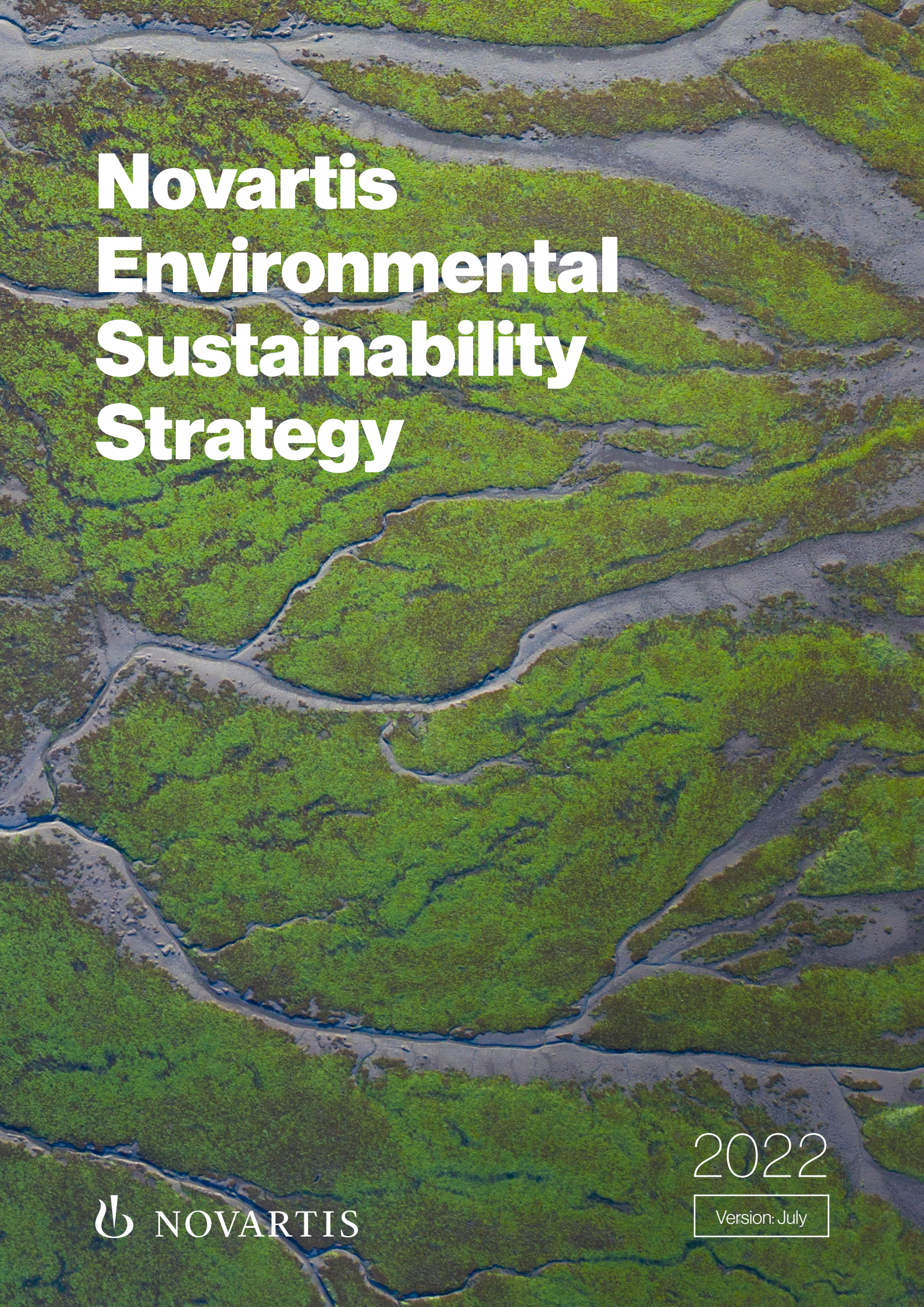




Novartis Environmental Sustainability Strategy



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Introduction

**Human health and
planetary health are
intrinsically linked.**



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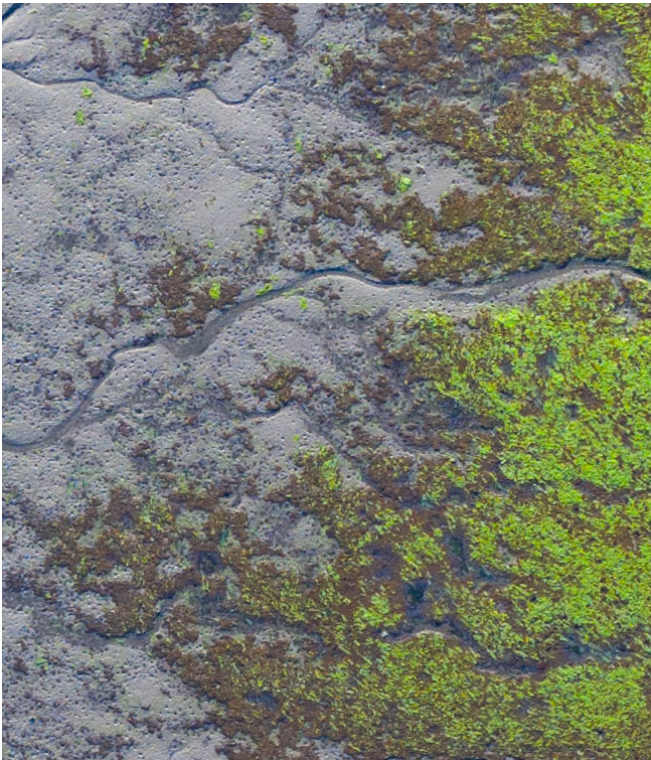
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The link between human and planetary health

Environmental sustainability is central to the Novartis strategy and operating model. Successful delivery of our environmental sustainability strategy will require leadership, innovation, investment and change.

A race we can win

As a leading global medicines company, committed to reimagining medicine to improve and extend people’s lives, we are at an important junction on our sustainability journey.

The relationship between global health and planetary health has never been more evident. This symbiotic relationship highlights the importance of delivering our purpose - to reimagine medicine - in a sustainable way.

Planetary health is about people, patients and the planet. Climate, temperatures, sea level elevation, wind and daylight duration play an important role in disease transmission. Climate change is already causing extreme heat and poor air quality in some areas, which threaten to exacerbate pre-existing health conditions, such as heart failure, lung cancer and respiratory diseases. It is expected that climate change will continue to have a profound impact on the most marginalized societies.

Vulnerable populations, living in the most fragile and conflict-affected countries, are disproportionately affected by climate change, leading to humanitarian crises in affected regions¹. In addition, an increase in temperature and humidity may cause a proliferation of insects that carry vector-borne diseases, including dengue fever, malaria and Chagas disease.

Novartis is working to understand and anticipate these climate and related risks, to ensure that we continue to discover, develop and deliver life-saving medicines.

- 

Planet

 - Extreme weather events
 - More deserts
 - Increased sea temperatures
 - Reduced sea ice
 - Increased sea levels
 - Loss of habitat nature
- 

Health

 - Harmful effects on health due to increased temperatures
 - More allergies
 - Increased disease spread including vector-borne disease
 - New disease transmission patterns

¹UNHCR Refugee Agency

Our environmental sustainability journey

Developing a holistic approach

Environmental sustainability has been a central component of the Novartis strategy, with a strong focus on efficiency as the key tool in the early stages of development. Building on our progress to date, this strategy sets out a holistic approach, incorporating four broad strategic objectives to:

- Deliver our net-zero, plastic neutrality and water sustainability targets
- Focus on delivering sustainable products to our patients
- Transform the sustainability mindset across our organization
- Collaborate with industry partners to influence change in our sector

The strategy incorporates climate, waste and water, all of which are interdependent topics. In recognition of the scale of the challenge we face, Novartis has committed to net-zero greenhouse gases by 2040. Further strengthening our commitment to carbon neutrality, plastic neutrality and water sustainability by 2030. Our net-zero target covers all greenhouse gas emissions, in alignment with the SBTi Net-zero Standard. Throughout the rest of this document, the term 'net-zero' refers to net-zero greenhouse gas emissions.

Further details of our targets and progress against those targets are outlined later in the document.

Measuring our value to society

Whereas environmental sustainability has traditionally been seen primarily as a compliance requirement, the global view is shifting. Environmental sustainability is increasingly viewed in the context of value creation and impact. Novartis is measuring its value to society and the environment using the Social, Environmental and Economic (SEE) impact valuation. This measures the overall value to society by assessing the “triple bottom line”, the benefits and costs to people, planet and profit. This monetization of SEE impact provides a common currency that improves visibility and comparability.

Climate-related reporting

Novartis has also expressed its support for the Task Force on Climate-related Financial Disclosures (TCFD). This provides a consistent set of voluntary disclosures across industries, which can be adopted by companies to inform investors and other stakeholders about climate-related risks. TCFD will help both companies and financial markets to better evaluate and price those risks. TCFD is reported in the Novartis in Society Integrated Report.



Signed up to the Climate Pledge to be net- zero by 2040



Novartis is a member of the Ellen MacArthur Foundation which is helping to develop and promote the idea of a circular economy



Novartis signed the UN Global Compact’s CEO Water Mandate, which mobilizes business leaders to make progress on six elements of water sustainability



Credit: Invenergy

We bring social value through life-saving medicines. In our efforts to treat illness and cure disease, we must also to look after the health of the planet.

Our environmental sustainability targets

Novartis has set environmental sustainability targets to achieve net-zero plastic neutrality, and water sustainability.

Further details of our plans to reach these targets are outlined in Section 2.

Ambitious targets

Novartis has shown strong commitment to the environmental sustainability agenda. Our ambition is to achieve carbon neutrality in our own operations by 2025, full carbon neutrality across the entire value chain by 2030 and net-zero by 2040.

We have made strong progress towards delivery of our 2025 targets and we continue to evolve and progress initiatives to deliver our 2030 and 2040 targets.

Environmental Sustainability targets 2025, 2030 and 2040

	Our ambition	Targets 2025	Targets 2030	Target 2040
Climate 	Net-zero	1 Carbon neutral own operations (Scope 1 and 2) ¹	3 Carbon neutral across the value chain (Scope 1, 2 & 3) ¹	4 Net-zero ²
		2 Environmental criteria in all supplier contracts		
Waste 	Circular economy and plastic neutrality	5 Eliminate PVC in packaging ³	7 Plastic neutral ⁴	
		6 Waste disposal reduced by half	8 All new products meet sustainable design principles	
Water 	Water sustainability	9 Water consumption reduced by half in our operations	11 Water neutral ⁵	
		10 No water quality impacts from manufacturing effluents ⁶	12 Enhance water quality wherever we operate ⁷	

1. Scope 1 is also referred to as direct climate emissions, and is defined as “emissions from sources that are owned or controlled by Novartis”; Scope 2 is also referred to as climate indirect emissions, defined as “emissions from the consumption of purchased electricity, steam, or other sources of energy (e.g., chilled water) generated upstream from Novartis”; Scope 3 is also referred to as other indirect climate emissions, defined as “emissions that are a consequence of the operations of an organization, but are not directly owned or controlled by Novartis – this includes supply chain, business travel, employee commuting, and use of products”.

2. In May 2022, our commitment to the SBTi net-zero standard was confirmed. Novartis is now working on development of a science-based target aligned with SBTi criteria.

3. Defined as secondary and tertiary packaging; primary packaging when feasible.

4. Plastic neutral is defined as the weight of plastic packaging entering the environment for disposal is approximately the same as the weight being recovered for recycling.

5. All Novartis sites to reduce water consumption in all areas and be water neutral in water stressed regions by not depleting local water reserves. Water stressed regions are determined using WWF water risk filter.

6. Includes supply chain.

7. 100% of manufacturing effluents released comply with all permit regulations related to water quality and meet our water quality requirements. This applies to Novartis manufacturing operations and APIs produced for Novartis sites by tier 1 and tier 2 suppliers.



Putting strategy into practice

Embedding sustainability

As a leading medicines company, our commitments to environmental sustainability and planetary health, including a commitment to support the UN Sustainable Development Goals (SDGs), are central to this holistic vision. SDG 3, to ensure good health and wellbeing, is central to our purpose, business and strategy. Novartis is committed to adopting a sustainable approach to support the delivery of the UN SDGs. Through our business operations and ongoing sustainability efforts, we make essential contributions to goal 13 (climate action). Our environmental sustainability targets align with SDG 6 (clean water and sanitation), SDG 7 (affordable and clean energy), and SDG 12 (responsible consumption).

Strategy design principles

Delivery of our four strategic objectives, covering the planet, patients, people and policy, will be underpinned by a set of design principles as shown in the graphic on the right.

The design principles highlight the drivers of success and help guide consistent decision-making by providing a compass for leaders as the strategy becomes embedded across business units, geographies and teams globally.

Our design principles are:

 **To minimize the environmental impact of our actions on the planet**

 **To focus on health impacts for patients**

 **To enhance, support and encourage collaboration across the value chain**

 **To optimize the environmental opportunity provided by data and digital solutions**

 **To adopt a transparent approach**

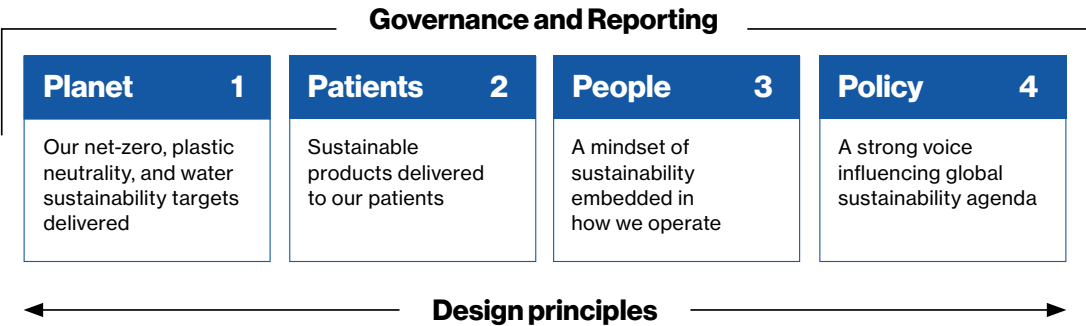
Bringing our strategy to life

Our purpose
To reimagine medicine to improve and extend people's lives

Our strategic priorities

Unleash the power of our people	Deliver transformative innovation	Embrace operational excellence	Go big on data and digital	Build trust with society
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Environmental Sustainability Strategy





Strategic Objective 1

Planet

Our targets to achieve net-zero, plastic neutrality and water sustainability are central to delivery of our Environmental Sustainability Strategy.



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Strategic Objective 1 | Planet

Our net-zero, plastic neutrality and water sustainability targets delivered.

Focused on three key areas - climate, waste and water - we will work in collaboration with our partners to achieve this. We are currently developing the detailed strategy behind each of these three key areas.

Climate

By 2025, we are committed to achieving carbon neutrality for our own operations (Scope 1 and 2) which includes our factories, offices, labs and owned vehicles. By 2030, we are committed to achieving full carbon neutrality across our value chain and by 2040 to achieve net-zero.

Scope 3

To reach our emission reduction targets, we are working with our suppliers to help them apply, where possible, the same high standards of environmental sustainability as we do. By 2025, we aim to include environmental sustainability criteria as part of supplier contracts. We are working with key suppliers to set baselines and targets for climate, waste and water. We are jointly developing sustainability roadmaps by focusing on product specific action plans. The expectation is that suppliers will report annually on progress and that remediation plans will be implemented by suppliers as needed.

Waste

We have already achieved our 2025 target to reduce the amount of waste sent for disposal by more than 50% (vs 2016). By 2030, we are committed to becoming plastic neutral.

Water

Water targets will follow a dual track approach. The first, water neutrality, involves reducing water consumption and ensuring that reserves are not depleted in water stressed areas. The second, water quality, is focused on seeking to enhance water quality wherever we operate.

Case studies

Climate

Signed five Virtual Power Purchase Agreements (VPPAs) for six solar and wind parks, which collectively are expected to add 277 megawatts of clean power to the electrical grid.



Goal

Novartis committed to the environmental sustainability goal of using only renewable electricity (carbon neutral in own operations) by 2025. In April 2021, we joined the RE100 initiative of the Climate Group and the CDP to accelerate our shift to 100% renewable electricity supply.

Outcomes

The VPPAs are expected to eliminate ~30% of our remaining Scope 1 and 2 emissions and achieve 100% carbon neutrality for electricity procured in Europe.

Six parks (solar and wind) will be built in Spain by three developers, with whom Novartis has contracts for periods between 10 and 15 years.

Waste

Omnitrope SurePal is a growth hormone therapy given to children and teenagers. The current pen and case presentation have been on the market for 10 years.



Goal

The challenge was to create a new, more sustainable product, using innovative designs, and eco-friendly materials.

The cases were evaluated by material analysis and Lifecycle Assessment (LCA) and one case was shown to have a significantly lower carbon footprint compared to the original case and other designs. An internal Human Factor Engineering (HFE) expert review was performed and favored the new design.

Outcomes

The proposed new case design is made entirely of recycled polypropylene. In addition to the circular design benefits, the new case design has also also reduced the total carbon footprint by 75% compared to the current case.

This proposed design also presents some clear advantages from a user perspective, by allowing users to see the contents of the case without opening it, an option that was favored by our internal HFE team.

Water

Reduction of water consumption through production process adjustment.



Goal

Metformin, one of the top drug products at the Strykow site, is produced in high amounts (>50 tonnes per year). This is managed through 2,300 batches, with 4 tablet containers per batch (=9,200), which to be cleaned after each batch, consumed 3,900 m³ of water per year.

Adjusting the transportation process of tablets from single batch to multiple batches simultaneously reduces the number of used containers, and the amount of water needed for cleaning.

Outcomes

For the production of 64 batches of metformin, the used containers are reduced from 9,200 to less than 800 containers. This also decreases the amount of water consumed for cleaning from 3,900 m³ to 320 m³ per year.



Strategic Objective 2

Patients

**Patients are the
inspiration behind
everything we do
at Novartis.**



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Strategic Objective 2 | Patients

Sustainable products delivered to our patients

Design, development and delivery of more sustainable products to our patients are key enablers of our environmental sustainability strategy. The aim is to minimize the negative impacts on our patients’ health and on planetary health.

At Novartis, patients are the inspiration behind everything we do. Therefore, this strategic objective, to deliver sustainable products to our patients, will involve an end-to-end review of the drug development lifecycle, from early-stage research through product development and marketing, to the use and disposal of our products by patients. The lifecycle assessment tool will provide the framework to evaluate the burdens associated with our products, processes and activities over their entire lifecycle, from the ‘cradle to the grave’. In addition, we will improve our understanding of the impact of environmental change on human health and we will use this to inform our future product portfolio plans.

New and existing products

The move to incorporate sustainable design principles into the development and delivery of new and existing products represents a fundamental change to the business model. Therefore, it will be introduced on a phased basis, based on a clear prioritization exercise.

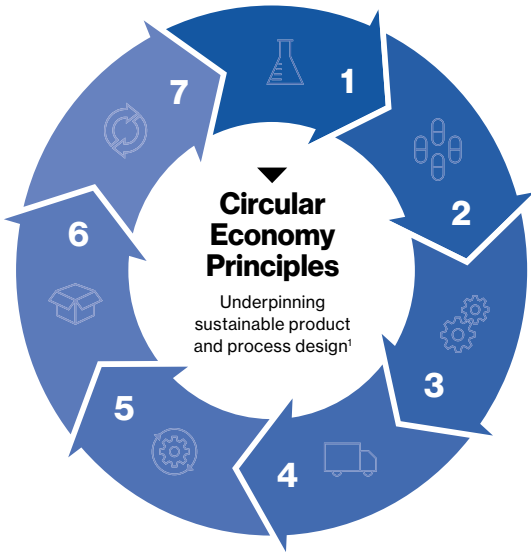
To achieve our strategic objective of embedding sustainable design principles in the research, development, production and marketing of new and existing products, we will:

- Leverage circular economy opportunities
- Reduce non-renewable components within our products, devices and packaging
- Aim to decarbonize our manufacturing processes



A targeted approach

The delivery of sustainable products to our patients is focused on product and production process optimizations across business units. We are following circular economy principles, starting from the selection of raw materials and a more sustainable product design approach, up to the collection and recycling of products at end-of-life, where appropriate.



Circular Economy Principles	Examples of environmental sustainability optimization potentials	
1 Raw Material		Use non-hazardous / more sustainable material alternatives.
2 Product Design		Green Chemistry principles. Packaging and device optimization. Build Life Cycle Assessments into the design process.
3 Production		Reduce PMI (Process Mass Intensity), lean production process.
4 Distribution		Reduce number of shipments and distance. Green Logistics.
5 Use and Re-use		Recovery and recycling of solvents and precious metal catalysts.
6 Collection		Recovery of reusable devices, e.g. Dry Powder Inhaler take-back scheme.
7 Recycling		Consider recyclability of devices and packaging at design phase itself.

Strategic Objective 2 | Patients

Case study

Sustainable product development

Life Cycle Assessment for our Dry Powder Inhaler devices

Description

Life Cycle Assessments (LCAs) are a “cradle-to-grave” analysis technique to assess the environmental impact associated with all stages of a product’s life, from raw material extraction to processing, manufacturing, distribution, use and disposal.

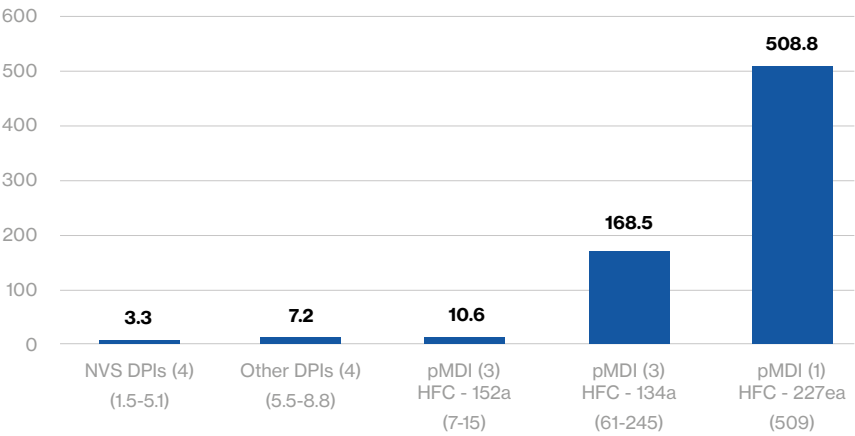
Novartis conducted environmental LCA studies for its respiratory Dry Powder Inhaler devices (DPI) across six environmental categories in accordance with the GHG Protocol’s Sector Guidance for Pharmaceuticals and Medical Devices. A streamlined LCA was conducted for the Active Pharmaceutical Ingredients (API) and the optional sensor.

Benefits

The study suggests that the Novartis DPIs have on average a carbon footprint of less than half compared to other published DPI LCAs. Classical pressurized metered-dose inhalers (pMDIs) using HFC-134a as propellant gas can have on average a carbon footprint of up to 50 times higher than the Novartis DPI.

Novartis is committed to integrating environmental LCAs into product development processes to embed sustainability by design, supporting the delivery of the Novartis goals to achieve our climate targets.

Global warming potential in CO₂e per year of various inhaler types per published LCAs



Stated CO₂e is the average of the number of considered LCAs (in brackets number of various LCA data and range). Global Warming Potential in kg CO₂e for 365 days (API excluded). References for published Inhaler LCAs (while applied methods of LCAs might not be fully comparable): <https://www.novartis.com/our-company/corporate-responsibility/environmental-sustainability/climate/case-study-breezhair-carbon-footprint>. <https://www.sciencedirect.com/science/article/abs/pii/S0959652619325934>. <https://doi.org/10.1016/j.jclepro.2019.117733>. <https://bmjopenrespres.bmj.com/content/bmjresp/7/1/e000571.full.pdf>



Strategic Objective 3

People

**We will embed a
mindset of sustainability
in how we operate.**



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Strategic objective 3 | People

A mindset of sustainability embedded in how we operate

Embedding a mindset of sustainability is about creating a culture where sustainability is consistently considered in the decision-making process. This provides a mutually beneficial benefit for Novartis employees and for the company. The opportunity to work in an organization that puts human and planetary health at the heart of its purpose and strategy is an attractive one for all generations, particularly for millennials. Many of our employees are motivated by the opportunity to contribute to a greater good.

Building momentum

We are mobilizing a network of green ambassadors to act as the link between global and local initiatives. The Green Ambassadors Network will provide the channel through which initiatives can be communicated, promoted, sponsored and shared.

Opportunities to innovate

We will support opportunities to innovate by engaging with teams across Novartis to encourage and foster sustainable innovation initiatives. The One Novartis Environmental Sustainability Team (ONEST) initiative is a global network of colleagues who collaborate to develop innovative sustainability projects. We will use that network to access the power of our people to think, create and innovate about how we can continually develop and improve our sustainability efforts on an ongoing basis.

Learning journey

Development of the learning journey will help to raise awareness and understanding of our environmental sustainability story. The training, which includes a learning map and training modules, will provide employees with a basic understanding of key aspects of the environmental sustainability strategy, and an option to focus on particular business unit features, as appropriate. Equipping employees with this training, will help to embed the sustainability mindset across business units.

Case study

One Young World (OYW) - Novartis Caucus 2021

Operation Planetary Health

Description

Purpose
The purpose of the OYW-Novartis Caucus 2021: Operation Planetary Health was to raise awareness about environmental sustainability and to create a movement to accelerate change within the organization. The theme of “planetary health” aligns with and builds on Novartis environmental sustainability targets and strategy.

Aims
The event aimed to inspire employees to address specific environmental challenges with actionable and sustainable solutions. Our focus was on carbon footprint reduction (Scope 3 emissions; emissions in our value/supply chain) and the circular economy. We also sought to gain insights and solutions for emerging issues that do not yet form part of our company targets.

The goal was to give employees a sense of responsibility and a platform to act and be empowered to make a difference.

OYW-Novartis Caucus 2021: Operation Planetary Health enabled all associates with an interest or passion for environmental sustainability to support the company in making a bold impact on planetary health.

Outcomes

891	Participants/unique users
10758	Views on Novartis Caucus portal
94	Yammer conversations
396	Ideas submitted
795	Comments
1869	People visited the platform
30	Workshops
>40	Subject matter experts from all units supported the innovation challenge

- 3 winners selected
- Greening our clinical studies
 - Reimagining shipment workflows
 - The GreeNovartis engagement app

Strategic Objective 4

Policy

**A strong voice influencing
the global environmental
sustainability agenda.**



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Strategic Objective 4 | Policy

A strong voice influencing the global environmental sustainability agenda

To achieve our fourth strategic objective, we will collaborate with industry partners to influence change across our sector.

Build trust

To achieve our ambition, we must build trust and to do so, we will need to be transparent about our successes and failures. A solid data foundation will inform strategic planning and decision-making. Our ongoing reporting of progress through disclosure platforms such as CDP and TCFD will underpin our commitment to build trust.

Focus our message

Clear and consistent messaging is key to our efforts to influence relevant advocacy and public affairs matters in the US, the EU and globally. We will leverage our country leadership teams to effectively influence at national and international fora. Development, sponsorship and communication of industry-relevant thought leadership will further enhance our efforts to engage with this important topic across our industry.

At the UN Climate Change Conference, COP 26, we worked with our partners to raise awareness of the the importance of the intrinsic link between human and planetary health, health equity and climate justice. We will build on that platform to further develop this important topic throughout the duration of this strategy.

Collaborate with industry partners

We will collaborate with industry partners to shape the environmental sustainability agenda across our sector. Clear and consistent communications and messaging with our diverse stakeholder group, including suppliers, customers, employees, shareholders and governments, will provide a single ‘One Novartis’ voice on environmental matters.

Case study

Energize program

Description

Launched at COP 26 in Glasgow (November 2021),¹ the *Energize* program is a collaboration between Novartis and nine global pharmaceutical companies to engage hundreds of suppliers in bold climate action to decarbonize the pharmaceutical value chain. Members include: AstraZeneca; Biogen; GSK; Johnson & Johnson; MSD; Novartis; Novo Nordisk; Pfizer; Sanofi and Takeda.

The program is a ‘first-of-its-kind’ innovation to leverage large-scale collaboration to dramatically reduce emissions across an entire sector’s supply chain. By proactively engaging with suppliers to create renewable energy opportunities, Novartis is collaborating with partners to collectively address their energy usage.

Benefits

The program aims to help pharmaceutical and healthcare suppliers to address their own operational Scope 2 greenhouse gas emissions through green power procurement, which in turn will reduce the participating companies’ Scope 3 emissions.

The *Energize* program enables pharmaceutical suppliers to learn more about renewable energy adoption and contracting. In practice, this means giving suppliers – who may not otherwise have the internal resources or expertise available – the opportunity to participate in the market for power purchase agreements (PPAs) as part of their efforts to move to 100% renewable electricity.

“We believe Energize will be a really effective collaboration of pharmaceutical companies looking to take bold climate action. Every business should be moving aggressively towards using 100% renewable electricity, and supporting their supply chains to do the same,” (Sam Kimmins, Head of RE100, Climate Group).

Renewable energy procurement can be challenging for companies of all sizes for a variety of reasons. The *Energize* program is designed to overcome typical market barriers such as inadequate knowledge about renewable energy transactions, load size, lack of credit, and the need for guidance throughout a complex and protracted contracting process. Participating suppliers will learn about the renewable energy market, receive guidance on PPAs, and have the opportunity to access and contract for renewable energy on their own or as part of a collaborative buyers’ cohort.

¹ United Nations Climate Change. Today’s Top of the COP: The Energy Transition. November 4th 2021. Accessed April 12th 2022. <https://climatechampions.unfccc.int/todays-top-of-the-cop-the-energy-transition/>

