We create chemistry for a sustainable future

BASF SRI Story June 2020
Cautionary note regarding forward-looking statements

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Resource efficiency – BASF’s Verbund is ideal for CO₂ emission reduction

- Combined heat and power plants and integrated energy Verbund prevented 6.4 million metric tons of CO₂e emissions in 2019
- Synergies in logistics and infrastructure, minimization of waste
- BASF uses fossil raw materials responsibly: 75% of carbon converted to products, 25% consumed for process energy and converted to CO₂ equivalents¹
- European emissions trading benchmarks show that BASF’s chemical plants operate at above-average energy efficiency

¹ BASF carbon mass balance calculation (2019, non-audited, without oil and gas business)
BASF has a strong track record of CO₂ emission reduction – our goal: CO₂-neutral growth until 2030

Since 1990, we have doubled our production volumes and cut our GHG emissions in halves; the emission intensity thus decreased by 75%, from 2.2 tons of CO₂e per ton of product to 0.6 tons of CO₂e

- 20 million tons of CO₂e emissions by BASF Group in 2019

- Low-hanging fruits have been harvested; fundamentally new technologies are needed to reduce emissions on a large scale

- We will grow our production volumes without adding further CO₂e emissions¹ until 2030 (intensity to be reduced by 30%)

- BASF is committed to the Paris agreement for climate protection

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¹ BASF operations excluding the discontinued oil and gas business; includes other greenhouse gases according to the Greenhouse Gas Protocol, which are converted into CO₂ equivalents
BASF’s Carbon Management – our focus to reduce emissions

Potential CO₂ reduction

- Further improve process and energy efficiency
- Shift power supply towards renewable energies
- Develop breakthrough technologies

Costs and risks

- We have established a carbon management that involves
  - a research program to develop CO₂-reduced breakthrough technologies
  - shifting our energy mix towards renewable energies
  - continued operational excellence measures

- BASF co-founded the World Economic Forum’s initiative on Collaborative Innovation for Low-Carbon Emitting Technologies in the Chemical Industry

- BASF further enhances transparency: We support the recommendations of the Task Force for Climate-related Financial Disclosure and participated in the “TCFD Preparer Forum for Chemicals” in 2019
BASF’s CO₂ reduction efforts are focused on main emitters

Example: Verbund site Ludwigshafen
Emissions 2019 in million tons CO₂e

- Carbon management research program:
  - breakthrough technologies for the most energy consuming basic chemicals (accounting for approximately 70% of the CO₂ emissions of the chemical industry in Europe)
  - electrification and fundamentally new synthesis pathways
  - moving towards low-carbon chemical value chains
Increasing importance of renewable energy

- In 2019, internally generated power in the BASF Group had a carbon footprint of around 0.26 tons of CO₂ per MWh of electricity and was below the national grid factor at most BASF Group locations (purchased electricity: around 0.46 tons of CO₂ per MWh)

- In 2019, 23 BASF sites were partially or fully powered by emission-free electricity

- Demand for electricity from renewable sources will increase sharply with new, low-carbon electricity-based production processes

- At the Ludwigshafen site in Germany, we would need to roughly triple or quadruple our current electricity use (2019: 6.2 TWh) to fully implement the new production processes

- Availability and price of renewable power as critical success factors

- BASF is investigating different options for renewable power supply
From a linear to a more circular economy – BASF contribution: ChemCycling™

Close the loop

**ChemCycling™**
+ can handle mixed plastic waste
+ produces virgin-like raw materials
+ replaces virgin fossil resources

- In 2019, BASF invested €20 million in Quantafuel (pyrolysis of mixed plastic waste and purification of the resulting oil)
- BASF providing technical support in the startup of Quantafuel’s commercial plant in Skive, Denmark

Plastic waste is converted into liquid feedstock and fed into BASF’s value chains
Alliance to End Plastic Waste (AEPW)
– take action, develop solutions and catalyze investment

- Founded in 2019, BASF is a founding member of the AEPW
- 46 members from entire plastics value chain
- Commitment to spend US$1.5 billion over five years for infrastructure development, innovation, education, engagement and clean-up
- Example: collaboration with non-profit initiative RenewOceans in Varanasi, India (Ganges river)
  - ReFence technology to collect plastic from waterways
  - waste management strategy for university campus
  - strategy for scaling and franchising of the existing model
We source responsibly and strive to improve sustainability performance in the supply chain

- Goal: Cover 90% of our relevant spend\(^1\) with sustainability evaluations by 2025 (2019: 81%), and have 80% of our suppliers improve their sustainability performance upon re-evaluation (2019: 52%)

- Supplier Code of Conduct rooted in internationally recognized standards such as the principles of the UN Global Compact and the International Labor Organization

- Engaged in more than 20 initiatives to improve sustainability performance and working conditions in the supply chain, e.g., Global Battery Alliance (GBA), Responsible Cobalt Initiative (RCI), Roundtable on Sustainable Palm Oil (RSPO)

- Founding member of the “Together for Sustainability” initiative for the joint evaluation of suppliers

- 4,197 sustainability assessments and 309 audits carried out by an independent service provider for member companies in 2019, thereof 537 assessments and 81 audits for BASF

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\(^1\) We understand relevant spend as procurement volumes with relevant suppliers. We define relevant suppliers as Tier 1 suppliers showing an elevated sustainability risk potential as identified by our risk matrices and our purchasers’ assessments. We also use further sources of information to identify relevant suppliers such as evaluations from Together for Sustainability (TfS), a joint initiative of chemical companies for sustainable supply chains.
Global water stewardship – strong commitment to local water management

- Further increase of water stress areas expected worldwide (climate change, population growth and economic development)

- Growing competition among water users expected (e.g., households, agriculture, industry)

- In 2019, BASF was included in CDP’s “Water A List” for sustainable water management

- Goal: Introduction of sustainable water management at all Verbund sites and sites in water stress areas by 2030, representing 93% of BASF’s entire water abstraction
  - water stress areas are regions where more than 40% of available water is used by industry, household and agriculture
  - status 2019: 36%
Engaged employees – proud ambassadors for what BASF stands for

- BASF’s employees and their engagement are key to enable our long-term business success

- Annual goal: More than 80% of our employees feel that at BASF, they can thrive and perform at their best

- To measure the engagement, we
  - collect regular feedback of our employees
  - engage our employees in discussions on the results
  - identify improvement areas and drive follow-up activities
  - report on the current status in the BASF Report

- Global survey “Employee Voices” in 2019: 79% of all participants agreed to the statement that at BASF they can thrive and perform at their best
Around 30% of BASF Group sales from sustainable solutions – leveraging our innovation power

- Portfolio segmentation: >50,000 specific product applications analyzed by 2019 (€51.9 billion in sales, 96.3% of relevant portfolio)¹
- >12,000 Accelerators across all business segments
- Accelerator margins on average ~6 percentage points above the rest of assessed portfolio
- Goal: €22 billion of sales with Accelerator products by 2025 (2019: €15.0 billion)
- Stronger integration in R&D pipeline, business strategies and M&A projects
- We will stop selling Challenged products within maximum five years after classification

¹ The product portfolio acquired from Bayer has been partially assessed.
Sustainable Solution Steering – BASF’s Accelerators contribute to the UN Sustainable Development Goals

Sales shares of contributing Accelerators (%)

- Cost savings downstream: 28.9%
- Biodiversity and renewables: 9.1%
- Climate change and energy: 61.9%
- Emission reduction: 9.1%
- Resource efficiency: 0.1%
- Water: 0.1%
- Health and safety: 0.1%
- Hunger and poverty: 0.1%

Primarily addressed SDGs

1. Zero hunger
2. Affordable and clean energy
3. Good health and well-being
4. Responsible consumption and production
5. Clean water and sanitation
6. Sustainable cities and communities
7. Industry, innovation and infrastructure
8. Decent work and economic growth
9. Life on land
10. Climate action
11. Responsible consumption and production
12. Industry, innovation and infrastructure
13. Decent work and economic growth
14. Affordable and clean energy
15. Life on land
Innovations for a sustainable future – Accelerator examples

- **SLENTITE®** – high-performance insulation material
- **Formic acid** – eco-efficient runway and road deicing
- **Acronal® MB** – from biomass to dispersions
- **ecovio®** – compostable cling film for fresh-food packaging
- **Inscalis®** – insecticide with unique mode of action
- **Synative® ES TMP** – biodegradable marine lubricants
Electromobility drives battery materials growth – BASF is a leading supplier with global production

First CAM production facility in Elyria, Ohio

2012

Second CAM production facility in Battle Creek, Michigan; merged with Elyria, Ohio into BASF TODA America (BTA)

2018

CAM precursor production planned in Harjavalta, Finland

2022

CAM production planned in Schwarzheide, Germany

2022

Foundation of BASF TODA Battery Materials (BTBM), Japan

2015

Tripled capacity at BTBM in Onoda, Japan

2017

Market projections for 2030:

- ~25 million electric vehicles built per year
- 1,500-2,500 kt of CAM in electromobility
- €45-60 billion CAM market size

~20–25% p.a.
BASF combines battery-materials production and recycling with the goal of closing the loop in the circular economy

Battery materials circular economy

- Metal mining & refining
- Cathode active material
- Battery cell
- Lithium-ion battery
- Collection & dismantling end-of-life battery packs
- Electric car
- Metal extraction

Key facts

- Regulation drives demand for recycling
- OEMs will need recycling partners to establish closed loop approaches
- Recycling provides sustainable and cost-efficient access to metals
- BASF has proprietary and differentiating technology along with expertise in recycling
# We create chemistry for a sustainable future – overview on sustainability goals and KPIs

<table>
<thead>
<tr>
<th>Energy &amp; climate protection</th>
<th>Goal</th>
<th>Status 2019</th>
<th>Status 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolute emissions of CO₂ equivalents(^1)</td>
<td>≤22</td>
<td>20.1</td>
<td>21.9</td>
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<tr>
<th>Production</th>
<th>Goal 2025</th>
<th>Status 2019</th>
<th>Status 2018</th>
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<tbody>
<tr>
<td>Process safety incidents(^2)</td>
<td>≤0.1</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>Lost-time injury rate(^2)</td>
<td>≤0.1</td>
<td>0.3</td>
<td>0.3</td>
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<th>Water</th>
<th>Goal 2030</th>
<th>Status 2019</th>
<th>Status 2018</th>
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<tbody>
<tr>
<td>Sustainable water management at Verbund sites and sites in water stress areas</td>
<td>100%</td>
<td>35.8%(^3)</td>
<td>50.0%</td>
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<thead>
<tr>
<th>Products &amp; solutions</th>
<th>Goal 2025</th>
<th>Status 2019</th>
<th>Status 2018</th>
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</thead>
<tbody>
<tr>
<td>Sales generated by Accelerators(^4) in product portfolio</td>
<td>22</td>
<td>15.0</td>
<td>14.3</td>
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<table>
<thead>
<tr>
<th>Employees</th>
<th>Annual</th>
<th>Status 2019</th>
<th>Status 2018</th>
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<tbody>
<tr>
<td>Employees feel that at BASF, they can thrive and perform at their best</td>
<td>&gt;80%</td>
<td>79%</td>
<td>–</td>
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<table>
<thead>
<tr>
<th>Procurement</th>
<th>Goal 2025</th>
<th>Status 2019</th>
<th>Status 2018</th>
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</thead>
<tbody>
<tr>
<td>Sustainability assessment of relevant spend(^5)</td>
<td>90%</td>
<td>81%</td>
<td>60%</td>
</tr>
<tr>
<td>Suppliers with improved performance upon re-evaluation</td>
<td>80%</td>
<td>52%</td>
<td>–</td>
</tr>
</tbody>
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1 Million metric tons; includes other gases according to the Greenhouse Gas Protocol, which are converted into CO₂ equivalents
2 Per 200,000 working hours including contractor working hours (ICCA)
3 Enlarged definition for water stress areas
4 Products with substantial contribution to sustainability; in billion €
5 Relevant spend; based on risk matrices, purchasers’ assessments and other sources
BASF in sustainability ratings and rankings

CDP
In 2019, BASF achieved a score of A– in the climate category, thus attaining leadership status again; BASF was included in the “Water A list” of leading companies for sustainable water management

MSCI ESG Research
In 2020, BASF was again rated AA and ranks third in “Diversified Chemicals”

Sustainalytics
BASF is “Outperformer” in the overall ESG rating 2020 with strong ratings in social and governance categories

FTSE4Good Global Index
BASF was included again in the FTSE4Good Global Index 2019, receiving the highest ESG rating score in the chemical industry
Value balancing alliance – consistent assessment in monetary terms of the impact of business activities on the well-being of people

- Founded in June 2019, BASF is a founding member of the value balancing alliance
- From traditional reporting of input and output (e.g., raw materials, CO₂ emissions) to impact valuation (e.g., climate change mitigation costs)
- Holistic view along the entire value chain
- Increase transparency by
  - standardizing calculations for comparable results
  - piloting in management accounting
  - making outcomes publicly available
- Ambition: transform business from maximizing profits to optimizing value creation
We create chemistry
SLENTITE®
High-performance insulation panel for construction

- PU aerogel as solid panel with best in class thermal insulation
- Flexible scope of design thanks to very slim panel (25–50% less than industry standard)
- Construction solution for reduced energy consumption
- Most efficient product for the preservation of the historical character of an old building
- Strong growth potential in a strategic relevant market of €1.3 billion
- First boards from pilot plant are being commercialized
- Start of large scale production in 2021
Formic acid
Ecoefficient runway and road deicing

- Better biodegradability than conventional products
- Less corrosive than conventional products, reduced impact on the surrounding flora, not hazardous to animals
- Reduced water treatment demand and costs
- Enabling ecoefficient deicing
- Key customers won: In Europe, all big airports are now using formate salts, the salt of formic acid
Acronal® MB
From biomass to dispersion for premium paints

- First BASF binder for interior paints based on the biomass balance approach launched in 2016
- Replacing fossil raw materials with renewable feedstock at the beginning of the production process
- Less greenhouse gas emissions
- Enabling interior paints that combine environmental responsibility with uncompromising premium quality
- 91% of interviewed professional painters in Germany see an increase in sustainability aspects in tenders
**ecovio®**
Compostable cling film for fresh-food packaging

- Developed together with Fabbri Group
- Certified compostable according to standards for industrial composting and home composting
- Optimal breathability for an extended shelf life of fresh food
- High transparency and excellent mechanical properties for automatic packaging
- Reducing food waste, lowering greenhouse gas emissions and promoting organic recycling
Inscalis®
Insecticide with unique mode of action

- New standard in the piercing and sucking insect pest market, delivering exceptional control of aphids, whiteflies, jassids and psyllids

- Derived from a natural fermentation process, Inscalis® has a favorable environmental profile exhibiting minimal impact on important beneficial arthropods and pollinators

- With a quick onset of action, Inscalis® insecticide quickly stops insect pests’ feeding, reducing nutrient loss and harmful viral/bacterial pathogens

- Resulting in healthier plants and optimal yields with higher quality
Synative® ES TMP
Environmentally acceptable marine lubricants

- Superior lubrication performance, excellent stability
- Lower impact on the aquatic environment
- Excellent biodegradability
- Renewable content of >80%
- One of few products to enable the formulation of environmentally acceptable lubricants for marine with EU Ecolabel and OSPAR\(^1\) listing
- Key customers won; considerable growth potential, depending on future regulation

\(^1\) Oslo/Paris convention for the protection of the marine environment of the North-East Atlantic