has 55 measurements, including the criteria that new plastic products shall consist of 30% recycled plastic in 2030, ban on single-use plastic products, and all major stakeholders have to offer reusable cups or plates. The action plan consists of four focus points: 1) production and design of plastic products, 2) consumption and use of plastic, 3) toxic free plastic circuit, and 4) driving force for businesses and stakeholders promoting innovative and circular business models for plastic.

Other important waste streams in the Strategy for Circular Economy are textiles, bio-based raw materials, food, construction materials, innovation-critical metals, and minerals. These product value chains are also key points in the European Circular Economy Action Plan.

### Textiles

Textiles has become an important waste stream for the European Commission and Sweden. In the Swedish national waste management plan (2018-2023), different initiatives to reduce textile waste and reuse resources are listed. Including funding to information campaigns and new business models. The funding schemes are managed by the Swedish Environmental Protection Agency. Moreover, in December 2020, a commission set by the Swedish government<sup>39</sup> presented how extended producer responsibility for textiles could be enrolled. Extended producer responsibility for textiles is yet to be implemented—just as in other European countries.

### Electronics, batteries, and vehicles

Sweden has extended producer responsibility for other waste streams, including electronics, batteries, and vehicles.

In continuation of extended producer responsibility, the government has set national goals for electronic waste, batteries, and vehicles that must be collected for reuse or recycling. Different measurements for the waste streams are presented in the Swedish national waste management plan (2018-2023). Measurements for waste streams involve critical raw materials and toxic waste being handled correctly to ensure recycling of materials without contaminating new products or the local environment.

### Construction

Constructions and buildings are also important factors in the circular transition. Sweden has made several measurements for constructions and buildings. In 2020, new legislation on demolition waste was made where the producer must sort demolition waste in six fractions (wood, minerals, metal, glass, plastic, and cast). Besides, from January 2022, the new 'Act on Climate Declarations'<sup>40</sup> for new buildings will make it mandatory to specify a building's climate impact.

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<sup>39</sup>The Government Offices in Sweden (2020). Remiss av SOU 2020:72 Ett producentansvar för textile. Available at: <https://www.regeringen.se/remisser/2020/12/remiss-av-sou-202072-ett-producentansvar-for-textil/>

<sup>40</sup>Boverket (2021). Regulation on climate declarations for buildings. <https://www.boverket.se/en/start/publications/publications/2020/regulation-on-climate-declarations-for-buildings/>

## Food, water and nutrients

The last key value chain is food, water, and nutrients. Measurements for food production and waste are presented in the national waste management plan (2018-2023) and the national Food Strategy to reduce food waste and recover important nutrients. The government has decided on new milestones for the circular transition, whereas two of these cover food waste and the entire food chain, including new targets to reduce food waste with 20% from 2020-2025<sup>41</sup>.

## 5.0 Recovery and Resilience Plans

Expectedly, the Swedish economy was affected by the COVID-19 pandemic. The Recovery and Resilience Plan<sup>42</sup> will therefore be an important step towards creating a new economy robust for the future. Sweden's Recovery and Resilience Plan consists of €3,3 billion in grants, and 44,4% of these are allocated to support climate objectives. The plan is supposed to accelerate the digital transformation, enhance investments in the green transition, and promote employment and skill development. Other than climate objectives, 20,5% of the grants are allocated to support digitalization, including 'accelerating broadband network rollout in sparsely populated areas' and 'upgrading digital services in public administration'. The plan also reinforces Sweden's economic and social resilience.

The plan is divided into five overall components: 1) Green recovery, 2) education and transition, 3) better conditions for addressing demographic challenges, 4) broadband expansion and digitalisation of public administration, and 5) investments in growth and housing.

The first component aims to tackle Sweden's milestone of carbon neutrality by 2045. The government aims to do in terms of transportation, process-related emissions, energy efficiency, and biodiversity. Different investment schemes will be used including 'Climate Leap' and 'Industry Leap' that shall finance local and regional activities to reduce emissions. Moreover, the government wishes to invest in energy efficiency in multi dwelling buildings, railways, and protection of valuable nature. This is indicated and measured by different quantitative indicators, including total CO<sub>2</sub> reduction and number of projects awarded. To achieve the overall goals, 18 targets and milestones have been developed, and the indicators and timeline for each target are illustrated in the table below:

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<sup>41</sup> The Government Offices in Sweden (2019). Regeringens handlingsplan del 2: En livsmedelsstrategi för Sverige – fler jobb och hållbar tillväxt i hela landet. Available at: <https://www.regeringen.se/informationsmaterial/2019/12/regeringens-handlingsplan-del-2-en-livsmedelsstrategi-for-sverige--fler-jobb-och-hallbar-tillvaxt-i-hela-landet/>

<sup>42</sup>The Government Offices of Sweden (2021). Sveriges återhämtningsplan. Available at: <https://www.regeringen.se/49bfc1/contentassets/dad10f1743b64c78a1c5b2d71f81a6eb/sveriges-aterhamtningsplan.pdf>

Table 1 Targets and milestones of the NRRP

Number	Measure	Milestone/Target	Name	Time	
				Q	Year
1	Local and regional climate investment	Target	T1: Award of projects reducing carbon dioxide emissions by expected 300 000 tonnes	Q4	2021
2	Local and regional climate investment	Target	T2: Award of projects reducing carbon dioxide emissions by expected 240 000 tonnes	Q4	2022
3	Local and regional climate investment	Target	T3: Award of projects reducing carbon dioxide emissions by expected 140 500 tonnes	Q4	2023
4	Local and regional climate investment	Target	T4: Award of projects reducing carbon dioxide emissions by expected 89 500 tonnes	Q4	2024
5	Local and regional climate investment	Target	T5: Award of projects reducing carbon dioxide emissions by expected 15 000 tonnes	Q4	2025
6	Climate investment in the industrial sector	Target	Award of projects having the potential to contribute towards reducing carbon dioxide emission	Q4	2025
7	Energy efficiency in multi-dwelling buildings	Milestone	Entry into force of an ordinance establishing the support scheme for investments to improve energy efficiency in multi-dwelling buildings	Q4	2021
8	Energy efficiency in multi-dwelling buildings	Target	600 000 square meters of buildings have been renovated	Q4	2025
9	Strengthened railway support	Target	60 km of railways has been improved or upgraded	Q4	2021
10	Strengthened railway support	Target	40 km of railways has been improved or upgraded	Q4	2022
11	Strengthened railway support	Target	Exchange, upgrade and connection of 160 road protection facilities	Q4	2023
12	Strengthened railway support	Milestone	Upgrade of bridge located in Vänersborg	Q1	2026
13	Adjustments in the reduction obligation	Milestone	Entry into force of a law establishing increased reduction quotas in the obligation to reduce GHG emissions from gasoline and diesel by requiring fuel suppliers to gradually blend in biofuels	Q3	2021
14	Adjustments in the reduction obligation	Milestone	Entry into force of a law establishing a reduction obligation on jet fuel	Q3	2021
15	Abolished reduction of energy tax on fuel in certain sectors	Milestone	Entry into force of a law that partially abolishes a reduction of energy tax on fuel in certain sectors	Q3	2021
16	Abolished reduction of energy tax on fuel in certain sectors	Milestone	Entry into force of the law to fully abolish reduction of energy tax on fuel in certain sectors	Q1	2022
17	Adjusted taxable benefit rates for company cars	Milestone	Entry into force of a law to adjust the taxable benefit rate for company cars	Q3	2021
18	Formal protection of valuable nature	Target	Funding disbursed for the protection of nature with high natural values for biodiversity	Q4	2023

Source: European Commission (2022). ANNEX to the proposal for a Council Implementing Decision on the approval of the assessment of the recovery and resilience plan for Sweden. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/DOC/?uri=CELEX:52022PC0152&from=en>

The Swedish Recovery and Resilience Plan has been revised three times since the plan was first accepted by EU in 2021. The plan was revised in September due to domestic policy and the fact that the plan consisted of measurements that were no longer relevant. In October, small technical adjustments were made. In February 2022, the plan was revised for the last time and a few measurements were changed, mainly about energy efficiency of apartment buildings.

The focus on circular economy in the Swedish Recovery and Resilience Plan is limited. The plan mainly focuses on reducing CO<sub>2</sub> emissions, creating jobs, housing, and digitalisation. The 44% of the plan's climate-focus is therefore primarily deals with energy efficiency, transport, and industrial processes. Reduction of CO<sub>2</sub> emissions and increase biodiversity are an important factor in national and international policies, also the European Green Deal. However, the Swedish plan does not incorporate other important factors from the circular economy.

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## ANNEX I - Policy strategies and instruments addressing circular economy and eco-innovations in Sweden

National and Regional Policy strategies						
Name of the policy document (strategy, action plan, roadmap)	Policy area	Relevance for eco-innovation	Relevance for Circular Economy	Relevance for Recovery and Resilience Plans	Targets	Source
<b>National Strategy for Circular economy</b>	Ministry of Environment	Will benefit in general	Cross-cutting	Will benefit in general	<ul style="list-style-type: none"> <li>▶ products and product design</li> <li>▶ consumption and use</li> <li>▶ non-toxic and circular flows, and</li> <li>▶ innovation and circular business models.</li> </ul>	<a href="https://www.government.se/4ad42c/contentassets/d5ab250cf59a47b38feb8239eca1f6ab/circular-economy--strategy-for-the-transition-in-sweden">https://www.government.se/4ad42c/contentassets/d5ab250cf59a47b38feb8239eca1f6ab/circular-economy--strategy-for-the-transition-in-sweden</a>
<b>Action Plan for Circular Economy</b>	Ministry of Environment	Will benefit in general	Cross-cutting	Will benefit in general	Overall goal: The transition to a circular economy will contribute to achieve the environmental and climate goals, as well as the global goals in Agenda 2030.	<a href="https://www.regeringen.se/48f821/contentassets/561eea8cac114172b993c1f916e86a9b/cirkular-ekonomi-handlingsplan-for-omstallning-av-sverige.pdf">https://www.regeringen.se/48f821/contentassets/561eea8cac114172b993c1f916e86a9b/cirkular-ekonomi-handlingsplan-for-omstallning-av-sverige.pdf</a>
<b>Action Plan for Plastic – A part of the circular economy</b>	Ministry of Environment	Will benefit in general	Cross-cutting	Indirectly	Follows the overall strategy for CE <ul style="list-style-type: none"> <li>▶ Target the production and design of plastic</li> <li>▶ The consumption of plastic</li> <li>▶ Toxic-free plastic</li> <li>▶ Innovative and circular business models for plastic</li> </ul>	<a href="https://www.regeringen.se/rapporter/2022/02/sveriges-handlingsplan-for-plast">https://www.regeringen.se/rapporter/2022/02/sveriges-handlingsplan-for-plast</a>
<b>National food strategy</b>	Ministry of Enterprise and Innovation	Will benefit in general	N/A	Indirectly	Overall vision: The Swedish food chain in 2030 is globally competitive, innovative, sustainable and attractive to operate within.	<a href="https://www.government.se/information-material/2017/04/a-national-food-strategy-for-sweden--more-jobs-and-sustainable-growth-throughout-the-country-short-version-of-government-bill-201617104/">https://www.government.se/information-material/2017/04/a-national-food-strategy-for-sweden--more-jobs-and-sustainable-growth-throughout-the-country-short-version-of-government-bill-201617104/</a>
<b>National waste management plan</b>	The Swedish Environmental Protection Agency	N/A	Will benefit in general	Indirectly	National waste management, with targets in all of Sweden's waste consumption	<a href="https://www.naturvardsverket.se/om-oss/publikationer/6900/att-gora-mer-med-mindre/">https://www.naturvardsverket.se/om-oss/publikationer/6900/att-gora-mer-med-mindre/</a>

Policy Instruments						
Category	Name of instrument	Relevance for eco-innovation	Relevance for Circular Economy	Relevance for Recovery and Resilience Plans	(Expected) Impact and Outcomes	Source
Direct financial support	Mistra	Cross-cutting	Cross-cutting	Indirectly	"The investments Mistra makes must also contribute to companies, public actors and users being able to develop new products, services and working methods that meet society's environmental challenges. At the same time, the investments will strengthen Swedish competitiveness."	<a href="https://www.mistra.org/forskningsprogram">https://www.mistra.org/forskningsprogram</a>
	Vinnova	Cross-cutting	Indirectly	Indirectly	"Our mission is to strengthen Sweden's ability to innovate and contribute to sustainable growth. We work for Sweden to be an innovative force in a sustainable world."	<a href="https://www.vinnova.se/om-oss/">https://www.vinnova.se/om-oss/</a>
Indirect financial support	Sweden's Carbon Tax	Indirectly	Indirectly	Indirectly	emissions are reduced in the most cost-effective way, while stimulating the development and deployment of new, clean technologies	<a href="https://www.government.se/government-policy/swedens-carbon-tax/swedens-carbon-tax/">https://www.government.se/government-policy/swedens-carbon-tax/swedens-carbon-tax/</a>

## ANNEX II -Eco-innovation performance overview

Indicator	Indicator value <sup>1</sup>	Performance relative to EU <sup>2</sup>	Country performance relative to EU in 2013 and 2022 <sup>3</sup>
<b>Eco-Innovation Index</b>	0.667	160.9	
<b>1. Eco-innovation inputs (normalised score)</b>	0.744	135.3	
1.1. Governments environmental and energy R&D appropriations and outlays (% of GDP)	0.05%	102.3	
1.2. Total R&D personnel and researchers (% of total employment)	1.99%	182.6	
<b>2. Eco-innovation activities (normalised score)</b>	0.544	163.5	
2.1. Number of ISO 14001 certificates (per million population)	270.4	163.5	
<b>3. Eco-innovation outputs (normalised score)</b>	0.832	201.2	
3.1. Eco-innovation related patents (per million population)	70.7	125.7	
3.2. Eco-innovation related academic publications (per million population)	31.3	447.2	
<b>4. Resource efficiency outcomes (normalised score)</b>	0.430	117.7	
4.1 Material productivity (GDP/Domestic Material Consumption, €/kg)	1.5	82.0	
4.2 Water productivity (GDP/total fresh water abstraction, €/m <sup>3</sup> )	160.8	234.4	
4.3 Energy productivity (GDP/gross inland energy consumption, €/toe)	9.2	140.0	
4.4 GHG emissions productivity (GDP/CO <sub>2</sub> e)	9.2	254.8	
<b>5. Socio-economic outcomes (normalised score)</b>	0.603	144.2	
5.1 Exports of products from eco-industries (% of total exports)	3.24%	107.3	
5.2. Employment in environmental protection and resource management activities (% of total workforce)	3.08%	154.0	
5.3. Value added in environmental protection and resource management activities (% of GDP)	3.47%	185.8	

### Notes:

1: Most recent data used where possible, for an overview see the methodology here: [https://ec.europa.eu/environment/ecoap/indicators/index\\_en](https://ec.europa.eu/environment/ecoap/indicators/index_en)

2: Performance relative to EU is calculated as follows: (Normalised country score / EU score)x100. Normalisation is done using the Min-Max approach. This leads to certain countries resulting in a zero score for an indicator, this implies that, that country is the lowest performing country vis-à-vis the other EU Member States.

3: Graph depicting the performance of the country relative to the EU in 2013 and 2022 where the EU27=100.

## ANNEX III – Circular economy indicator performance overview

Indicator	Indicator value <sup>1</sup>	Performance relative to EU <sup>2</sup>	Country performance versus EU27 average in 2022 <sup>3</sup>
<b>1. Sustainable resource management (normalised score)</b>	0.469	105.6	<p>Performance relative to EU27 (EU27=100)</p>
1.1 Material Footprint: domestic material consumption (tonnes per capita)	24.9	295.7	
1.2 Resource Productivity (purchasing power standard per kg)	1.5	50.5	
1.3 Number of enterprises involved in the repair of computers and personal and household goods (per million population)	395.5	91.8	
1.4 Number of EPR schemes (per million population)	1.1	188.1	
1.5 Municipal waste recycling rates (%)	47.0%	97.4	
1.6 Municipal solid waste generation (kg per capita)	0.002	142.7	
1.7 Recycling of packaging waste (rate in %)	61.3%	90.0	
1.8 Recycling of biowaste (kg per capita)	78.0	86.7	
1.9 Recycling rate of construction and demolition waste (percent)	90.0%	100.0	
1.10 Municipal waste recycled (kg/capita)	165.0	75.0	
<b>2. Societal behaviour (normalised score)</b>	0.290	66.0	
2.1 Citizens who have chosen alternatives to buying new products (% of respondents)	56.0%	95.7	
2.2 Coverage of the Circular Economy topic in Electronic Mass Media, number of articles published (per million population)	135.9	131.4	
2.3 Turnover share of repair of computers and personal and household goods (percent in total business economy)	0.05%	54.7	
2.4 Share of enterprises in repair of computers and personal and household goods (percent in total business economy)	0.62%	61.7	
2.5 Share of employees in repair of computers and personal and household goods (percent in total business economy employment)	0.12%	21.7	
<b>3. Business operations (normalised score)</b>	0.553	146.9	
3.1 Share of SMEs reporting no difficulties in implementing circular economy activities (% of SMEs)	0.804	145.2	
3.2 Self-financing ability for circular economy activities (% of SMEs)	78.0%	180.0	
3.3 Information readily available that can help access finance for circular economy related activities (% of SMEs)	10.0%	0.0	
3.4 Share of SMEs that facilitated recycling of products after use (% of innovative SMEs)	29.8%	113.3	

Indicator	Indicator value <sup>1</sup>	Performance relative to EU <sup>2</sup>	Country performance versus EU27 average in 2022 <sup>3</sup>
3.5 SMEs that extended product life through more durable products, by innovation (% of innovative SMEs)	38.7%	155.9	
3.6 SMEs recycling waste, water or materials for own use or sale within the enterprises by innovating (% of innovative SMEs)	39.0%	128.9	
3.7 Number of eco-labelled products and services (per million population)	624.5	314.0	

## Notes:

1: Most recent data used where possible, for an overview see the methodology here: [https://ec.europa.eu/environment/ecoap/indicators/index\\_en](https://ec.europa.eu/environment/ecoap/indicators/index_en)

2: Performance relative to EU is calculated as follows: (Normalised country score / EU score)x100. Normalisation is done using the Min-Max approach. This leads to certain countries resulting in a zero score for an indicator, this implies that, that country is the lowest performing country vis-à-vis the other EU Member States.

3: Graph depicting the performance of the country relative to the EU in 2013 and 2022 where the EU27=100.