



# *Bayer Climate Strategy*

## *Transition and Transformation Plan*

*Mitigation, Adaptation & Access*

Health for all. Hunger for none

March 2025

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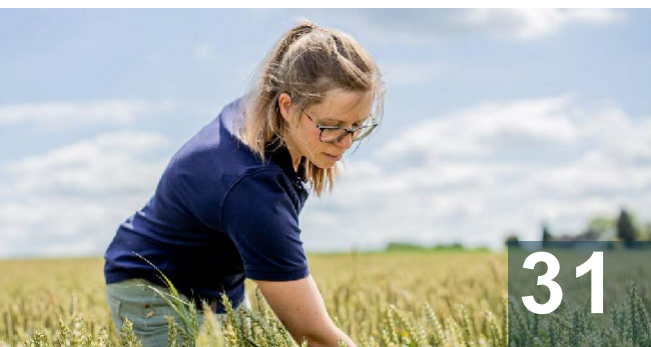
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# A Letter from the CEO



Bill Anderson, Chief Executive Officer and  
Chief Sustainability Officer Bayer AG

Climate change affects us all and is one of the greatest challenges that humankind will face in the future.

For us, “Health for all. Hunger for none” means more than just corporate responsibility. Through our three divisions Pharmaceuticals, Consumer Health and Crop Science, we are uniquely positioned to support access to healthcare and food security. This safeguards Bayer’s future growth and is an integral part of our business strategy, operations, and compensation system.

To support Bayer’s mission, we defined our strategic triangle, where we have a significant impact and aim to both boost our ambitions and drive our business solutions forward:

- // Climate change negatively impacts both the availability and nutritional value of staple food crops and vegetables. Everyone needs to contribute to reducing emissions.
- // Health needs and access to healthcare are challenged by climate change, with rising temperatures compounding health issues and new diseases and more health challenges.
- // Food security fundamentally depends on the continuous development and advancement of sustainable agricultural innovations and on the health of farmers and communities who produce food.

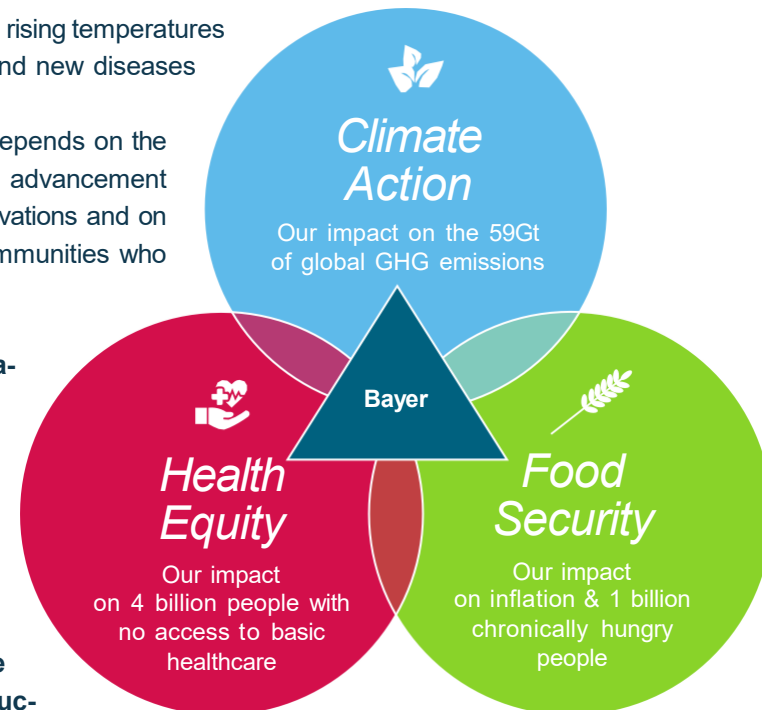
**Our Transition and Transformation Plan is a direct result of our strategic triangle and translates our mission into concrete targets and actions. We are focused on delivering.**

**Through our businesses, we are able to contribute to global reduc-**

**tion targets and provide access to healthcare and agricultural solutions for humans around the world.**

We are welcoming all of you to support our journey.

Bill Anderson, CEO/CSO



**Bayer's Areas of Impact**  
Our Sustainability Strategic Triangle

# Climate Integrated into Business Strategy to Contribute to Global Goals

## Letter from Matthias Berninger

The global climate crisis continues at an alarming rate. In 2023, the global average temperature increase surpassed 1.5°C for the first time. The pace of change exceeds projections. Almost a decade later, we are on a trajectory well past the limits agreed in the 2015 Paris climate conference. Around the world, changing climate conditions increasingly impact human health and harm agricultural production.

This **Transition and Transformation Plan** provides an overarching picture of our climate strategy including key actions mitigation, adaptation and access. This plan serves as an update to our initial climate program from 2019.

The **“Transition”** section delves into our systematic approach aligned with what has been agreed in Paris to keep temperature increase within 1.5°C.

- 1: Growing CO<sub>2</sub>e neutral
- 2: Cutting our emissions in half every decade until 2050
- 3: Removing the remaining emissions. It outlines the commitments, targets and actions we are implementing to achieve Net Zero.

The **“Transformation”** section explores our strategic initiatives in our businesses, showcasing how we leverage our unique position to create impact supporting

our farmers, patients and consumers through innovative solutions and services. Together, this plan provides a comprehensive overview of our ambitious climate strategy integrated into the business to generate value across multiple dimensions. Climate action for Bayer is good business. We need bold action across value chains to mitigate and drive adaptation.

**We invite all of you to provide feedback, and we are looking forward to an enhanced discussion with you to collaborate and drive our mission “Health for all. Hunger for none”.**



Matthias Berninger, Executive Vice President & Head of Public Affairs, Sustainability & Safety of Bayer

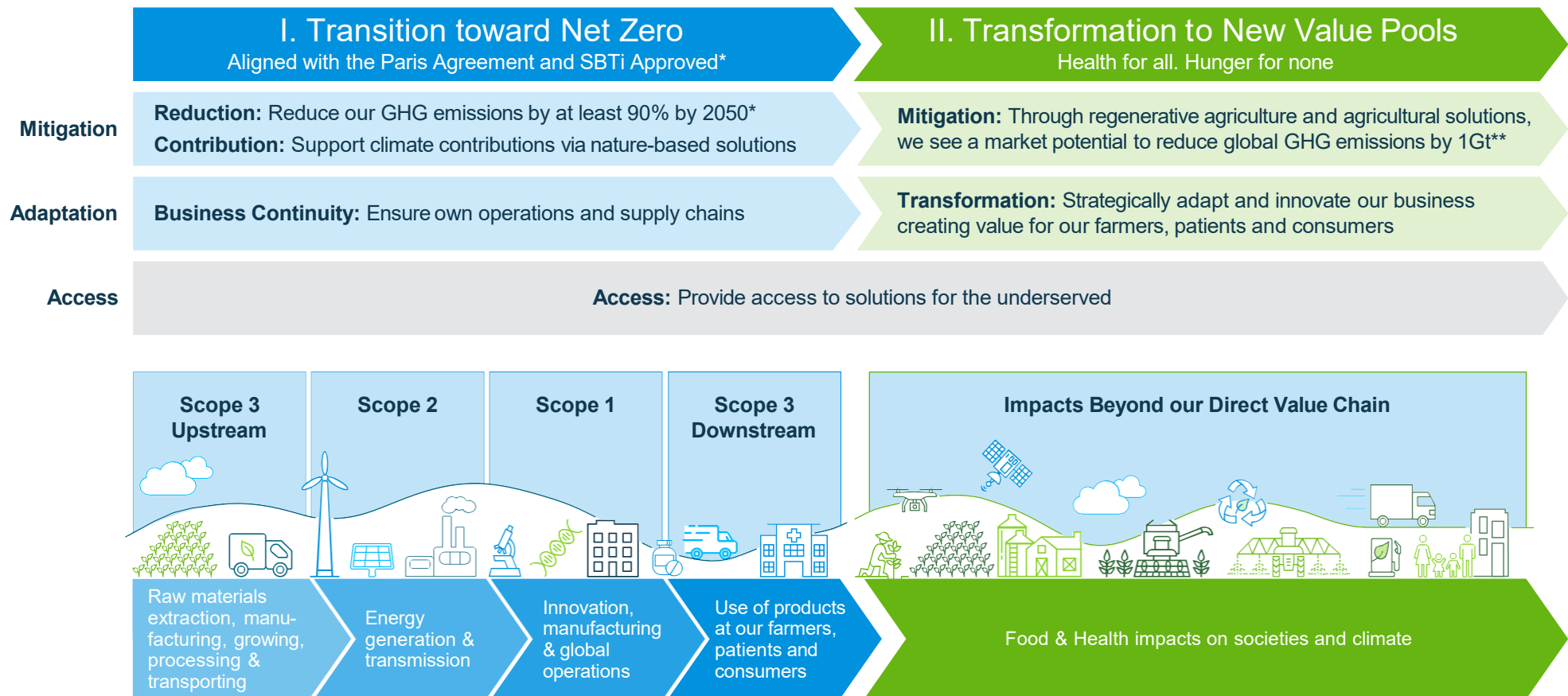


# Bayer Climate Strategy

## Navigating the Path to Net Zero and Transformation to New Value Pools.

We are continuously striving to improve our Climate Strategy. We have divided our Climate Strategy into a Transition and a Transformation section. The transition is focused on us and commitments we need to deliver on. The transformation is beyond our boundaries and reflects new value pools where customers mitigate and strategically adapt.

With our businesses we have massive potential to positively impact food and health systems through innovation, adaptation and the mitigation of global emissions through regenerative agriculture and new solutions. The overarching actions are described in the following report.



\* SBTi approved our near-term target until 2029. Net Zero Target alignment requested by SBTi. \*\* From 59Gt global GHG emissions (reference year 2019; source: IPCC AR6 WGIII Full Report 2022).

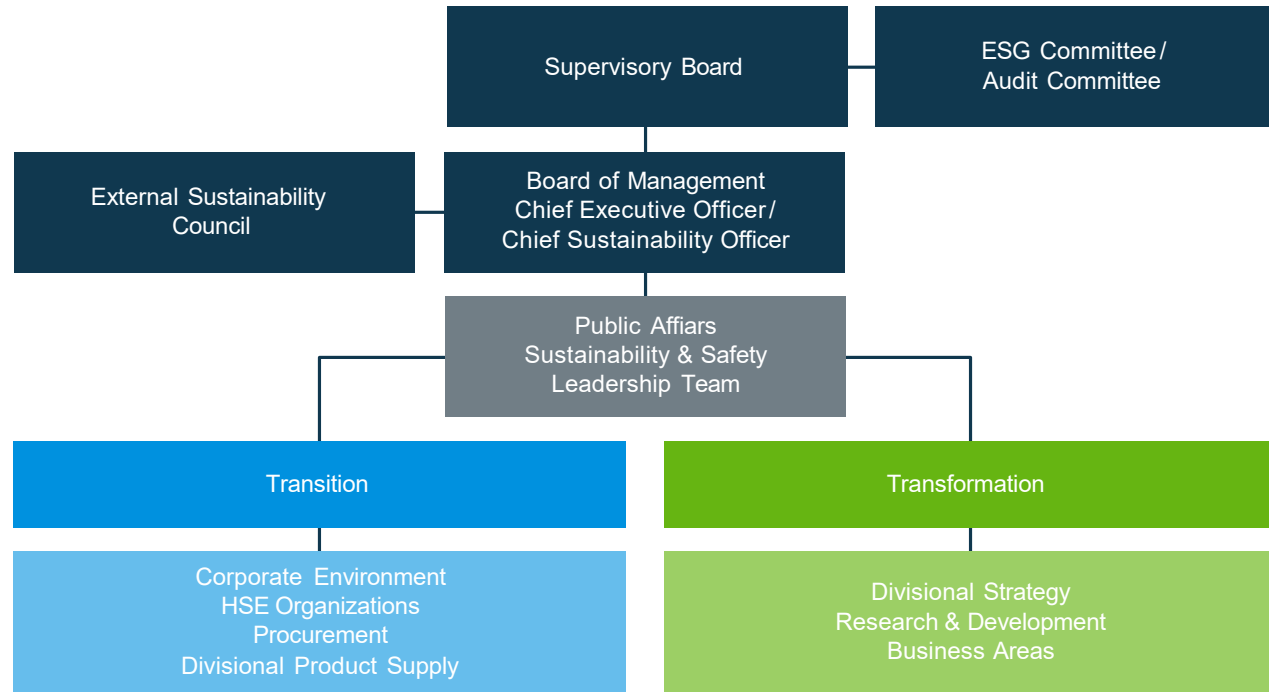
# Climate Governance

**Securing Long-term Success and Fostering a High Level of Trust Among All Stakeholders.**



*We have set up a governance system across all divisions to drive climate action forward. Climate action is a cross-function work, where every department in the organization can contribute. By doing this we are moving from commitment towards impact and opportunities. The objective is to leverage these opportunities by benefiting our farmers, patients and consumers, while reducing the risks.*

Chitkala Kalidas, Head of ESG



The Chairman of the Board of Management (CEO) holds direct responsibility for climate protection in his role as Chief Sustainability Officer. In keeping with their level of importance, climate-change-related topics and Bayer's climate strategy are discussed with the Meetings of the Board of Management, the Supervisory Board and both, the ESG Committee and the Audit Committee of the Supervisory Board. In addition, the Sustainability Council that was established in 2020 advises the Board of Management in all matters relating to sustainability – including climate protection.

The Board of Management (CEO) is supported in this by the Public Affairs, Science, Sustainability & HSE Enabling Function and the sustainability departments within the divisions. The divisions coordinate the operational implementation of the climate protection measures. We have formed Group-wide working groups for the strategic and operational implementation of climate-change-related activities.

# Climate Governance

## Securing Long-term Success and Fostering a High Level of Trust Among All Stakeholders.

Bayer is committed to responsible corporate governance. By adhering to laws, safeguarding values and strengthening our reputation, we aim to secure our company's long-term success and to foster a high level of trust among all stakeholders. Our endeavors in this regard are further supported by our increased integration of sustainability aspects into all processes and at all levels of the company.

Corporate governance practices that go beyond the legal requirements are derived from our mission and our common values, which form the basis for the respectful working relationship among our employees and with our external partners. The main guidelines are summarized primarily in our Group regulations on compliance, human rights, and fairness and respect at work, as well as in our Supplier Code of Conduct and the Bayer Societal Engagement (BASE) principles.

Our Group-wide sustainability targets are integrated into the remuneration system for the Board of Management. In so doing, we aim to continuously increase value for stockholders and other stakeholders and ensure the continuity of our company for the long-term. Quantitative targets derived from the climate strategy are integrated into the long-term variable compensation (LTI) of the Board of Management and LTI-entitled managerial employees with a weighting of 20%. For more information, please see the [Annual Report](#).

Bayer maintains an integrated management system (IMS) based on the overarching Plan-Do-Check-Act (PDCA) principle.





# Risks & Opportunities

## Climate Change Is Impacting Our Farmers, Patients and Customers Already Today. We Are Working on Solutions for the Biggest Challenges.

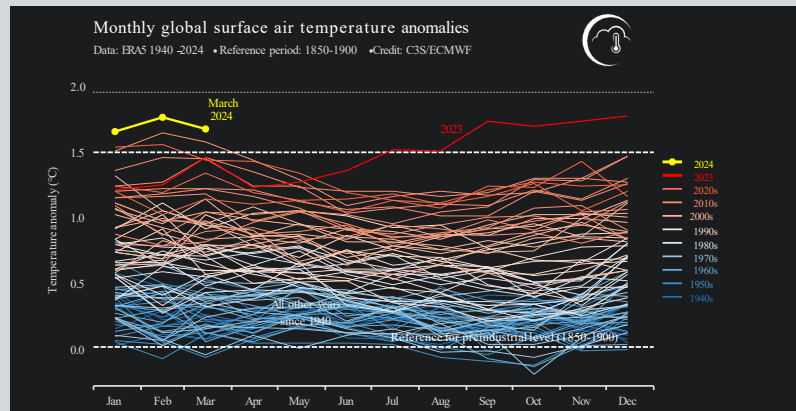
### Today:

We observe droughts, extreme weather events and temperature increases in all regions globally. The latest climate data (February 2024) shows record highs driven by climate change. Farmers, patients and consumers are already feeling the impacts of climate change today.

### Forecasted:

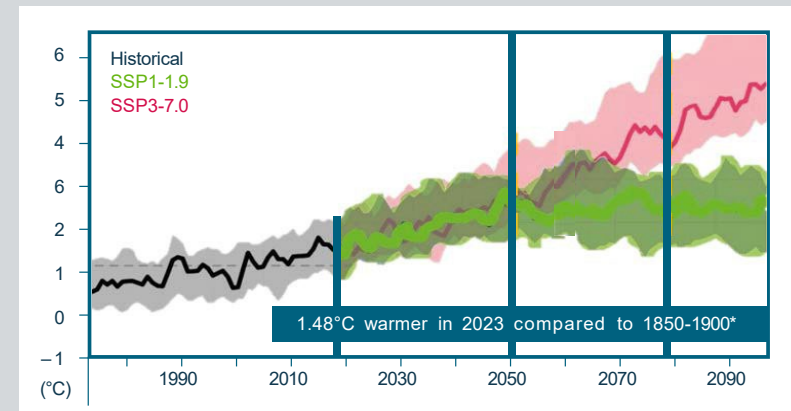
We use global societal scenarios and climate data as input in our strategic planning. As the world is currently not on track to achieve the Paris Agreement (UN Emission GAP Report 2023), the SSP3-7.0 (3.6°C best estimate increase of global average temperature by 2100) is our leading scenario, accompanied by the SSP1-1.9 (1.5°C aligned) scenario to assess transition impacts.

### Global Surface Air Temperature Anomalies



Data: ERA 5, Copernicus Climate Change Service; Credit: C3S/ECMWF

### Global Temperature Change



\*Copernicus: 2023 is the hottest year on record, with global temperatures close to the 1.5°C limit | Copernicus

### Primary Risk:

Our downstream agricultural value chain due to changing environmental conditions.

Impacts from climate change broken down: Up to 10% of global crop and livestock areas will become climatically unsuitable by 2050 under SSP3-7.0 (IPCC AR6 Fact Sheet – Food and Water). On page 33, you can take a detailed look at the impacts of agriculture. You can find our Climate Impact Drivers (main impact areas) and a qualitative assessment in our [TCFD Report](#).

### Opportunities:

To innovate and shape the future business model and activities to create value for our farmers, consumers and patients.



## Transition toward Net Zero

Our climate-related **Transition Plan** is an action plan which clearly lays out Bayer's climate strategic targets, actions and resources for its transition toward Net Zero.

We have aligned our **Transition Plan** along the requirements of the IFRS, CSRD, CDP and Transition Plan Taskforce.

The plan reflects our current approaches and understanding. As the world is constantly evolving, we will update this plan on a regular basis.

# Bayer's Reduction Plan toward Net Zero



## We Are on Track to Deliver on Our Commitment

We had set an interim target by 2029 as the midpoint of the target period. Accordingly, we aimed to achieve a 20% reduction of our combined Scope 1 and 2 greenhouse gas emissions overall and a 6% reduction in Scope 3 greenhouse gas emissions.

These reduction targets were attained, or the target set was exceeded, respectively, in 2024. Compared with the base year 2019, we reduced our combined Scope 1 and Scope 2 greenhouse gas emissions by 21.3% and our target-related Scope 3 greenhouse gas emissions by 12.7% in 2024.

We address our climate protection activities in our latest [Annual Report 2024](#), [Impact Report 2024](#) and [CDP](#).

## Medium-term Climate Targets by 2029

We intend to reduce our own GHG emissions by an absolute 42% compared to the base year 2019 by the end of 2029 from Bayer sites whose annual energy consumption exceeds 1.5 terajoules. This target is on the pathway to a 1.5°C scenario which was reviewed and acknowledged by the SBTi\*

Further we aim to reduce GHG emissions from relevant Scope 3 categories in our supply chain by an absolute 25% (compared to the 2019 base year) by 2029. This target is on the pathway to a below 2°C scenario which was reviewed and acknowledged by the SBTi\*.

## Net Zero Target by 2050

We have set ourselves the target to achieve Net Zero GHG emissions including our entire value chain by 2050 or sooner and signed the [Business Ambition for 1.5°C](#). This target was formulated in accordance with the criteria of the SBTi defining Net Zero as a reduction of -90% across Scope 1, 2 and 3\*.

\* We have received our target validation incl. a long-term target from the Science Based Target Initiative.

\*\* In accordance with our SBTi target and relevant categories (88% in scope).

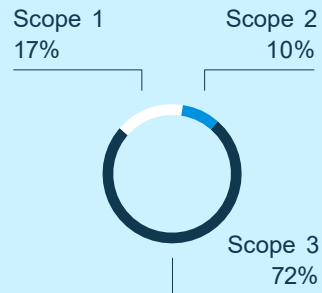
\*\*\* In accordance with our SBTi target and relevant categories (68% in scope).



# Bayer Total GHG Inventory

## We Are on Track to Deliver on Our Commitment

In 2024, we reduced our total greenhouse gas emissions (Scope 1, 2 and 3) compared to the reference year 2019 by around 1.9 million tons, while our business has grown over the same period. Regarding the reduction in our own emissions (Scope 1 and 2), we have also exceeded our targets, achieving a decline of 21.3% since 2019. We address our climate protection activities in our latest [Report to CDP](#).



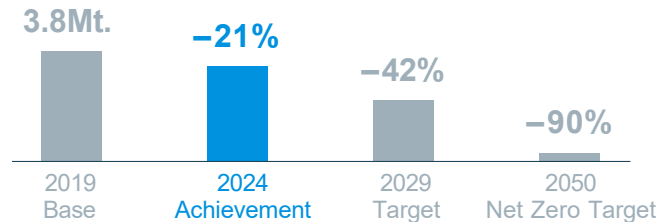
## Total Greenhouse Gas Emissions (Scope 1, 2 and 3)

| Million Metric Tons of CO <sub>2</sub> Equivalents  | 2019  | 2023  | 2024  |
|---|-------|-------|-------|
| Total emissions according to the location-based method <sup>1</sup>   | 12.67 | 11.98 | 11.23 |
| Total emissions according to the market-based method <sup>2</sup>   | 12.58 | 11.45 | 10.66 |
| Specific total emissions (kg CO <sub>2</sub> e/€ thousand external sales) according to the location-based method <sup>3</sup> | 291   | 252   | 241   |
| Specific total emissions (kg CO <sub>2</sub> e/€ thousand external sales) according to the market-based method <sup>4</sup>   | 289   | 240   | 229   |

<sup>1</sup>Total emissions according to the location-based method are calculated by adding together direct emissions (Scope 1) and indirect emissions (Scope 2) calculated using the location-based method of the GHG Protocol plus indirect emissions from our value chain. For the Scope 3 categories, we use the five categories of material importance to Bayer that represent our target inventory for Scope 3 emissions: (3.1) purchased goods and services; (3.2) capital goods; (3.3) fuel- and energy-related activities; (3.4) (upstream) transportation and distribution; and (3.6) business travel. <sup>2</sup>Total emissions according to the market-based method are calculated by adding together direct emissions (Scope 1) and indirect emissions calculated using the market-based method of the GHG Protocol (Scope 2) plus indirect emissions from our value chain. For the Scope 3 categories, we use the five categories of material importance to Bayer that represent our target inventory for Scope 3 emissions (see above). <sup>3</sup>Specific total emissions according to the location-based method are calculated by adding together direct emissions (Scope 1) and indirect emissions calculated using the location-based method of the GHG Protocol (Scope 2) plus indirect emissions from our value chain, then dividing this total by the external sales volume. For the Scope 3 categories, we use the five categories of material importance to Bayer that represent our target inventory for Scope 3 emissions (see above). <sup>4</sup>Specific total emissions according to the market-based method are calculated by adding together direct emissions (Scope 1) and indirect emissions calculated using the market-based method of the GHG Protocol (Scope 2) plus indirect emissions from our value chain, then dividing this total by the external sales volume. For the Scope 3 categories, we use the five categories of material importance to Bayer that represent our target inventory for Scope 3 emissions (see above).

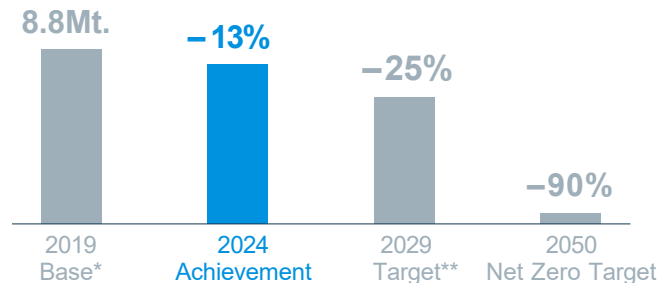
## Scope 1

At Bayer, direct greenhouse gas emissions are primarily caused by the combustion of primary energy sources such as gas and oil. These are used to generate electricity, steam and auxiliary energy (such as for heating and cooling) for the manufacture of our products. Further emissions derive from chemical processes which are required to produce chemical reactions.



## Scope 3

Upstream emissions are primarily attributed to the procurement of raw materials from the chemical industry, agricultural inputs, final products and transportation. Downstream emissions predominantly occur at the end of the product's life cycle.



\*In accordance with our SBTi target and relevant categories (88% in scope).

\*\*We will publish a revalidated Baseline in line with our updated SBTi target with the 2025 reporting



# Decarbonization Journey

Bayer has developed from an energy-intensive pharmaceutical and chemical company toward a life science company with less energy intensity. The challenges have changed, but our goals have

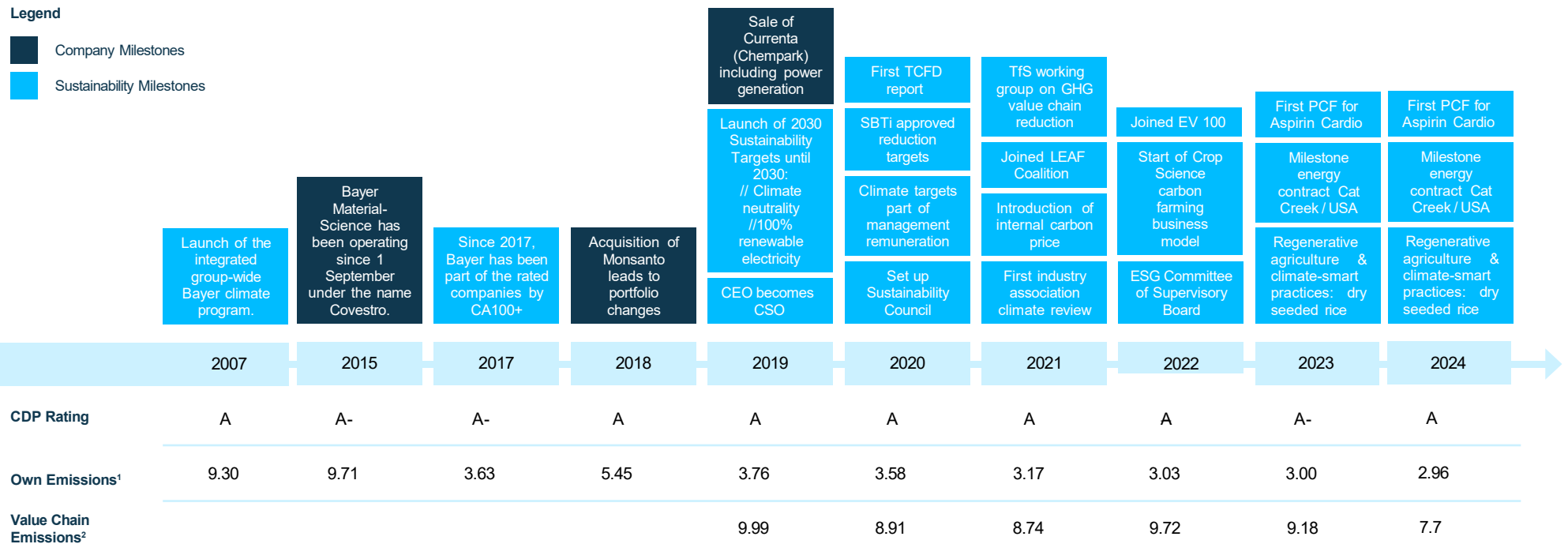
remained the same. Bayer will develop and change its portfolio, but we will continue our pathway to enhance sustainability.

## Pharmaceutical and Chemical Company

## Life Science Company

### Legend

- Company Milestones
- Sustainability Milestones



<sup>1</sup>Scope 1 & 2 marked based in million tons of CO<sub>2</sub> equivalent

<sup>2</sup>Scope 3 in million tons

# Bayer's GHG Inventory Scope 1 & 2

## Delivering What We Can Influence

Bayer's greenhouse gas emissions fell further in 2024 compared to 2023. We succeeded in reducing our own Scope 1 and Scope 2 emissions by 1,4%, or around 42,000 metric tons of CO<sub>2</sub> equivalents, mainly by increasing the share of our electricity derived from renewable energies (Scope 2). Overall, we have already reduced our own emissions (Scope 1 and Scope 2) by 21.3% compared with the base

year 2019. In our GHG emission reporting, we take account of the recommendations of the Greenhouse Gas Protocol (GHG Protocol). Direct emissions from our own power plants, vehicles, waste incineration plants and production facilities (Scope 1) and indirect emissions from the procurement of electricity, steam and cooling energy (Scope 2) are determined at all environmentally relevant sites whose

annual energy consumption exceeds 1.5 terajoules. In this connection, we have published our [methodology](#) for the group-wide recording of greenhouse gas emissions. In line with the GHG Protocol, we report indirect emissions (Scope 2) according to both the location-based and the market-based method. Further information can be found in our [Annual Report](#) or our [CDP reporting](#).

## Greenhouse Gas Emissions (Scope 1 and 2)

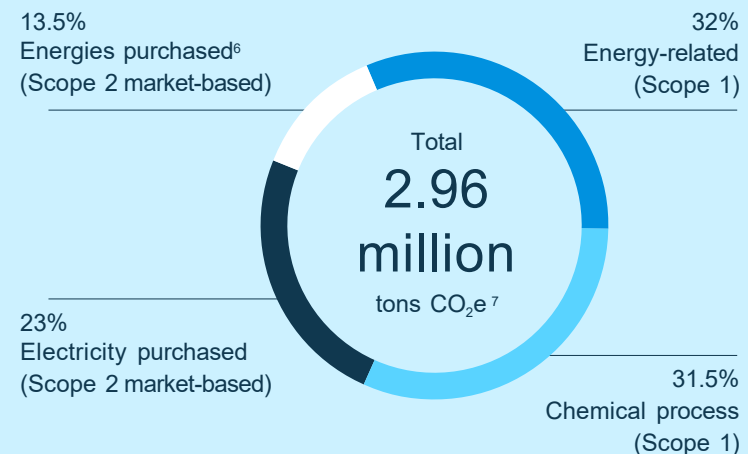
| Million Metric Tons of CO <sub>2</sub> Equivalents   | 2019 | 2023 | 2024 |
|--|------|------|------|
| Scope 1: Direct emissions <sup>1</sup>   | 2.08 | 1.89 | 1.88 |
| Scope 2: Indirect emissions <sup>2</sup> according to the location-based method                  | 1.77 | 1.65 | 1.65 |
| Scope 2: Indirect emissions <sup>2</sup> according to the market-based method <sup>3</sup>       | 1.68 | 1.11 | 1.08 |
| Total greenhouse gas emissions (Scope 1 and 2) according to the market-based method <sup>3</sup> | 3.76 | 3.00 | 2.96 |

<sup>1</sup> In line with the GHG Protocol, we also report the direct emissions resulting from the generation of energy for other companies that is sold as a site service. In 2024, these emissions corresponded to 0.12 million metric tons of CO<sub>2</sub> equivalents.

<sup>2</sup> Typically, CO<sub>2</sub> accounts for 97.2% of all energy-related greenhouse gas emissions. When determining indirect emissions, our calculations are therefore limited to these greenhouse gases and we indicate all emissions in CO<sub>2</sub> equivalents.

<sup>3</sup> For Bayer, the market-based method of the GHG Protocol most reliably reflects the values for Scope 2 emissions and the success of emissions reduction measures, so we apply emissions volumes calculated using this method when calculating the total and specific greenhouse gas emissions.

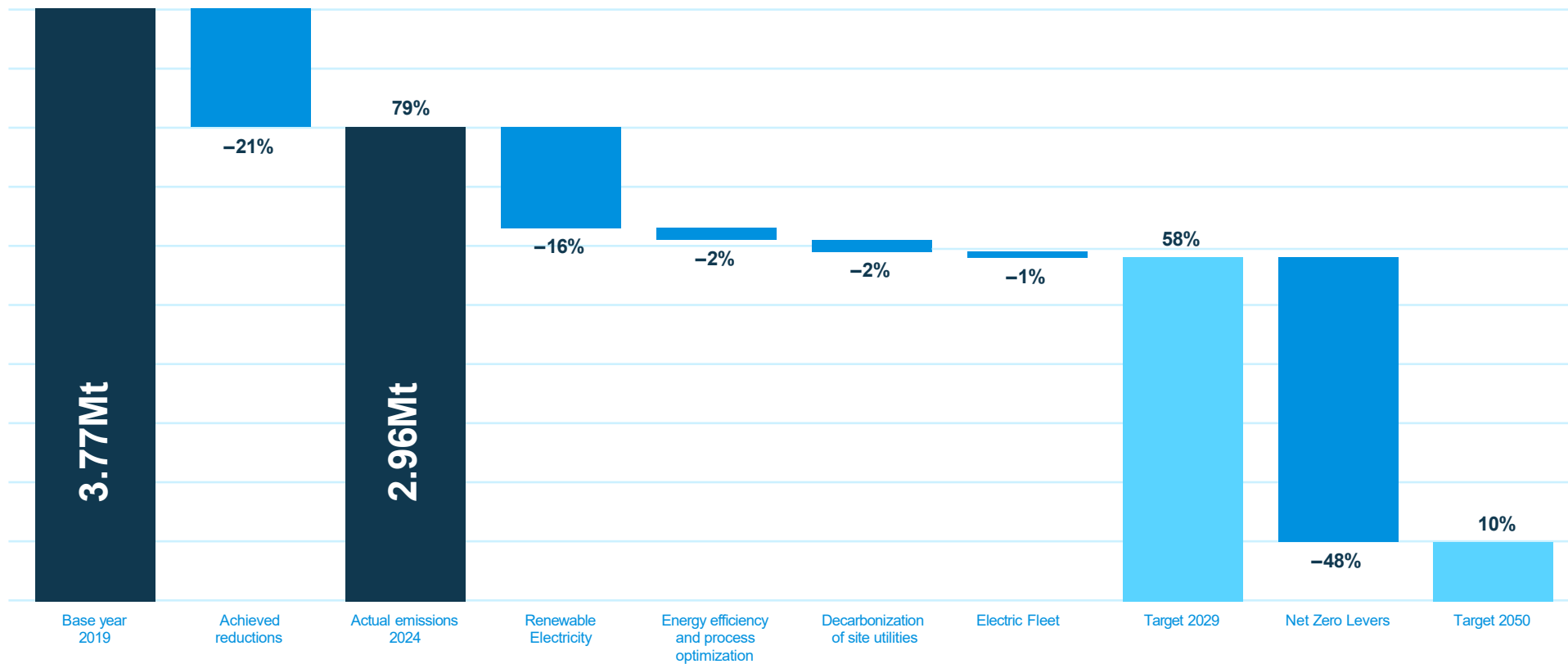
## Sources of Greenhouse Gas Emissions at Bayer



<sup>6</sup> Steam, cooling, other than electricity

<sup>7</sup> Million metric tons of CO<sub>2</sub> equivalents

# Reduction Levers Own Operations (Scope 1 and 2)



We have developed a Net Zero roadmap to achieve our ambitious climate targets\*. This roadmap for Scope 1 and 2 comprises various measures with different magnitudes of impacts. To implement our long-term climate strategy, we focus on reducing the greenhouse gas emissions associated with our operations and on strengthening the resilience of our business areas. Furthermore, reducing our own emissions becomes increasingly challenging as our business expands. Any organic growth will be additionally compensated for.

## Assessing Emissions on Site Level

Emissions are directly measured by sites and reported once a year via the environmental reporting system. With our global engineering colleagues, we are gradually reducing these emissions.

## Hurdles

So far, we are on track, but hurdles to reducing our own emissions remain. At a local level, many regulations are not yet in place to enable actual

emission reduction. Global investments in renewable production, availability, and energy grids need to be prioritized and supported. Specifically, the regulatory framework and infrastructure to reduce hard-to-abate chemical process emissions are not available and are at best in the piloting phase.

\*We have handed in a target validation incl. a long-term target at the Science Based Target initiative.

Disclaimer: The levers and associated reduction potential reflect our current understanding. This will be further developed and adjusted over the years.



# Reduction Levers Own Operations

## UNTIL 2029

### RENEWABLE ELECTRICITY:

By 2029 we plan to source 100% of our electricity from renewables, respecting specific criteria as e.g. additionality and geographical proximity. Currently 39.5% of our electricity stems from renewable sources.

### ENERGY EFFICIENCY AND PROCESS OPTIMIZATION:

We currently plan further capital expenditures of approximately €200 million in our plants and buildings to attain our climate targets in the coming years through 2029. This includes process innovations, efficient technology and optimized energy management systems.

### DECARBONIZATION OF SITE UTILITIES:

At various sites we are investing in renewable and lower GHG footprint utilities. Projects are underway to advance the use of climate-neutral technologies including geothermal energy and emissions-free steam production.

### ELECTRIC FLEET

By 2030 we aim to transition our roughly 23,000 vehicles to electric where feasible. Bayer joined the EV100 initiative of the Climate Group and has validated its activities according to the criteria.

## UNTIL 2050

### NET ZERO

We aim to achieve Net Zero by 2050 or sooner. Our expert teams are constantly working on this target understanding emission sources and reduction methods. We plan to use a mix of actions including:

- // Energy efficiency and process optimization
- // Renewable utilities
- // Technological innovation incl. carbon capture and storage

We have made cost estimates for achieving Net Zero but will not disclose investments due to uncertainties and assumptions in our calculations. Significant barriers include unsupportive global policies, lack of a globally aligned playing field, challenges in passing costs to customers, insufficient governmental infrastructure funding and solutions still in the piloting stage. Additional GHG emissions from organic growth are further reduced accordingly.



*One key factor in decarbonization is the shift to renewable energy sources. We have set criteria to ensure the highest quality level of supply for Bayer.*

Sabrina Ritterbach,  
Energy & Renewables Global Lead

# Decarbonizing Bayer's Own Operations Around the World

## Renewable Energy

(Cat Creek/Soda Springs, United States)

Bayer has entered a significant renewable energy agreement with a planned supply volume of 1.4 terawatt hours annually aiming to transition to renewable sources by procuring 60% of its US sites' electricity from renewable sources by 2028.

## Efficiency

(Guatemala City, Guatemala)

At one of our sites, we improved our ventilation and air conditioning to avoid unnecessary humidification in the dry season (overcooling and reheating). The site was able to reduce energy consumption and 18% of its GHG emissions permanently.

## Circular Solutions

(Bergkamen, Germany)

The Solvent Management & Recovery Plant at SC Bergkamen utilizes advanced distillation columns, leading to substantial global impacts including GHG reduction and enhanced supply security, with the implementation of acetone recovery marking a significant milestone in reducing the site's carbon footprint by around 50,000 tons of GHG emissions.

## Renewable Electricity

(Beijing, China)

The 1MW photovoltaic project (Phase I) of the Supply Center Beijing was officially grid-connected in October 2023.

## Efficiency

(Kunming, China)

At our site, we modified ventilation and air conditioning to only run in full operation mode during production times. This resulted in relevant reductions of energy usage.

Further examples can be found in our [Annual Report 2024](#)

# Bayer's GHG Inventory Scope 3

Reducing emissions in our value chain (Scope 3) is an increasing challenge in the face of a growing business. We aim to reduce greenhouse gas emissions from relevant Scope 3 categories in our supply chain by an absolute 25% (compared to the 2019 base year) by 2029 (in accordance with the criteria set out by the Science Based Targets

initiative [SBTi]). This target was first validated in 2019 and in 2024 updated in line with the SBTi criteria. To achieve significant reductions in the supply chain in the coming years, we are intensifying our collaboration with suppliers, in particular in terms of a shift to renewable energies.

We have also specified this in our updated Supplier Code of Conduct. All procedures applied by Bayer in the individual categories are described in detail in the Report to CDP.

## Greenhouse Gas Emissions in the Value Chain (Scope 3)

| Million metric tons of CO <sub>2</sub> equivalents   | 2019 | 2023   | 2024    |
|--|------|--------|---------|
| Scope 3: Indirect emissions from our upstream and downstream value chain (by materiality) <sup>1</sup>     | 9.99 | 9.18   | 8.38    |
| of which indirect emissions from our upstream and downstream value chain to attain the SBT <sup>2, 3</sup> | 8.42 | 8.44   | 7.70    |
| of which (3.1) purchased goods and services  | 6.62 | 6.52   | 5.87    |
| of which (3.2) capital goods   | 0.51 | 0.49   | 0.37    |
| of which (3.3) fuel- and energy-related activities   | 0.73 | 0.54   | 0.65    |
| of which (3.4) (upstream) transportation and distribution  | 0.66 | 0.70   | 0.60    |
| of which (3.6) business travel   | 0.30 | 0.19   | 0.21    |
| Progress in reducing Scope 3 emissions relative to the base year 2019 <sup>3, 4, 5</sup>                   |      | -4.2 % | -12.7 % |

Previous years' figures restated.

<sup>1</sup>Emissions from eight Scope 3 categories are of material importance to Bayer and together represent our total Scope 3 emissions: (3.1) purchased goods and services, (3.2) capital goods, (3.3) fuel- and energy-related activities, (3.4) (upstream) transportation and distribution, (3.5) waste generated in operations, (3.6) business travel, (3.7) employee commuting and (3.12) end-of-life treatment of sold products.

<sup>2</sup>Science Based Target.

<sup>3</sup>For the calculation of our reduction target for Scope 3 emissions in line with SBTi targets set in 2019, the following Scope 3 categories are covered: (3.1) purchased goods and services, (3.2) capital goods, (3.3) fuel- and energy-related activities, (3.4) (upstream) transportation and distribution and (3.6) business travel. Revalidated target of 25% reduction including additional Scope 3 categories will be reflected in 2025 year-end reporting.

<sup>4</sup>2029 target: 25% reduction

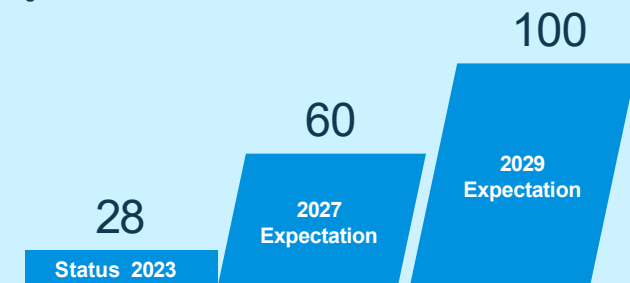
<sup>5</sup>All greenhouse gas emissions from air travel in 2020, 2021, 2022, 2023 and 2024 were offset.

## FROM SPEND-BASED INTO HYBRID

Achieving our Scope 3 target necessitates accurate and reliable information about our suppliers' performance. PCF data from LCA databases, along with information from our suppliers, will be incorporated into our Scope 3 inventory. This will allow us to gradually replace macro-economic emission factors with more precise data.

## VALUE CHAIN ACTION IS KEY

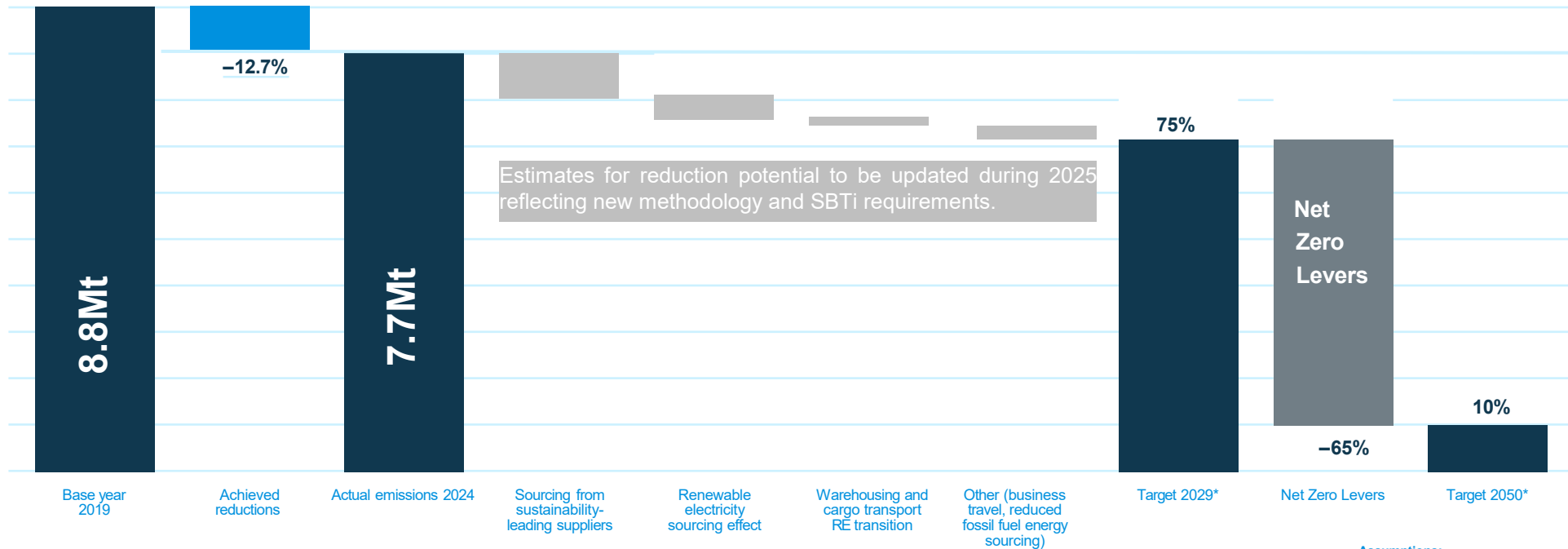
We've strengthened our supplier code of conduct to require decarbonization. With a shared goal of reducing emissions, we're setting targets, taking action and tracking progress. However, our evaluation of supplier performance reveals it's insufficient for meeting our long-term Scope 3 targets. Of our top 100 suppliers that account for 30% of emissions, we have 28 suppliers with Science Based Targets initiative-approved goals.



**Suppliers with set short-term targets in alignment with the Science Based Targets Initiative**



# Reduction Levers Value Chain Scope 3



## Action across the Value Chain

Our ambition is to achieve net zero by 2050 or sooner, including our Scope 3 emissions\*. This task is particularly difficult because we cannot directly control the required decrease in greenhouse gas emissions, and the existing conditions are equally demanding. Furthermore, mitigating emissions in our value chain (Scope 3) becomes increasingly challenging as our business expands. Any organic growth will be additionally compensated for.

## Significant Barriers

So far, we are on track, but significant barriers to reducing Scope 3 emissions remain. Collective action is required to drive activities forward. Global policies are currently not designed to support the

transition. In addition, there is competition and a lack of global alignment. The absence of common action across industries and the lack of a level playing field are hampering the transition. We need to see further governmental action and investments to initiate and accelerate the transition, especially in terms of infrastructure (e.g., green hydrogen network, renewable electricity).

## Transparency Is Key

We understand our emission sources and strive to implement actions for each relevant category. Since we cannot directly implement actions, the reduction levers for Scope 3 are very different compared to Scope 1 and 2.

### Assumptions:

1. Considering only SBTi target relevant categories i.e. 68% of total inventory as reported by Bayer;
2. Business growth assumptions to be aligned across Bayer.

\*We have received in 2024 and updated near- and long-term Scope 3 target at the Science Based Target initiative.

Disclaimer: The levers and associated reduction potential reflect our current understanding. This will be further developed and adjusted over the years. Most levers depend on investment costs, regulations, technologies and actions with the value chain.

# Reduction Levers Value Chain Scope 3

## UNTIL 2029

### ENGAGEMENT AND SOURCING FROM SUSTAINABLE SUPPLIERS

We've outlined climate expectations in our Supplier Code of Conduct, mandating suppliers to prioritize climate protection and set targets by 2025. We aim to partner with suppliers committed to emission reduction and decarbonization, integrating our internal carbon pricing into decision-making processes. You can download our Supplier Code of Conduct [here](#). Together with selected suppliers we, continue to invest in low-carbon product deals to accelerate the decarbonization. These selected deals are accompanied by the switch from fossil-based ingredients toward plant-based ingredients.

### WAREHOUSING AND CARGO TRANSPORT RENEWABLE ELECTRICITY TRANSITION

Our warehousing and logistics providers are crucial for decarbonizing our supply chain, focusing on renewable electricity and fleet electrification, while leveraging digital technologies to optimize logistics strategies, reducing emissions through less air transport and more rail and waterway use. As a member of the EcoTransIT World Initiative, Bayer adopted the EcoTransIT system in 2023 to calculate and standardize transport-related GHG emissions globally.

### RENEWABLE ELECTRICITY

Bayer expects the transition to renewable electricity to be a critical lever for decarbonization, both in our operations and among our suppliers, who should aim for 100% renewable electricity by 2030 and continuously improve energy efficiency. We will support our suppliers in this transition, emphasizing the importance of adhering to purchasing requirements such as the approach and criteria of RE100.

### OTHER (REDUCED BUSINESS TRAVEL, PACKAGING, FUEL SOURCING ACTIVITIES ETC.)

We are committed to keep track on emissions due to business travel employee commuting, packaging and making impact with several initiatives.

## UNTIL 2050

At this point, actions across industries are insufficient. Therefore, we have decided not to quantify the individual contributions of the different reduction levers for the time between 2029 and 2050. We will not disclose the investments because there are too many uncertain- ties and assumptions within the calculations.

### INNOVATIVE TECHNOLOGIES

Availability at scale (and cost) of innovative technologies (carbon capture and storage, hydrogen blending etc.) will drive next-gen decarbonization.

### NEW PRODUCTS

We are working relentlessly to innovate our future products to reduce their CO<sub>2</sub> footprint (e.g., finding new synthesis routes). As an example in the research and development (R&D) of new radiology products, we have begun introducing sustainability criteria according to a "sustainability by design" approach. We want to examine the sustainability of future radiology products at various stages of R&D using sustainability checkpoints.

### POLICIES AND REGULATIONS

Consistent and strong policies and regulations globally will ensure action by all players across our value chain.

# Product Carbon Footprints Are Crucial to Steer Transformation to Stay Competitive

## Product Carbon Footprints

With increasing importance, we, but also our customers, will steer by actual Product Carbon Footprints (PCF).

We are further developing our internal systems and collect climate-related data from our suppliers, particularly the PCFs of the products we procure.

The goal is to standardize the calculation of a PCF based on sector guideline for the chemical industry. At the same time, the allocation approach is being improved for the PCF within the value chain. We are calculating and sharing PCF based on the Together for Sustainability guideline (TfS) in a cradle-to-gate approach in line with the Partnership for Carbon Transparency (PACT) of the World Business Council for Sustainable Development (WBCSD). PACT develops climate approaches across industries. As a member of the WBCSD, we are working on suitable measures there as well.

## Steering the Impact

PCFs are becoming increasingly important. Especially in the Pharmaceuticals business, we observe tenders in countries like France, Spain, Denmark or the UK in which PCFs are mandatory. We are expecting that other countries will follow this approach.

Similar to this, we are working on different approaches to ask high quality PCFs from our suppliers and make sourcing decisions accordingly.

## Example

A PCF pilot was certified externally in 2023 by TÜV in which we determined the first Bayer PCF based on a TfS sector guidance. Applying a cradle-to-gate approach, we included both upstream and our own greenhouse gas emission for a defined product unit. Learning from the pilot we standardized the calculation approach and received external certification for our scalable TfS based calculation method in 2024 and shared results with customers.



Dr. Sebastian Fischer,  
Performance Manager

“ PCF calculation is crucial to fulfill customer requirements as well as the identification and prioritization of CO<sub>2</sub> reduction potentials.





# Internal Carbon Prices to Steer Reduction

## Scope 1 and 2

We are aligning our capital expenditures to our goal of achieving Net Zero GHG emissions by 2050. To drive this transition, we have established an internal CO<sub>2</sub> price of €100 per metric ton of CO<sub>2</sub> for the calculation of our capital expenditure projects.



Capital expenditure decisions: We perform a voluntary ecological assessment for capital expenditure projects exceeding €10 million. Emissions reduction and efficiency measures are integral to these evaluations.

## Scope 3

We are further developing our internal systems and collect climate-related data from our suppliers, particularly the PCFs of the products we procure. The main hurdle to a successful implementation is the availability of PCFs from our suppliers. Based on this data, we also want to identify emissions reduction potential, for example, by basing purchasing decisions on emissions or being able to initialize and evaluate joint reduction projects.

We also aim for an internal CO<sub>2</sub> price to manage our Scope 3 emissions. This should create an incentive internally to purchase products with a lower carbon footprint.



## Shadow Price Approach

1. Understand the emissions of your options (activity, process, purchase, supplier, etc.)
2. Calculate delta in CO<sub>2</sub>e emissions between different options, or with the PCF of the product sourced
3. Multiply shadow price of 100 Euro/t with delta of the different options or the PCF
4. Add shadow price to business case and investment case to benefit the option with lower GHG emissions carbon footprint



# Climate Contribution – Nature-Based Solutions



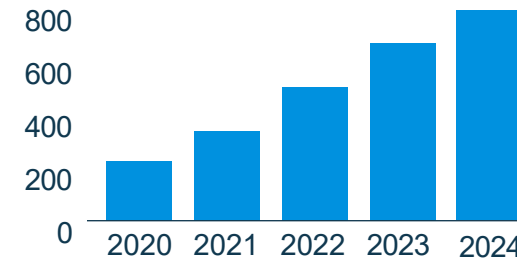
We are focusing on emission reduction while building up nature-based solutions. Carbon contribution is a process by which funds are directed to projects that help avoid or remove global emissions beyond the own value chain. Our engagement in voluntary carbon markets is purely additional to our reduction activities.

By 2030 we want to contribute the same volume we have in remaining emissions within our own operations. Applying clear criteria on these projects, we want to support voluntary carbon markets. To be transparent in activities is of utmost importance for us at Bayer. We publish details of every transaction we are undertaking to support the voluntary carbon market. You can find our strategy and criteria [here](#). In addition, Bayer is driving forward the implementation

*We believe that supporting contribution projects are an indispensable component of the global fight against climate change. We have established this voluntary program to contribute to build up nature-based solutions which are needed.*

Daniel Schneiders, Director Climate Program

Climate Contribution in Kt of CO<sub>2</sub>e



Overview and details to all projects can be found here: [Offsetting Strategy](#)

of carbon farming initiatives in every region we serve. The goal is to learn how to scale the adoption of climate-smart and solutions to create new value streams for our farming customers. This leads to new business opportunities for us that benefit the environment at the same time. In 2023, the first credits from our US Carbon Farming Program [ForGround](#) have been brought onto the market.

## Example of Our Engagement

*Bayer is a founding member of the LEAF coalition to protect tropical forests.*

Worldwide, trees absorb twice as much carbon as they emit. But many carbon sinks are threatened, and the world is off track to meet its forest conservation targets. In 2022 alone, 6.6 million hectares of trees were lost to deforestation.



However, forest conservation is about more than avoiding emissions; it also brings invaluable co-benefits to people, their communities and biodiversity.

# Collaborate and Engage with Stakeholders

We publicly commit to engaging our stakeholders, including suppliers, governments, regulators, scientific societies, trade associations, experts, consumers,

NGOs, and other businesses, toward achieving the goals of the Paris Agreement. We recognize the need for collective action across all sectors.

## Advocating in Line with 1.5°C

We advocate for a climate position in line with our ambitious targets and demand that our partners also undertake action to reduce greenhouse gas emissions in accordance with the Paris Agreement. We have therefore published a detailed list of our climate policy lobbying activities.

In line with our goals, we critically scrutinize our memberships in relevant industry associations and their positions as regards climate policy measures on a regular basis. In developing this approach, we have worked together with Climate Action 100+, an investor initiative that cooperates with the world's biggest industrial companies on the issue of climate change.

To ensure maximum transparency in this process, Bayer has published the results in the Industry Association Climate Review since 2021. This report compares the climate policy positions of our industry associations with our own climate goals. As our industry associations represent us in the public debate, we disclose where we agree with these positions and where they diverge from ours. Where differences exist, dialogue enables us to take measures to close these gaps. We disclosed both our achievements and the challenges that still lie ahead of us in our Industry Association Climate Review published in 2023. [Bayers Industry Association Engagement report.](#)



*The challenge we face requires a creative approach to engagement and collaboration.*

Helga Flores Trejo,  
Head International & Multilateral Affairs



*Excerpt of  
Net Zero-related  
memberships and  
initiatives we are  
aligning with.*





# Adaptation: Ensuring Resilience in Own Operations and Supply Chains

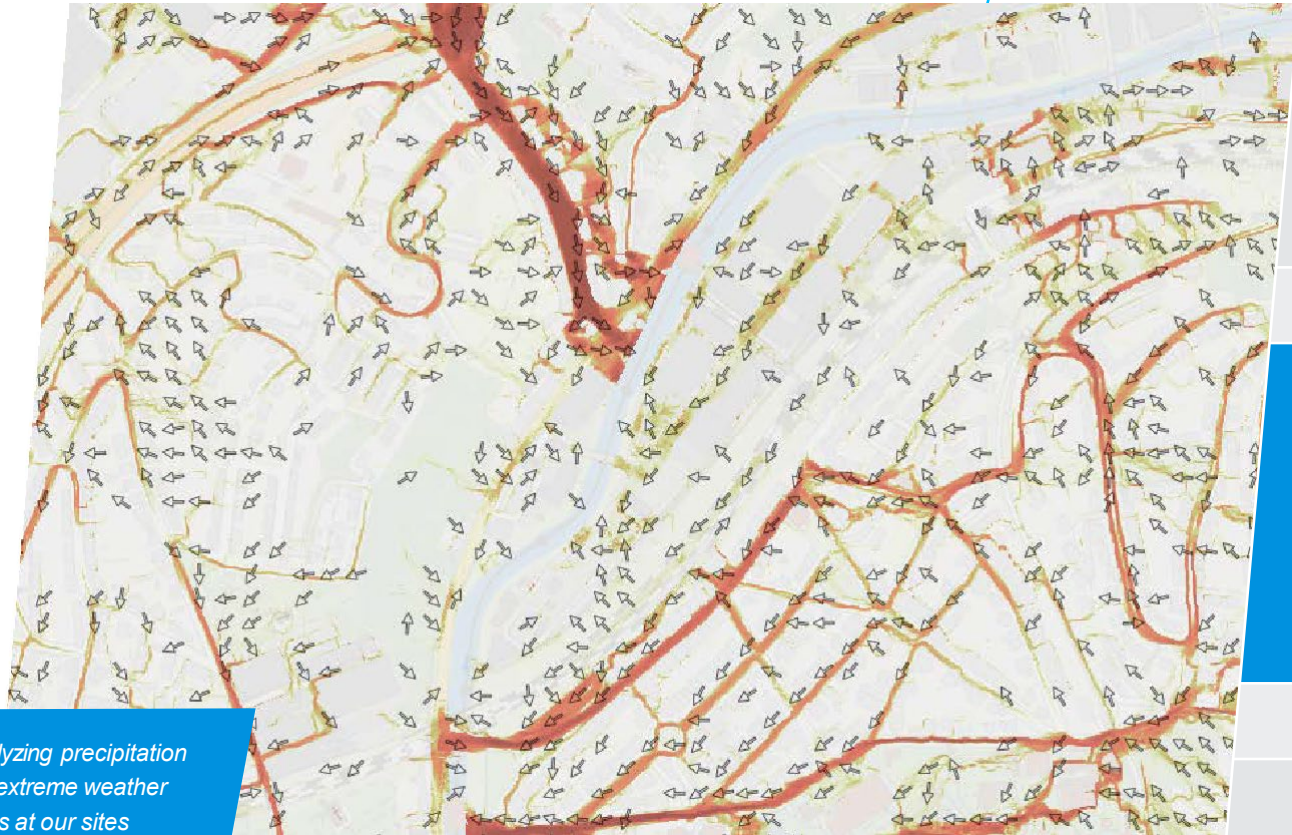
It is essential that we deliver our products to our farmers, patients and consumers. This is the core of our business. To do this, we need to ensure that our production processes and supply chains are resilient.

This is business continuity and of high importance to management across all levels of the organization. Therefore, adaptation at our sites is highly important. We have been including this in our Enterprise Risk Management system. Details of our ERM system are published in the [Bayer Annual Report 2024](#).

We started to analyze the impact of climate change on Bayer's own activities as well as the upstream and downstream value chain. All climate models anticipate an increase in extreme weather conditions (such as drought, heavy rains and storms). In the IPCC forecasts, the intensity of such events varies widely from one region to the next.

While we have successfully managed to hold up our supply chains during the COVID pandemic, we witness a sudden and significant impact of weather anomalies on demand for specific product categories. In addition, we are expecting mid- to long-term shifts in demand patterns due to climate change.

Analyzing precipitation  
and extreme weather  
events at our sites  
(example Wuppertal  
[Starkregengefahren-  
karte Wuppertal](#)).



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## Transformation to New Value Pools

Our climate-related **Transformation Plan** describes how we are adjusting our business to the actual and expected impacts of climate change, as well as how we can mitigate climate change beyond our boundaries.

The plan reflects our current status. Every year, we invest in R&D and new initiatives. Therefore, our plan will be updated on a regular basis.

# Advancing Personal and Patient Health

*On a warming planet, the stakes for our ‘Health for all, Hunger for none’ mission have never been higher. There’s no doubt we need to approach this more sustainably and effectively than has been done in the past. And I know that Team Bayer is committed to delivering exactly that.*

Daniella Foster,  
Global Senior Vice President and Head of Public Affairs,  
Science and Sustainability for Bayer’s Consumer Health Division



Billions of people still do not have access to basic medical care. Climate change is currently and will continue to have further negative impacts on human health. We believe we have a responsibility to improve access to healthcare for a growing world population. We reach people all over the world with the products and solutions of our Pharmaceuticals and Consumer Health divisions.

As part of our mission of “Health for all. Hunger for none” and the corresponding business strategy, we are addressing important medical needs and expanding access to our products and services, in both the prescription and over-the-counter sectors.

We have established dedicated teams to work towards the SDGs, in the areas we can strategically impact with new developments and greater access to products.

The ambitious vision of healthcare for all and gender equality is enshrined in the UN Sustainable Development Goals (SDG 3 and 5) and is shared by many around the world



MISSION

TRANSITION

TRANSFORMATION

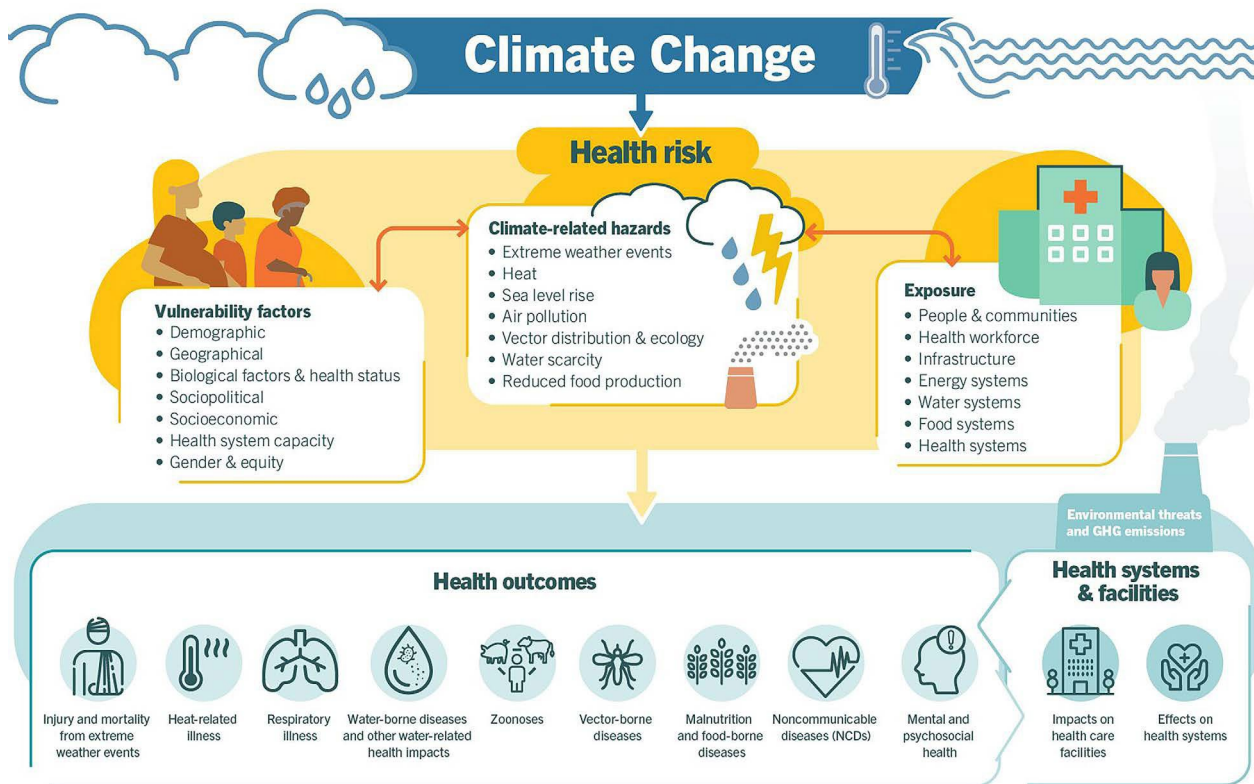


# Climate Crisis Is a Health Crisis

The Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report (AR6) concluded that climate risks are appearing faster and will become more severe sooner than previously expected, and it will be harder to adapt with increased global heating. Climate-sensitive health risks are disproportionately

felt by the most vulnerable and disadvantaged, including women, children, ethnic minorities, low resource communities, migrants or displaced persons, older adults, and those with underlying health conditions. Scientific advances progressively allow us to attribute an increase in morbidity and

mortality to global warming and more accurately determine the risks and scale of these health threats. [Source: World Health Organization: Climate change impacts on health, 2021 \(who.int\)](#)



[Source: World Health Organization: Climate change impacts on health, 2021 \(who.int\)](#)

Understanding key climate-change-sensitive health risks against Bayer's expertise, portfolio and networks, we have identified opportunities to help individuals mitigate the impact of climate change on their health in four areas:

**Heart Health**

**Reproductive Health / Women**

**Clear Breathing**

**Nutrition**  
Hunger for none

COLLABORATION, PARTNERSHIPS & ENGAGEMENT

MISSION

TRANSITION

TRANSFORMATION

# Meeting Medical Needs Associated with Climate Change

## Focus on Patient and Consumer Needs



### Heart Health:

Rising temperatures and **heatwaves**, especially when combined with air **pollution**, increase heart risks for the whole population, especially for **disadvantaged and vulnerable communities**.



*Together with a group of eminent experts in climate and health, we are taking action to address the medical needs resulting from climate change. In doing so, we are maximizing our contribution to building health resilience around the world, with a special focus on vulnerable populations.*

Michael Devoy, Bayer Chief Medical Officer



## EXISTING CAPABILITIES

Bayer has a large footprint in cardiovascular prevention and treatment.

Example: Bayer has partnered with Huma Therapeutics Limited ("Huma"), a leading global digital health company, and is introducing their innovative heart health screening tool in key markets around the world (e.g., the US and Saudi Arabia). The digital-only tool rapidly evaluates an individual's risk for developing cardiovascular disease (CVD) over the next decade.





# Meeting Medical Needs Associated with Climate Change

## Focus on Patient and Consumer Needs



### Clear Breathing:

Preventing debilitating or fatal respiratory illnesses. Increasing quantity, diversity and strength of airborne **allergens** and **pollution** will negatively affect breathing, with allergen levels rising in several regions including North America and Northern Europe. Asthma growing several areas including India and China, especially among urban residents and disadvantaged and **vulnerable communities**.



### Sexual and Reproductive Health:

Women are on the front line of climate change, with its socio-economic, cultural and health impacts having amplified effects on their fertility and pregnancy and its outcomes, lactation, breastfeeding, and menopause – worldwide, and for generations to come.



## EXISTING CAPABILITIES

Bayer's **allergy** ecosystem includes a **pollen forecast** to help individuals prepare ahead of peak days and offers prescription-strength OTC solutions in the US.



## EXISTING CAPABILITIES

Bayer is funding multi-stakeholder aid programs to provide access to modern contraception for 100 million women in low- and middle-income countries (LMICs) yearly by 2030. We are collaborating with the United Nations Population Fund, United States Agency for International Development, German Red Cross, Bill & Melinda Gates Foundation, and several other organizations to scale proven reproductive health solutions for women in LMICs.

# Meeting Medical Needs Associated with Climate Change

## Health Is Dependent on the Availability of Essential Nutrients



### Nutrition:

Rising CO<sub>2</sub> concentrations increase the **frequency and severity of extreme weather** and decrease the **nutritional quality** of grown food. This is worsening malnutrition which disproportionately impacts women, girls and rural communities.



### EXISTING CAPABILITIES

Bayer covers the full spectrum of micronutrient sources, from food to supplements, including **vegetable seeds**, tailored to the local diet for smallholder farmers, adapting **nutritional supplements for affordability and accessibility** in emerging markets, advocating to make comprehensive **prenatal supplementation** the standard of care in LMICs, and investing in nutrition **education**, from fruit and vegetables to the importance of essential nutrient supplementation.



Example: Our flagship nutrition access program, The Nutrient Gap Initiative, aims to **enable access to essential vitamins and minerals to 50M people in underserved communities per year by 2030**. The initiative tackles the three main barriers to access: Intervention (physical and financial access to vitamins and minerals, from food to supplementation), Education through partnerships and our brands (with consumers, healthcare professionals, farmers etc) and Advocacy (cross-sector collaboration, advocating for greater access to nutrition). In 2023, we reached 30M people in underserved communities with our nutritious portfolio (fruits, vegetables, nuts and seeds) and essential supplementation.

Bayer was ranked **#1 in Nutrition in the 2023 Food and Agriculture Benchmark**, which assessed 350 of the most influential food and agriculture companies around the world, up from #23 in 2021. The Nutrient Gap Initiative was highlighted as the leading practice for making nutritious food and solutions available. Further Information can be found here: [The Nutrient Gap Initiative](#).



### FOOD

Solutions to grow fruits, vegetables, grains, animal proteins

**Education** for better nutrition



### SUPPLEMENTS

Essential supplementation

**Advocacy** for better nutrition



# Powering Regenerative Agriculture Through Our Innovation Engines



*While climate change affects us all, farmers are especially exposed to the impact of increasingly extreme weather conditions including drought, severe heat, flooding or other shifting climatic trends. At Bayer, we're working to scale the adoption of regenerative agriculture practices by our farming customers.*

Natasha Santos,  
Vice President and Head of  
Sustainability & Strategic Engagement  
for Bayer's Crop Science Division

How can we grow enough to feed and fuel the world around us? Can we create a more sustainable, healthy and resilient food system while helping farmers produce more with less? We believe we can, even as climate change, declining natural resources and supply chain issues make the job even more complex. At this pivotal moment, we need break-through technologies for a smarter

approach. We need science and smart systems to optimize our inputs and outcomes, and we need to do it all in a way that sustainably benefits the environment and growers. Put simply, we need to do things differently – and this is where regenerative agriculture comes into play.

Here you can find our [Agriculture Targets](#) and our comprehensive [Progress Report](#) for our Crop Science division.

Our efforts in R&D and innovation contribute to the following [UN Sustainable Development Goals](#):



# Focus Climate Change and Agriculture

## Growing Population

## Pressure on Ecosystems

+2.2bn



people on the planet by 2050

+50%



more food and feed required to meet growing demand<sup>2</sup>

–17%



harvest losses from climate change<sup>3</sup>

–20%



loss in arable land per capita by 2050<sup>4</sup>

## Broadening our Sustainability Approach with a Regenerative Focus

Two of the most globally recognized challenges the planet must face by 2050 are food security and climate change. From a farmer's perspective, climate change is projected to reduce harvest yields by 17% by 2050 while arable land is expected to decrease by 20% in the same time period. Moreover, our global population is expected to increase by 2.2 billion people by 2050. Combined with climate change impact, this means the planet will need to increase food and feed output by 50% to meet future food demand.

Climate change poses significant challenges for agriculture, primarily through increased frequency of extreme weather events such as floods, droughts, winds and wildfires. Over the past decade, these events have led to substantial crop losses and instability for farmers – which have tripled in the last 50 years – endangering global food security.

–30% by 2030

## Our Target

We aim to enable our farming customers to reduce their on-field greenhouse gas emissions per mass unit of crop produced by 30% by 2030 compared to the overall base year emission intensity.<sup>5</sup> This applies to the highest greenhouse gas emitting crop systems in the regions Bayer serves with its products.<sup>6</sup>

## Our Approach

Since 2021, we have been conducting detailed climate change impact assessments across our organization with a special focus on agriculture. The transformation is directly anchored within the business areas and our Crop Science Strategy department. Our vision is powered by innovation engines, with a special focus on **Breeding and Regenerative Agriculture** with a focus on a systemic change.

<sup>1</sup> UNDESA 2017 (United Nations Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision)

<sup>2</sup> FAO 2017 (FAO Global Perspective Studies)

<sup>3</sup> Nelson et. al (2014); FAO 2016 "Climate change and food security"

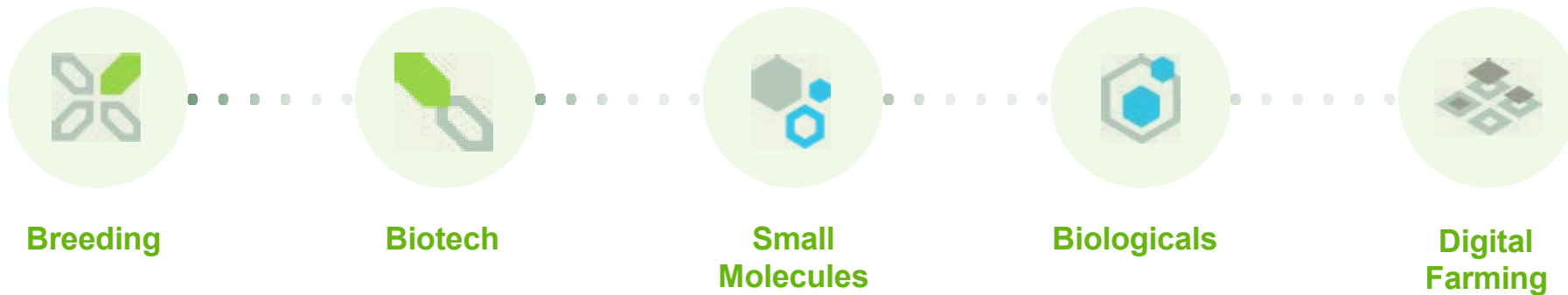
<sup>4</sup> FAOSTAT for 1961-2016 data on land, FAO 2012 for 2030 and 2050 data on land, and UNDEDA 2017: World Population Prospects for world population data

<sup>5</sup>Our reduction target refers to an overall base year greenhouse gas intensity that includes the weighted emission intensities of 17 crop-country combinations (CCCs). In 2024, the CCC Australia-Cotton was removed from the scope due to the unavailability of data. Base years are defined individually for each CCC, using data from either harvest year 2021 or 2022 depending on the availability of data. Base years were adjusted in 2024 due to additional data requirements based on an updated GHG calculator methodology and lack of data availability from prior years.

<sup>6</sup>The CCCs Italy-Corn and Spain-Corn were not selected based on these factors but were additionally included because data were already available.



# Focus Climate Change and Agriculture



The combination of these innovation engines differentiates us from our competitors and allows us to think differently about how agriculture can work as a system, bringing sustainability targets into our core business.

Our innovations significantly benefit farmers globally, leading the agricultural sector with over €1.8 billion invested in R&D annually and a workforce of approximately 8,300 in more than 60 sites worldwide.

We further extend our innovative impact through our Leaps by Bayer venture capital arm, with 21 investments focused on sustainable productivity and nutrition.

## Focus on Breeding

Breeding plants to be more resilient and adaptable to these changing conditions is a proactive approach to ensure food security and agricultural sustainability. Here are some key objectives:

- 1. Increased resilience to stress:** Plants bred for resilience can better withstand stressors such as drought, heat, salinity, and flooding.
- 2. Improved resource use efficiency:** Plants can be bred to use water and nutrients more efficiently, which is vital in areas where water is scarce or soil quality is poor.
- 3. Resistance to pests and diseases:** Climate change can lead to the spread and increased prevalence of certain pests and diseases.
- 4. Adaptation to changing growing seasons:** As climate patterns shift, so do the lengths and conditions of growing seasons.

At Bayer, our efforts in breeding plants that can safeguard yields and enable them to thrive in a rapidly changing climate are part of our broader commitment to sustainability and innovation in agriculture.

Examples on the following slides:

Preceon™ Smart Corn System, Direct seeded rice (DSR)



# Regenerative Agriculture

## Increasing Agricultural Production, Farm Incomes and Resilience in a Changing Climate While Protecting and Renewing Nature – At a Significant Scale.

We aim to transform agriculture by driving forward a more sustainable food system guided by our vision of regenerative agriculture and a multi-season, multi-crop system approach. The transformation towards regenerative agriculture can significantly contribute to both:

- // Through regenerative agriculture and agricultural solutions, we see a market potential to reduce global GHG emissions by ~1Gt\*
- // Strategically adapting and innovating our business, creating value for our farmers considering the increasing impacts of climate change

Our mission is to transform the agricultural sector at scale on the basis of regenerative farming and to create a more sustainable food production system. For us, regenerative agriculture is an outcome-based production model based on two key building blocks: productivity, which focuses on helping farms to produce more with less; and regeneration, which focuses on delivering a positive impact on nature.

Key outcomes we strive for are yield increase and improved social and economic well-being of farmers and communities, and positive impact on nature, which can be achieved, for instance, by improving soil health, reducing on-field greenhouse gas emissions, and increasing carbon sequestration to mitigate climate change, restoring biodiversity and conserving water.

Further information can be found here: [Regenerative Agriculture](#)

### Outcomes of Regenerative Agriculture



Yield increase and improved productivity



Social and economic well-being of farmers and communities



Improved soil health



Mitigation of and adaptation to climate change



Preservation and restoration of biodiversity



Conservation of water

\*From 59Gt global GHG emissions (reference year 2019; source: IPCC AR6 WGIII Full Report 2022)

# Innovation in Breeding and Regenerative Agriculture Will Create Huge Market Potentials in Light of Climate Change

Due to the increasing need of agricultural solutions, we see our accessible markets doubling from more than €100 billion in the ag input market we serve today to a market value of more than €200 billion in the next decade.

One of the drivers of this increase in overall market size is the need for innovative and regenerative solutions due to the pressure of climate change.



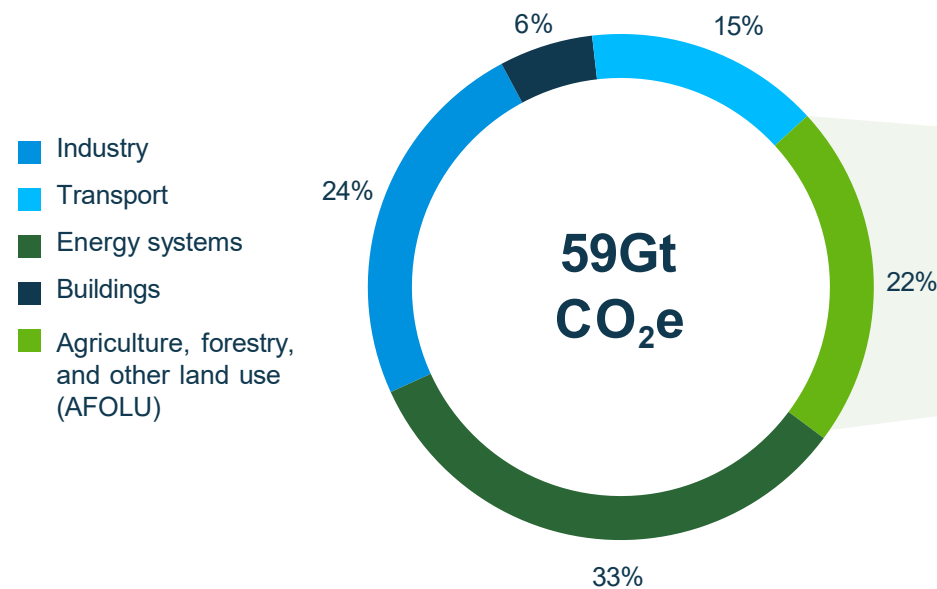
Innovation in breeding seeds and crop protection are essential to deliver regenerative agriculture outcomes and sustainability commitments.

With regenerative agriculture, regenerative new markets and adjacencies are opening up. One example is crop fertility and biological breakthroughs focusing on nitrogen fixation technologies and biological base crop protection.

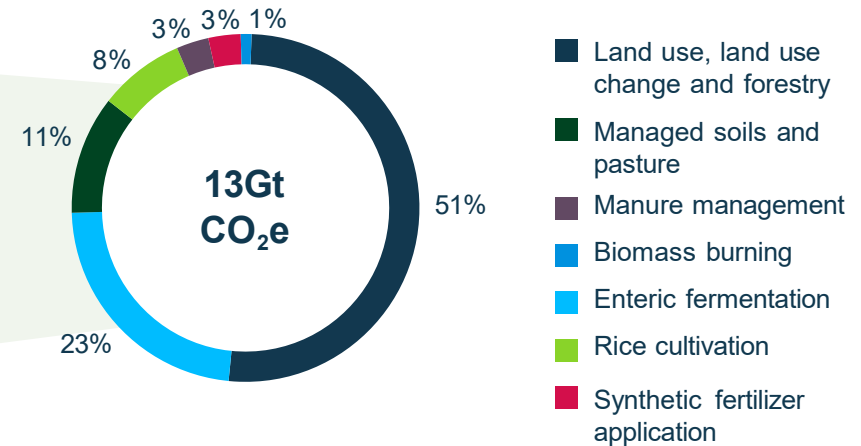
# Agriculture Holds Huge Potential for Reducing GHG Emissions

The Agriculture Sector Can Unlock Adjacent Spaces for Greater Impact.

Direct Global GHG Emissions By Sector<sup>1</sup>



Agriculture, Forestry and Other Land Use – Global GHG Emissions by Subsector<sup>1</sup>



**Through Regenerative Agriculture and Agricultural Solutions, We See a Market Potential to Reduce Global GHG Emissions by ~ 1Gt**

As leaders in agriculture, we have a unique opportunity to restore nature and scale regenerative agriculture practices. These adjacent opportunities can significantly reduce CO<sub>2</sub>e emissions while creating new business opportunities for farmers who produce feed, food, fuel and fiber.

We are actively innovating and providing solutions to support global mitigation efforts, including scaling and fostering systems that support the adoption of smart climate practices (such as no-till, crop rotation, cover crops, etc.) in agriculture; helping farmers provide feedstock to support biofuel production in order to phase out fossil fuel; and advancing precision agriculture innovation.

<sup>1</sup> From 59Gt global GHG emissions (reference year 2019; source: IPCC AR6 WGIII Full Report 2022).



# Multiple Farm Management Practices Support Climate Mitigation and Deliver Environmental Co-benefits

## Carbon Sequestration Under Improved Cropland Management

Agriculture provides the second largest share of greenhouse gas emissions mitigation potential, with improved cropland management providing medium confidence mitigation potential of 0.3-3Gt CO<sub>2</sub>e per year<sup>1</sup>.

Cropland management practices include reduced and no-till practices, which play a crucial role in mitigating climate change by sequestering carbon in agriculture soils.

Bayer supports improved cropland management practices, including through its herbicide (e.g. glyphosate) and trait portfolio, which allows for better crop rotations and reduced / no-till practices. This in turn also provides socioeconomic benefits to the farmer by reduction of labor and mechanization costs<sup>2</sup>.



\*Sources  
IPCC: Mean of 1.5 Gt of global soil carbon sequestration (0.3-3Gt CO<sub>2</sub>e/yr) Statista: 1.5bn passenger cars worldwide emit 3Gt CO<sub>2</sub>e emissions annually



## Regenerative Farm Management Increasing Yield and Stopping Deforestation

Without stopping deforestation, reducing environmental footprint, restore nature and increasing yield per acre our common goals can not be achieved. Our current estimates from the Carbon Program in LATAM suggest that the resulting carbon capture improvements to soil health could result in more than 10% yield and 6% profitability increases.

As part of this program, in May 2023 Bayer delivered the first load of Brazilian soybeans with a traceable, deforestation-free and lower-carbon footprint into the value chain. Titled PRO Carbono Commodities, this initiative stems from our global program to protect forests and other natural vegetation. The carbon footprint data was measured by a carbon calculator (PRO Carbono Footprint), which we are developing initially for soybean cultivation in the tropical zone in a joint effort between Bayer and Embrapa. Further information can be found [here](#).

<sup>1</sup> IPCC, 2019: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.-O. Pörtner, D. C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M. Belkacemi, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, 896 pp. <https://doi.org/10.1017/9781009157988>

<sup>2</sup> FAO and ITPS. 2021. Recarbonizing global soils: A technical manual of recommended management practices. Volume 3: Cropland, Grassland, Integrated Systems and Farming Approaches – Practices overview. Rome, FAO. <https://doi.org/10.4060/cb6595en>

# The Preceon™ Smart Corn System

Corn farmers face many hurdles, including pressure from weeds, pests, diseases and unpredictable weather conditions that have increased in frequency and severity. The Preceon™ Smart Corn System provides a solution to these heightened challenges with features that reap big benefits:

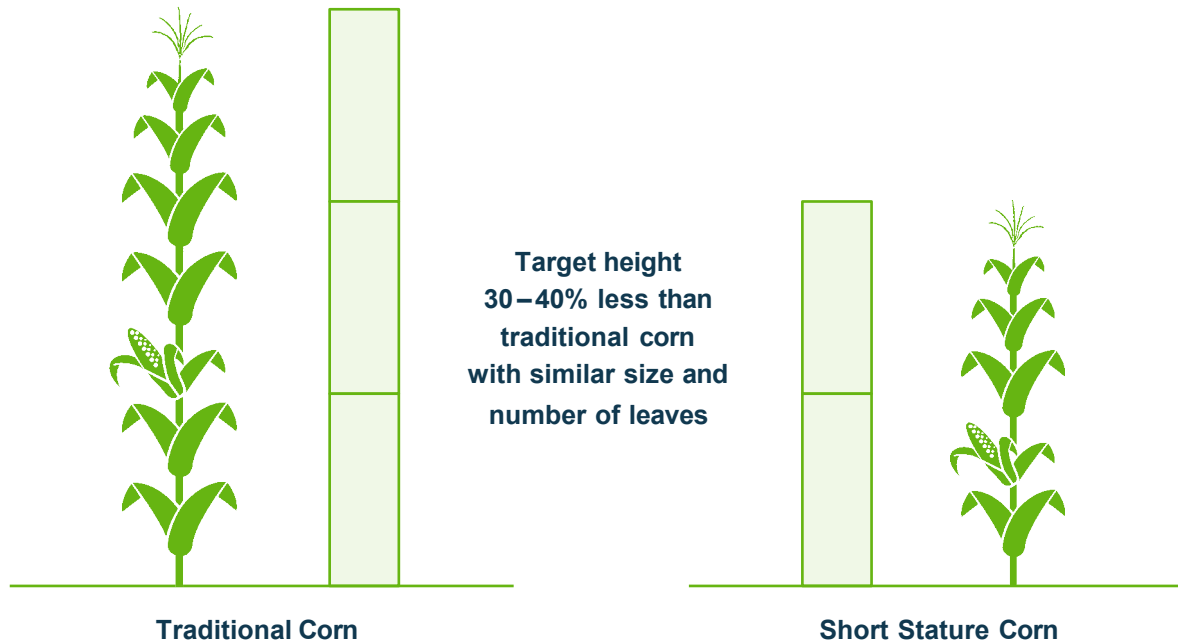
1. The system brings a new variety of hybrids, which are shorter in stature without compromising yield (short-stature corn hybrids). Beside the significantly improved lodging resistance in strong wind conditions, they provide extended in-season access to the fields – with standard equipment – and can generally be planted more densely than tall hybrids. The ability to use ground equipment, rather than having to access the crops aerially, also means an improved greenhouse gas footprint.

2. The Preceon™ Smart Corn System is an integrated system combining the short-stature hybrids with management practices, crop protection, digital solutions and agronomic advice, orchestrated to unleash the potential of each field tailored to individual conditions.

Combining the Preceon™ Smart Corn System with climate-smart practices enables corn farmers to produce corn more profitably and sustainably.

Further information can be found here:

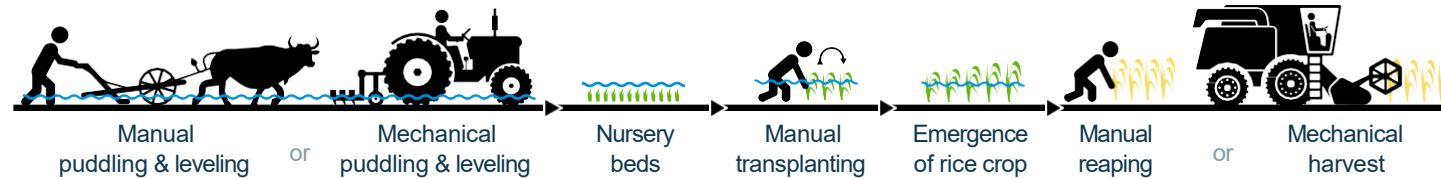
[Preceon® Smart Corn System](#) | [Bayer Traits](#) | [Crop Science US](#).



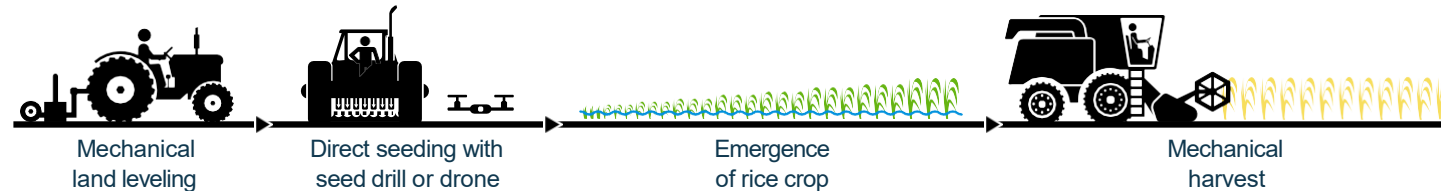
# Direct Seeded Rice (DSR)

## Transplanted Puddled Rice and Direct Seeded Rice

### Transplanted Puddled Rice



### Direct Seeded Rice



Rice is one of the most important staple foods in the world. Billions of people rely on a diet that includes rice every day – but the irrigation of rice crops is responsible for up to 43% of global freshwater use in irrigation.

Around 80% of the world's rice is grown through water- and labor-intensive transplanted puddled rice cultivation, leading to increased methane emissions from non-percolating water in flooded fields. Seedlings are grown for two to three weeks before being moved to flooded paddy fields, where constant water levels are maintained to support growth until the fields are drained just before harvest (90 to 130 days later) for grain maturation.

One of the most promising solutions to support a sustainable rice production is direct seeded rice. Direct seeded rice is a technology-driven and less resource-intensive cultivation system. Moving from traditional transplanted puddled rice cultivation to direct seeded rice can help farmers reduce water use by up to 40% and can reduce greenhouse gas emissions by up to 45% (by reducing methane emissions from the flooded rice fields).

In addition, farmers can reduce their dependence on manual labor by up to 50%. Using direct seeded rice cultivation methods enables direct seeding without labor-intensive manual transplanting of the rice seedlings.

Direct seeded rice cultivation methods can also lead to improved soil health.

We are building entire systems driven by climate-resilient rice hybrids, a high-performing crop protection portfolio, and digital advisory and machinery services. Furthermore, we are offering potential additional revenue streams from carbon certificates through our Bayer Carbon Initiative to incentivize farmers to adopt direct seeded rice cultivation systems – in line with Bayer's approach to regenerative agriculture.

Further information can be found here: [Direct Seeded Rice | Bayer Global](#)



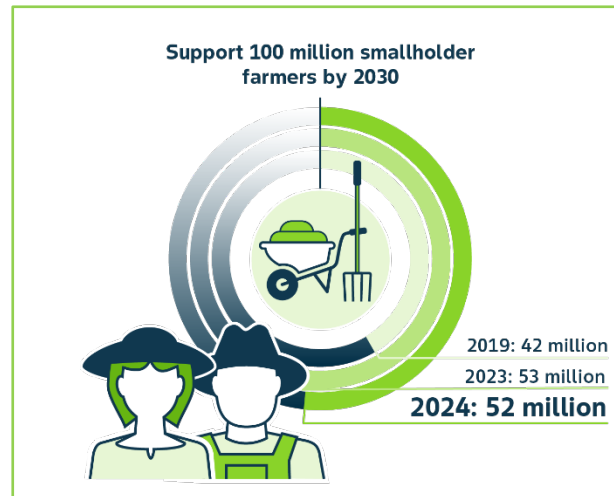
# Access and Just Transition

## Leverage Our Impact

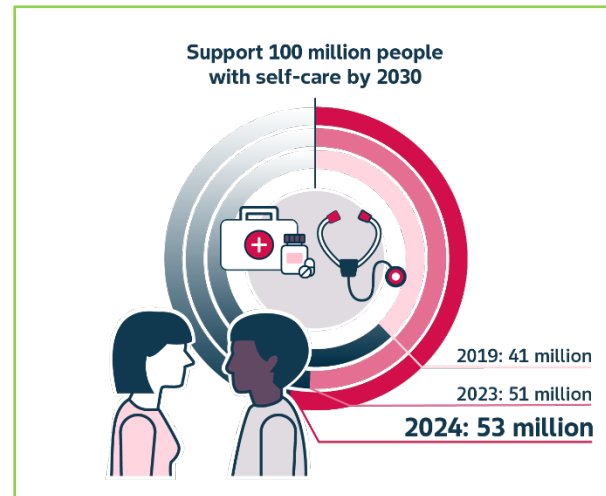
Bayer is committed to a just transition to a sustainable economy and advocates a favorable societal and political environment. We are constantly involving our stakeholders in developing just transition plans adjusted to their and our needs. Details can be found in our [Just Transition Framework](#).

Sustainability is at the centre of our corporate vision “Health for all. Hunger for none” and comprises the following three core elements for all divisions:

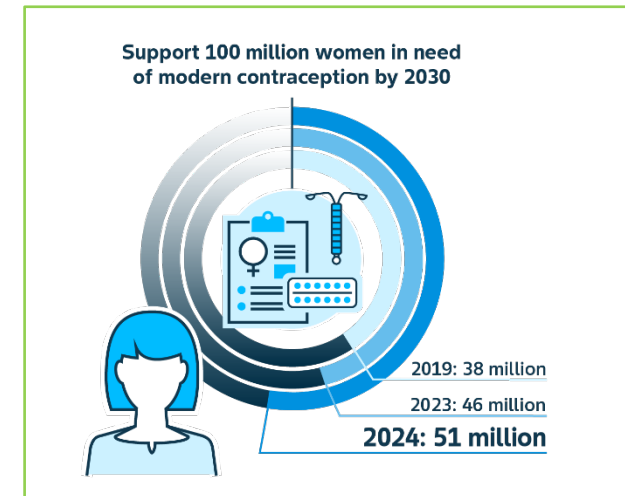
- // Inclusive growth and value added for society
- // Reduction of our ecological footprint
- // Responsible business practices along our value chain



By 2030, we will be supporting 100 million smallholder farmers in low- and middle-income countries each year with products, services and partnerships.



By 2030, we will be supporting 100 million people in economically or medically underserved communities each year with self-care.



By 2030, we will be satisfying the need of 100 million women in LMICs for modern contraception each year. We want to strengthen the role of women and intensify our efforts in modern family planning (aligned with the UN gender equality actions).

Further insights and the methodology can be found here: [Our Targets & Our Progress](#).





## Transition and Transformation Planning and Reporting:

We are committed to continually advancing this transition and transformation plan by leveraging the latest tools, methodologies and data to accurately determine the climate impact on our operations and value chains. Additionally, we have started to quantify the investment needs and assess the financial impacts associated with our climate action path. This effort will ensure the necessary transparency regarding areas where further work is planned.

Our specific climate-related sources:

// [Website – This is how we protect the climate](#)

// [Annual Report and further Reports](#)

// [SASB](#), [TCFD](#) and [CDP](#)

Published by:  
Bayer AG  
51368 Leverkusen  
Germany

Version 1.2

Date of publication:  
March 5<sup>th</sup> 2025

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Sustainability, Safety,  
Health & Environment

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