Forecast

Economic Environment in 2021

We expect the global economy to gradually recover in 2021 after the sharp downturn resulting from the coronavirus pandemic. Gross domestic product (GDP) will return to roughly the pre-crisis level. We assume that global GDP will grow by 4.3% (2020: –3.7%). Consumers and companies in many countries remain restricted in their freedom of actions for the time being due to measures to combat the pandemic. Positive seasonal impulses should start to make themselves felt as the year progresses. We expect that growing immunization of the population – especially risk groups – will increasingly support the economic recovery in the second half of 2021. Regional differences will presumably remain significant: While we assume emerging markets in Asia will experience robust growth, momentum in Europe, the United States and Japan is likely to initially remain sluggish. Uncertainty about future developments is exceptionally high. It is very difficult to predict how the coronavirus pandemic will progress. Furthermore, the aftereffects of the sharp economic decline in the business sector and the labor market from the past year will materialize further.

Trends in the global economy in 2021

- **Moderate growth expected in Europe and the United States**
- **Strong growth likely in Asia**

We anticipate an overall moderate GDP growth rate of 3.0% (2020: –6.4%) in the European Union (E.U.). We expect base effects to support growth momentum in countries that were hit especially hard by the pandemic. These include southern European countries with a high percentage of tourism, but also economies in northwestern and eastern Europe where industry is specialized in investment goods and automotive production. It is likely, though, that measures to contain the coronavirus pandemic, which vary in degree among the different E.U. member countries, will continue to have a significant impact on economic growth. Furthermore, we expect Brexit to have a negative effect on economic growth in the E.U. In the United Kingdom, we are forecasting weak GDP growth of 2.4% due to Brexit and extremely high infection rates at the beginning of the year, after the considerable decline in the previous year (2020: –9.9%).

We expect a GDP growth rate of 4.0% in the United States. A further government spending plan is likely to significantly bolster the economy. However, since the 2020 economic decline in the United States was only about half of what the E.U. saw, base effects should have a smaller impact. Private consumption in 2020 was significantly supported by government payments. Consequently, no strong catch-up effects can be expected in the consumption of goods in 2021. Moreover, we expect the labor market to recover more slowly than in the previous year. While the weaker U.S. dollar should have a positive effect on exports, import prices will foreseeably rise year on year. We do not expect tariffs imposed on imported intermediate or consumer goods from China to drop for the time being, and thus no favorable effect on import prices is foreseeable.

The emerging markets of Asia will presumably see considerably higher growth rates. In China, private consumption will increasingly bolster growth. Global economic recovery should also have a stimulating effect on exports. Overall, growth is likely to slow during the course of the year. Year on year, growth will still be relatively high, at over 7%, and thus above average for recent years. We expect India to see a continuation of the dynamic recovery that began in the second half of 2020. In the other Asian emerging markets, we anticipate a growth rate comparable to the long-year average before the crisis, slightly above 4%.

In Japan, we expect moderate GDP growth of just slightly above 2%. Although this country has been able to control the pandemic better than other advanced economies so far, domestic demand for consumer and investment goods will presumably only recover slowly after the sharp decline in the previous year. Exports are likely to see a considerably better upswing, especially due to increasing demand from China.

Growth prospects in South America will probably remain subdued. We are forecasting total GDP growth in this region of slightly above 4%. Fiscal impetus in Brazil is likely to weaken over the course of the year and dampen further economic recovery (2021: +3.5%; 2020: +4.6%). Macroeconomic imbalances, primarily rising inflation rates coupled with continued low interest rates and growing national debt, will presumably continue to burden the Brazilian currency. In Argentina, too, the debt and currency crisis are expected to dampen the country’s economic recovery following the sharp decline in the previous year (2021: +5.0%; 2020: –10.4%). In the other countries of South America, we anticipate moderate growth in domestic demand and a favorable impact on demand for industrial and agricultural raw materials from the recovering global economy.

1 Our assumptions account for current estimates by external institutions, including economic research institutes, banks, multinational organizations and consulting firms.
Outlook for gross domestic product 2021

<table>
<thead>
<tr>
<th>World</th>
<th>4.3%</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Union</td>
<td>3.0%</td>
</tr>
<tr>
<td>United States</td>
<td>4.0%</td>
</tr>
<tr>
<td>Emerging markets of Asia</td>
<td>6.9%</td>
</tr>
<tr>
<td>Japan</td>
<td>2.3%</td>
</tr>
<tr>
<td>South America</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

Real change compared with previous year

World: 4.3%
European Union: 3.0%
United States: 4.0%
Emerging markets of Asia: 6.9%
Japan: 2.3%
South America: 4.4%

Outlook for key customer industries

- Recovery expected in the automotive industry and for consumer goods

Overall, we anticipate moderate growth momentum in 2021 following the rapid recovery in 2020. By contrast, we expect stronger recovery effects in western and eastern Europe as well as in North America, India and Japan. The percentage of hybrid and electric vehicles should continue to rise due to buying incentives, vehicle tax rebates and the expansion of the charging infrastructure.

In the energy and raw materials sector, we expect moderate overall growth in energy demand and demand for industrial raw materials. Production growth should only be small in advanced economies. In the emerging markets by contrast, we are forecasting considerable growth. Approximately half of total global growth is expected to be in Asia.

Production in the construction industry will presumably grow moderately in 2021. We anticipate lower growth rates in commercial construction but higher growth in housing construction and in the infrastructure segment. While the construction business in Europe is likely to grow moderately, we only foresee a slight increase in the United States. This is because of small base effects after the upswing in the housing market in the previous year and government spending on construction, which is only likely to benefit from the economic stimulus packages after a delay. By contrast, we expect considerably higher growth rates in Asia.

Due to recovery effects, overall production of consumer goods, primarily textiles and consumer durables, will foreseeably grow at a somewhat higher rate than global GDP. Production of care products, by contrast, will grow approximately in line with the gross domestic product.

The electronics industry should benefit from the ongoing digitalization trend, more frequent use of electronic parts in the automotive industry and the advancement of connectivity and automation. We therefore continue to expect above-average growth.
Outlook for the chemical industry

Above-average growth expected in the chemical industry

Global chemical production (excluding pharmaceuticals) is expected to grow by 4.4% (2020: –0.4%) in 2021, which is above average for the years prior to the coronavirus pandemic. This growth should be seen predominantly in emerging markets (2021: +5.4%; 2020: +1.8%). In advanced economies, we anticipate a growth rate of 2.5% (2020: –4.2%), which is above average for pre-crisis years. The level of production from 2019 will thus already be surpassed in 2021 in emerging markets. Overall, production in advanced economies will presumably still be considerably lower.

In China, the world’s largest chemical market, we are forecasting a growth rate in chemical production of 6.3% (2020: 3.4%). Momentum is likely to slow down after the rapid recovery in production in 2020. Nevertheless, we anticipate demand across all customer industries to grow for intermediate inputs from the chemical industry, in particular consumer goods and in the automotive industry.

In the European Union, we are forecasting an increase in chemical production of 3.2% (2020: –1.9%), roughly in line with GDP growth. The expected marked recovery in the automotive industry along with moderate growth in the construction industry and in consumables in the health and nutrition sector, as well as somewhat stronger growth in consumer durables should bolster domestic chemical demand. We anticipate weaker growth momentum in the United Kingdom. Higher transaction costs are likely to dampen chemical production due to the end of the Brexit transition period and the negative economic impact of the coronavirus pandemic (2021: +2.0%; 2020: +1.0%).

We expect chemical production in the United States to grow by 2.6% (2020: –4.3%). Further recovery in automotive production and considerable growth in health and nutrition and in electronics should have positive effects on chemical demand, whereas the construction and oil and gas industries are only expected to provide weak growth stimulus.

In Japan, we anticipate moderate growth in chemical production, analogous to the modest overall economic recovery.

In South America, chemical production will presumably lag slightly behind the economy as a whole (2021: +3.0%; 2020: –1.1%). Chemical growth will be buoyed by the recovery in automotive production, as well as in the agriculture, nutrition and industrial raw materials sectors.

<table>
<thead>
<tr>
<th>Outlook for chemical production 2021 (excluding pharmaceuticals)</th>
<th>Real change compared with previous year</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>4.4%</td>
</tr>
<tr>
<td>European Union</td>
<td>3.2%</td>
</tr>
<tr>
<td>United States</td>
<td>2.6%</td>
</tr>
<tr>
<td>Emerging markets of Asia</td>
<td>5.9%</td>
</tr>
<tr>
<td>Japan</td>
<td>1.0%</td>
</tr>
<tr>
<td>South America</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

Trends in chemical production 2021–2023 (excluding pharmaceuticals)

<table>
<thead>
<tr>
<th>Trends in chemical production 2021–2023 (excluding pharmaceuticals)</th>
<th>Real change compared with previous year</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>3.9%</td>
</tr>
<tr>
<td>European Union</td>
<td>2.3%</td>
</tr>
<tr>
<td>United States</td>
<td>2.6%</td>
</tr>
<tr>
<td>Emerging markets of Asia</td>
<td>5.3%</td>
</tr>
<tr>
<td>Japan</td>
<td>1.0%</td>
</tr>
<tr>
<td>South America</td>
<td>2.5%</td>
</tr>
</tbody>
</table>
Outlook 2021

We expect the global economy to recover in 2021 after the sharp downturn resulting from the coronavirus pandemic. However, uncertainty about future developments remains exceptionally high. Our forecast therefore includes wide ranges to account for the possibility of significant disruptions to global supply chains and negative effects on the entire economy. At the same time, we are confident that without such negative impacts, we will be able to achieve earnings at the upper end of the forecast range. Our forecast assumes growth in our customer industries. For the automotive industry in particular, we are forecasting significant production growth compared with 2020. The global economy should see significant growth of 4.3% compared with 2020 (–3.7%). Global chemical production is expected to expand by 4.4%, well above the prior-year level (2020: –0.4%). We anticipate an average oil price of $50 for a barrel of Brent crude and an exchange rate of $1.18 per euro.

Based on these assumptions, we aim to increase our sales to between €61 billion and €64 billion (2020: €59,149 million). The BASF Group’s income from operations (EBIT) before special items is expected to be between €4.1 billion and €5.0 billion (2020: €3,560 million). The return on capital employed (ROCE) should be between 8.0% and 9.2% (2020: 1.7%).

For 2021, we anticipate Accelerator sales of between €18 billion and €19 billion (2020: €16.7 billion). Our CO₂ emissions are expected to stabilize at between 20.5 million metric tons and 21.5 million metric tons in 2021 (2020: 20.8 million metric tons). For more information on our opportunities and risks, see page 152 onward.

Sales, earnings and ROCE forecast for the BASF Group¹

- Sales growth to between €61 billion and €64 billion
- EBIT before special items of between €4.1 billion and €5.0 billion
- ROCE of between 8.0% and 9.2%

In 2021, we expect the BASF Group as a whole to increase sales to between €61 billion and €64 billion (2020: €59,149 million). The main drivers should be volume growth and higher prices. By contrast, currency and portfolio effects will have a negative impact. The Materials segment and Other are expected to see considerable sales growth. We are forecasting slightly higher sales in the Surface Technologies, Chemicals, Agricultural Solutions and Nutrition & Care segments, and a slight year-on-year decline in the Industrial Solutions segment.

The BASF Group’s EBIT before special items is expected to increase to between €4.1 billion and €5.0 billion (2020: €3,560 million). We anticipate considerably higher contributions from the Materials and Chemicals segments, Other and the Surface Technologies segment. The Agricultural Solutions and Nutrition & Care segments should record slightly higher EBIT before special items. By contrast, we are forecasting slightly lower EBIT before special items in the Industrial Solutions segment.

Based on the expected recovery in the global economy, a positive business trajectory and a lower cost of capital basis in 2021, we expect the BASF Group’s ROCE to be between 8.0% and 9.2% (2020: 1.7%). We expect a considerable increase in ROCE in all segments compared with the previous year.

Accelerator sales and CO₂ emissions forecast for the BASF Group

We expect Accelerator sales to increase to between €18 billion and €19 billion in 2021 (2020: €16.7 billion), in line with the global economic recovery and growing demand for chemical products. The divestiture of BASF’s global pigments business will also reduce sales of Accelerator products in BASF’s portfolio. Compensating factors will include the expected increase in Accelerator products from the initial portfolio segmentation of the businesses acquired from Solvay.

Despite the global economic recovery and growing demand for chemical products, CO₂ emissions are expected to stabilize at between 20.5 million metric tons and 21.5 million metric tons in 2021. We will keep emissions roughly at the prior-year level (2020: 20.8 million metric tons) with targeted measures. These include the implementation of further projects to increase energy efficiency and optimize processes, for example, to significantly reduce nitrous oxide emissions in Ludwigshafen, Germany. In addition, we are switching energy supply agreements to renewable energy sources, for example in Freeport, Texas, where we have signed long-term supply agreements for wind power. Emissions will also be reduced by the divestiture of BASF’s global pigments business in 2021.

The significant opportunities and risks that could affect our forecast are described under Opportunities and Risks on pages 158 to 166.

¹ For sales, “slight” represents a change of 1%–5%, while “considerable” applies to changes of 6% and higher. “At prior-year level” indicates no change (+/–0%). For earnings, “slight” means a change of 1%–10%, while “considerable” is used for changes of 11% and higher. “At prior-year level” indicates no change (+/–0%). At a cost of capital percentage of 9% for 2021, we define a change in ROCE of 0.1 to 1.0 percentage points as “slight,” a change of more than 1.0 percentage points as “considerable” and no change (+/–0 percentage points) as “at prior-year level.”
Sales and earnings forecast for the segments

For the Chemicals segment in 2021, we expect a slight increase in sales, mainly driven by growth in volumes in line with a market recovery and higher prices. In the Petrochemicals division, we expect an improved availability of steam cracker products following the unplanned outage at the steam cracker in Port Arthur, Texas, in 2020. In the Intermediates division, we anticipate higher sales volumes in all business areas. Price levels will likely rise, primarily due to higher raw materials prices in both divisions and from a favorable product mix in the Petrochemicals division. Currency effects are expected to dampen sales performance. We expect considerable growth in EBIT before special items. Mainly through higher sales volumes, due in part to improved availability of steam cracker products, and a recovery in margins.

For the Materials segment, we expect sales to be considerably above the previous year in 2021 due to higher volumes. In the Performance Materials division, we expect higher demand from all customer industries. For the Monomers division, we anticipate higher volumes, specifically for isocyanates and polyamides. Currency effects should reduce sales performance. We want to considerably increase EBIT before special items through the increase in volumes and a recovery in margins, especially in the Monomers division.

Sales in the Industrial Solutions segment will likely decline slightly in 2021, mainly as a result of the agreement to divest BASF’s global pigments business to DIC. This should be partially offset by higher volumes in both divisions. We anticipate slightly lower EBIT before special items, due in particular to the sale of BASF’s global pigments business and higher fixed costs. This will not be completely offset by the expected growth in volumes.

In the Surface Technologies segment, we are forecasting slightly higher sales growth in 2021, primarily from higher precious metal prices in the Catalysts division and higher volumes in both divisions. We aim to considerably improve the segment’s EBIT before special items compared with 2020, mainly through volume growth. We anticipate considerably higher EBIT before special items in the Coatings division but a slight year-on-year decrease in EBIT before special items in the Catalysts division due to lower contributions from precious metal trading.

For the Nutrition & Care segment, we expect slightly higher sales than in 2020. Higher volumes in both divisions will likely be partially offset by negative price and currency effects. Our planning assumes improved product availability, especially in the Nutrition & Health division. We expect the segment’s EBIT before special items to be slightly above the previous year, due to a higher contribution from the Nutrition & Health division, driven by volume growth. For the Care Chemicals division, we are forecasting a slight year-on-year decrease in EBIT before special items as a result of slightly higher fixed costs due to costs for the startup of new plants.

We expect sales to be slightly above the prior-year level in the Agricultural Solutions segment. We aim to increase our sales volumes and prices, which should more than offset negative currency effects. Overall, we expect a slight increase in EBIT before special items. Alongside higher sales, this will be driven by stringent fixed cost management. In addition, we will benefit from the measures to increase efficiency initiated in 2020. We will continue to invest in research and development and digitalization at a high level in 2021. Currency effects will presumably have a significantly negative impact on EBIT before special items in 2021.

Sales in Other are expected to be considerably above the 2020 level in 2021. This will be driven by sales growth in commodity trading. We anticipate a considerable improvement in EBIT before special items compared with the previous year. This should mainly reflect lower research expenses and higher contributions from other businesses.
Capital expenditures (capex)

- **Capex of around €3.6 billion planned for 2021**

We are planning capital expenditures (additions to property, plant and equipment excluding acquisitions, IT investments, restoration obligations and right-of-use assets arising from leases) of around €3.6 billion for the BASF Group in 2021. For the period from 2021 to 2025, we have planned capital expenditures totaling €22.9 billion. The investment volume in the next five years will thus be below that of the planning period 2020 to 2024 (€23.6 billion). A focus area is our investment project in Zhanjiang, China, to expand our businesses in Asia.

Projects currently being planned or underway include:

### Capex: selected projects

<table>
<thead>
<tr>
<th>Location</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antwerp, Belgium</td>
<td>Capacity expansion: integrated ethylene oxide complex</td>
</tr>
<tr>
<td>Geismar, Louisiana</td>
<td>Gradual capacity expansion: alkoxylates</td>
</tr>
<tr>
<td>Hämeenlinna, Finland, and Schwarzheide, Germany</td>
<td>Capacity expansion: MDI plant</td>
</tr>
<tr>
<td>Ludwigshafen, Germany</td>
<td>Investment: battery materials</td>
</tr>
<tr>
<td>Zhanjiang, China</td>
<td>Construction: production plant for vitamin A</td>
</tr>
<tr>
<td></td>
<td>Planned construction: integrated Verbund site</td>
</tr>
</tbody>
</table>

### Capex by segment 2021–2025

- **Other 25% (Infrastructure, R&D)**
- **Agricultural Solutions 4%**
- **Nutrition & Care 13%**
- **Surface Technologies 14%**
- **Industrial Solutions 4%**
- **Chemicals 30%**

### Capex by region 2021–2025

- **Asia Pacific 41%**
- **Europe 39%**
- **North America 18%**
- **South America, Africa, Middle East 1%**
- **1% Alternative sites currently being investigated**

**Dividend**

We have an ambitious dividend policy and offer our shareholders an attractive dividend yield. We aim to increase our per-share dividend each year.

Information on the proposed dividend can be found on page 13

**Financing**

In 2021, we expect cash outflows in the equivalent amount of around €1.0 billion from the scheduled repayment of bonds. To refinance maturing bonds and to optimize our maturity profile, we continue to have medium to long-term corporate bonds and our global commercial paper program at our disposal.

Information on our financing policies can be found on page 64

**Events after the reporting period**

There have been no significant changes in the company’s situation or market environment since the beginning of the 2021 business year.
Opportunities and Risks

The goal of BASF’s risk management is to identify and evaluate opportunities and risks as early as possible and to take appropriate measures in order to seize opportunities and limit risks. The aim is to avoid risks that pose a threat to BASF’s continued existence and to make improved managerial decisions to create value. We define opportunities as potential successes that exceed our defined goals. We understand risk to be any event that can negatively impact the achievement of our short-term operational or long-term strategic goals.

Opportunities
Potential successes that exceed our defined goals

Risks
Events that can negatively impact the achievement of our goals

In order to effectively measure and manage identified opportunities and risks, we quantify these where appropriate in terms of probability and economic impact in the event they occur. Where possible, we use statistical methods to aggregate opportunities and risks into risk factors. This way, we achieve an overall view of opportunities and risks at a portfolio level, allowing us to take effective measures for risk management.

According to our assessment, there continue to be no significant individual risks that pose a threat to the continued existence of the BASF Group. The same applies to the sum of individual risks, even in the case of a global economic crisis, such as the intensification of the coronavirus crisis.

Ultimately, however, residual risks (net risks) remain in all entrepreneurial activities that cannot be ruled out, even by comprehensive risk management.

Potentially short-term effects on EBIT of key opportunity and risk factors subsequent to measures taken

<table>
<thead>
<tr>
<th>Potential short-term effects on EBIT of key opportunity and risk factors</th>
<th>Outlook – 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business environment and sector</td>
<td></td>
</tr>
<tr>
<td>Market growth</td>
<td></td>
</tr>
<tr>
<td>Margins</td>
<td></td>
</tr>
<tr>
<td>Competition</td>
<td></td>
</tr>
<tr>
<td>Regulation/policy</td>
<td></td>
</tr>
<tr>
<td>Company-specific opportunities and risks</td>
<td></td>
</tr>
<tr>
<td>Procurement</td>
<td></td>
</tr>
<tr>
<td>Supply chain</td>
<td></td>
</tr>
<tr>
<td>Investments/production</td>
<td></td>
</tr>
<tr>
<td>Personnel</td>
<td></td>
</tr>
<tr>
<td>Acquisitions/divestitures/cooperations</td>
<td></td>
</tr>
<tr>
<td>Information technology</td>
<td></td>
</tr>
<tr>
<td>Law</td>
<td></td>
</tr>
<tr>
<td>Financial</td>
<td></td>
</tr>
<tr>
<td>Exchange rate volatility</td>
<td></td>
</tr>
<tr>
<td>Other financial opportunities and risks</td>
<td></td>
</tr>
</tbody>
</table>

Using a 95% confidence interval per risk factor based on planned values; summation is not permissible.

For 2021, we anticipate a considerable global economic recovery after the downturn in the previous year due to the coronavirus pandemic. General economic uncertainty will nevertheless remain high until widespread immunization of the population has been achieved. Specifically, production stoppages due to official orders or high infection rates can lead to disruptions in the supply chains of our customer industries, with our suppliers and in our own production plants. Moreover, restricted economic activity resulting from further lockdowns can have a significant negative impact on aggregate demand. An escalation of geopolitical conflicts as well as the ongoing trade conflicts between the United States and China and the associated slowdown of the economy also pose significant risks. These developments could have a negative impact on demand for intermediate and investment goods worldwide. Opportunities arise from continued strong demand, supported by earlier and better availability and broader acceptance of the coronavirus vaccine than is assumed in our forecasts. In addition to the uncertainties surrounding market growth and the development of key customer industries, material opportunities and risks for our earnings arise from margin volatility. From today’s perspective, Brexit does not give rise to any material opportunities or risks for the BASF Group due to the trade agreement reached between the European Union and the United Kingdom.

According to our assessment, there continue to be no significant individual risks that pose a threat to the continued existence of the BASF Group. The same applies to the sum of individual risks, even in the case of a global economic crisis, such as the intensification of the coronavirus crisis.
As a non-integral shareholding, income from Wintershall Dea is reported in net income from shareholdings. The opportunities and risks resulting from the shareholding in Wintershall Dea are therefore not included in the outlook for the EBIT of the BASF Group. Opportunities and risks that have an impact on net income from shareholdings and cash flow from the shares in Wintershall Dea are monitored and tracked through BASF’s involvement in the relevant governing bodies.

Risk management process

- Integrated process for identification, assessment and reporting
- Decentralized management of specific opportunities and risks
- Aggregation at a Group level

The BASF Group’s risk management process is based on the international risk management standard, COSO II Enterprise Risk Management – Integrated Framework, and has the following key features:

**Organization and responsibilities**

- Risk management is the responsibility of the Board of Executive Directors, which also determines the processes for approving investments, acquisitions and divestitures.
- The Board of Executive Directors is supported by the Corporate Center. Corporate Finance and Corporate Development, which are units within the Corporate Center, and the Chief Compliance Officer coordinate the risk management process at a Group level, examine financial and sustainability-related opportunities and risks, and provide the structure and appropriate methodology. Opportunity and risk management is thus integrated into the strategy, planning and budgeting processes.
- BASF’s risk committee reviews the BASF Group’s risk portfolio at least twice a year to evaluate any adjustments to risk-management measures and informs the Board of Executive Directors of these.
- Members of the risk committee are the head of Corporate Finance (president), the head of Corporate Development, the head of Corporate Legal, Compliance, Tax & Insurance and representatives of the Corporate Audit and Corporate Environmental Protection, Health & Safety units.
- The management of specific opportunities and risks is largely delegated to the divisions, the service and research units and the regions, and is steered at a regional or local level. This also applies to sustainability-related topics relevant to BASF including the impact of climate change on BASF. Financial risks are an exception. The management of liquidity, currency and interest rate risks is conducted in the Corporate Finance unit. The management of commodity price risks takes place in the Global Procurement unit or in authorized Group companies.
- A network of risk managers in the divisions, service and research units as well as in the regions advances the implementation of appropriate risk management practices in daily operations.
- The BASF Group’s management is informed of short-term operational opportunities and risks that fall within an observation period of up to one year in the monthly management report produced by the Corporate Finance department. In addition, Corporate Finance provides information twice a year on the aggregated opportunity/risk exposure of the BASF Group. Furthermore, if a new individual risk is identified which has a more than €10 million impact on earnings or bears reputational risks, it must be immediately reported.
- As part of strategy development, the Corporate Development unit conducts strategic opportunity/risk analyses for long-term opportunities and risks with a 10-year assessment period. These analyses are annually reviewed as part of strategic controlling and are adapted if necessary.
- BASF’s Chief Compliance Officer (CCO) manages the implementation of our Compliance Management System, supported by additional compliance officers worldwide. He regularly reports to the Board of Executive Directors on the status of implementation.
Our Group-wide Compliance Program aims to ensure adherence to legal regulations and the company’s internal guidelines. Our global employee Code of Conduct firmly embeds these mandatory standards into everyday business. Members of the Board of Executive Directors are also expressly obligated to follow these principles.

Significant features of the internal control and risk management system with regard to the Group financial reporting process

- Conducted in accordance with standardized Group guidelines
- Segregation of duties, principle of dual control and clearly regulated access rights
- Annual evaluation of the control environment and relevant processes at significant companies

The Consolidated Financial Statements are prepared by a unit in the Corporate Finance department. BASF Group’s accounting process is based on a uniform accounting guideline that sets out accounting policies and the significant processes and deadlines on a Group-wide basis. There are binding directives for the internal reconciliations and other accounting operations within the Group. Standard software is used to carry out the accounting processes for the preparation of the individual financial statements as well as for the Consolidated Financial Statements. There are clear rules for the access rights of each participant in these processes.

Employees involved in the accounting and reporting process meet the qualitative requirements and participate in training on a regular basis. There is a clear assignment of responsibilities between the specialist units, companies and regional service units involved. We strictly adhere to the principles of segregation of duties and dual control, or the “four-eyes principle.” Complex actuarial reports and evaluations are produced by specialized service providers or specially qualified employees.

An internal control system for financial reporting continuously monitors these principles. To this end, methods are provided to ensure that evaluation of the internal control system in financial reporting is structured and uniform across the BASF Group.

The significant risks for the BASF Group regarding a reliable control environment for proper financial reporting are reviewed and updated on an annual basis. Risks are compiled into a central risk catalog.

Moreover, a centralized selection process identifies companies that are exposed to particular risks, that are material to the Consolidated Financial Statements of the BASF Group, or that provide service processes. The selection process is conducted annually. Persons responsible for implementing the requirements for an effective control system in financial reporting are appointed at the relevant companies.

In these companies, the process comprises the following steps:

- **Evaluation of the control environment**
  Adherence to internal and external guidelines that are relevant for the maintenance of a reliable control environment is checked by means of a standardized questionnaire.

- **Identification and documentation of control activities**
  In order to mitigate the risks to the financial reporting processes listed in our central risk catalog, critical processes and control activities are documented.

- **Assessment of control activities**
  After documentation, a review is performed to verify whether the described controls are capable of adequately covering the risks. In the subsequent test phase, samples are taken to test whether, in practice, the controls were executed as described and effective.

- **Monitoring of control weaknesses**
  The managers responsible receive reports on any control weaknesses identified and their resolution, and an interdisciplinary committee
investigates their relevance for the BASF Group. The Board of Executive Directors and the Audit Committee are informed if control weaknesses with a considerable impact on financial reporting are identified. Only after material control weaknesses have been resolved does the company’s managing director confirm the effectiveness of the internal control system.

- **Internal confirmation of the internal control system**
  All managing directors and chief financial officers of each consolidated Group company must confirm to the Board of Executive Directors of BASF SE every half-year and at the end of the annual cycle, in writing, that the internal control system is effective with regard to accounting and reporting.

**Short-term opportunities and risks**

**Market growth**
The development of our sales markets is one of the strongest sources of opportunities and risks. More details on our assumptions regarding short-term growth rates for the global economy, regions and key customer industries, such as the chemicals, automotive and construction sectors, can be found under Economic Environment in 2021 on pages 152 to 154.

We also consider risks from deviations in assumptions. Stronger demand caused by an accelerated lifting of lockdowns, for example as a result of high efficacy and acceptance of coronavirus vaccines, give rise to macroeconomic opportunities. A significant macro-economic risk arises from the possibility that measures to contain the coronavirus are kept in place for a longer period of time or expanded, and that global economic growth slows as a result. Additional macroeconomic risks result from the escalation of geopolitical conflicts and the ongoing trade conflict between the United States and China. Both can have a considerable impact on global demand for intermediate goods for industrial production and demand for investment goods.

Weather-related influences can result in positive or negative effects on our business, particularly in the Agricultural Solutions segment.

**Margin volatility**
Opportunities and risks for the BASF Group primarily result from higher or lower margins in the Chemicals and Materials segments. Opportunities arise here if the positive margin trend driven by the supply side continues for longer than expected. However, new capacities or raw materials shortages could increase margin pressure on a number of products and value chains. This would have a negative effect on our EBIT.

Moreover, if oil and gas prices rise, Wintershall Dea does not have a compensating effect on the BASF Group’s EBIT because this shareholding is no longer reported in EBIT, but in net income from shareholdings.

The year’s average oil price for Brent crude was $42 per barrel in 2020, compared with $64 per barrel in the previous year. For 2021, we anticipate an average oil price of $50 per barrel. We therefore expect price levels for the raw materials and petrochemical basic products that are important to our business to rise slightly.

**Competition**
We continuously enhance our products and solutions in order to maintain competitive ability. We monitor the market and the competition, and try to take targeted advantage of opportunities and counter emerging risks with suitable measures. Aside from innovation, key components of our competitiveness are our ongoing cost management and continuous process optimization.

**Regulation and political risks**
Risks for us can arise from intensified geopolitical tensions, new trade sanctions, stricter emissions limits for plants, changes in chemical regulations and energy and climate laws.

In addition, risks to the BASF Group can be posed by further regulations in key customer industries or on the use or registration of agricultural and other chemicals.

Political measures could also give rise to opportunities. For example, we view measures around the world to increase energy efficiency and reduce greenhouse gas emissions as an opportunity for increased demand for our products, such as our insulation foams for buildings, catalysts, battery materials for electromobility, or our solutions for wind turbines. Our broad product portfolio enables us to offer alternatives if new chemicals have to be developed as a result of restrictions in connection with the REACH chemicals regulation or new standards in our customers’ industries.

**Purchasing and supply chain**
We minimize procurement risks through our broad portfolio, global purchasing activities and the purchase of raw materials on spot markets. If possible, we avoid procuring raw materials from a single supplier. When this cannot be avoided, we try to foster competition or we knowingly enter into this relationship and assess the consequences of potential nondelivery. We continuously monitor the credit risk of important business partners.

Around the world, the frequency and intensity of extreme weather conditions (such as high/low water levels on rivers or hurricanes) are subject to change as a result of climate change. We address the risk of supply interruptions on the procurement and sales side caused by extreme weather conditions by switching to alternative logistics carriers and the possibility of falling back on unaffected sites within our global Verbund.

In 2019/2020, we implemented a package of climate resilience measures at our Verbund site in Ludwigshafen, Germany: We developed an early warning system for low water, created multimodal transportation concepts, chartered more ships that can navigate low water levels and, in cooperation with partners, are currently developing our own type of ship designed for extreme low-water
situations. These measures are already making long periods of low water on the Rhine River, like in 2018, more manageable.

**Investments and production**

We try to prevent unscheduled plant shutdowns by adhering to high technical standards and by continuously improving our plants. We reduce the effects of an unscheduled shutdown on the supply of intermediate and end products through diversification within our global production Verbund.

In the event of a production outage – caused by an accident, for example – our global, regional or local emergency response plans and crisis management structures are engaged, depending on the impact scope. Every region has crisis management teams on a local and regional level. They not only coordinate the necessary emergency response measures, they also initiate the immediate measures for damage control and resumption of normal operations as quickly as possible.

Crisis management also includes dealing with extreme weather conditions such as hurricanes (for example, at the sites on the Gulf of Mexico in Freeport, Texas, and Geismar, Louisiana) or significantly elevated water temperatures in rivers due to extended heat waves, which limit the available cooling capacity (for example, at the Ludwigshafen site in Germany). Appropriate precautions are taken at the sites in the case of a potential change in risk in connection with climate change. For example, over the past few years, the Verbund site in Ludwigshafen, Germany, has implemented a package of measures to increase cooling capacity, including expanding and optimizing the central recooling plants and optimizing cooling water flows. These are capable of avoiding production outages due to extreme heatwaves like the one in 2018.

**Acquisitions, divestitures and cooperations**

We constantly monitor the market in order to identify possible acquisition targets and develop our portfolio appropriately. In addition, we work together in collaborations with customers and partners to jointly develop new, competitive products and applications.

Opportunities and risks arise in connection with acquisitions and divestitures from the conclusion of a transaction, or it being completed earlier or later than expected. They relate to the regular earnings contributions gained or lost as well as the realization of gains or losses from divestitures if these deviate from our planning assumptions. (2) For more information on opportunities and risks from acquisitions and divestitures in 2020, see page 51

**Personnel**

Due to BASF’s worldwide compensation principles, the development of personnel expenses is partly dependent on the amount of variable compensation, which is linked to the company’s success, among other factors. The correlation between variable compensation and the success of the company has the effect of minimizing risk. Another factor is the development of interest rates for discounting pension obligations. Furthermore, changes to the legal environment of a particular country can have an impact on the development of personnel expenses for the BASF Group. For countries in which BASF is active, relevant developments are therefore constantly monitored in order to recognize risks at an early stage and enable BASF to carry out suitable measures. (2) For more information on our compensation system, see page 149. For more information on risks from pension obligations, see page 164

**Information technology risks**

BASF relies on a large number of IT systems. Their nonavailability, violation of confidentiality or the manipulation of data in critical IT systems and applications can all have a direct impact on production and logistics processes. The threat environment has changed in recent years, as attackers have become better organized, use more sophisticated technology, and have far more resources available. If data are lost or manipulated, this can, for example, negatively affect plant availability, delivery quality or the accuracy of our financial reporting. Unauthorized access to sensitive data, such as personnel records or customer data, competition-related information or research results, can result in legal consequences or jeopardize our competitive position. This would also be accompanied by the associated loss of reputation.

To minimize such risks, BASF uses globally uniform processes and systems to ensure IT availability and IT security, such as stable and redundantly designed IT systems, backup processes, virus and access protection, encryption systems as well as integrated, Group-wide standardized IT infrastructure and applications. The systems used for information security are constantly tested, continuously updated, and expanded if necessary. In addition, our employees receive regular training on information and data protection, IT-related risk management is conducted using Group-wide regulations for organization and application, as well as an internal control system based on these regulations.

BASF also established the Cyber Defense Center in 2015, is a member of Cyber Security Sharing and Analytics e.V. (CSSA), and a founding member of the German Cybersecurity Organization (DCSO) together with Allianz SE, Bayer AG and Volkswagen AG. BASF has also established an information security management system and is certified according to ISO/IEC 27001:2013.

**Legal disputes and proceedings**

We constantly monitor current and potential legal disputes and proceedings, and regularly report on these to the Board of Executive Directors and Supervisory Board. In order to assess the risks from current legal disputes and proceedings and any potential need to recognize provisions, we prepare our own analyses and assessments of the circumstances and claims considered. In addition, in individual cases, we consider the results of comparable proceedings and, if needed, independent legal opinions. Risk assessment is
particularly based on estimates as to the probability of occurrence and the range of possible claims. These estimates are the result of close cooperation between the relevant operating and service units together with Corporate Finance and Corporate Legal. If sufficient probability of occurrence is identified, a provision is recognized accordingly for each proceeding. Should a provision be unnecessary, general risk management continues to assess whether these litigations nevertheless represent a risk for the EBIT of the BASF Group.

We use our internal control system to limit risks from potential infringements of rights or laws. For example, we try to avoid patent and licensing disputes whenever possible through extensive clearance research. As part of our Group-wide Compliance Program, our employees receive regular training.

**Financial opportunities and risks**

Detailed guidelines and procedures exist for dealing with financial risks. Among other things, they provide for the segregation of trading and back office functions.

As a part of risk management, activities in countries with transfer restrictions are continuously monitored. This includes, for example, regular analysis of the macroeconomic and legal environment, shareholders’ equity and the business models of the operating units. The chief aim is the management of counterparty, transfer and currency risks for the BASF Group.

**Exchange rate volatility**

Our competitiveness on global markets is influenced by fluctuations in exchange rates. For BASF’s sales, opportunities and risks arise in particular when the U.S. dollar exchange rate fluctuates. A full-year appreciation of the U.S. dollar against the euro by $0.01, which could result from a macroeconomic slowdown, would increase the BASF Group’s EBIT by around €30 million, assuming other conditions remain the same. On the production side, we counter exchange rate risks by producing in the respective currency zones.

Financial currency risks result from the translation of receivables, liabilities and other monetary items in accordance with IAS 21 at the closing rate into the functional currency of the respective Group company. In addition, we incorporate planned purchase and sales transactions in foreign currencies in our financial foreign currency risk management. These risks are hedged using derivative instruments, if necessary.

**Interest rate risks**

Interest rate risks result from potential changes in prevailing market interest rates. These can cause a change in the fair value of fixed-rate instruments and fluctuations in the interest payments for variable-rate financial instruments, which would positively or negatively affect earnings. To hedge these risks, interest rate swaps and combined interest rate and currency derivatives are used in individual cases.

In addition to market interest rates, BASF’s financing costs are determined by the credit risk premiums to be paid. These are mainly influenced by our credit rating and the market conditions at the time of issue. In the short to medium term, BASF is largely protected from potential refinancing risks by the balanced maturity profile of its financial indebtedness as well as through diversification in various financial markets.

**Risk of asset losses**

We limit country-specific risks with measures based on internally determined country ratings, which are continuously updated to reflect changing environment conditions. We selectively use investment guarantees to limit specific country-related risks. We lower credit risks for our financial investments by engaging in transactions only with banks with good credit ratings and by adhering to fixed limits. Creditworthiness is continuously monitored and the limits are adjusted accordingly. We reduce the risk of default on receivables by continuously monitoring the creditworthiness and payment behavior of our customers and by setting appropriate credit limits. Risks are also limited through the use of credit insurance and bank guarantees. Due to the global activities and diversified customer structure of the BASF Group, there are no major concentrations of credit default risk.

**Impairment risks**

Asset impairment risk arises if the assumed interest rate in an impairment test increases, the predicted cash flows decline, or investment projects are suspended. Following the impairments recognized in the third quarter of 2020, we currently consider the risk of further impairment for assets such as property, plant and equipment, goodwill, technologies and trademarks to be immaterial. The same applies to investments accounted for using the equity method, with the exception of Wintershall Dea, which was revalued in 2019. As the value of the shareholding is dependent on expected
oil and gas price developments, impairments of the shareholding and of the assets held by the company are possible.

**Long-term incentive program for senior executives**

BASF offers leaders the opportunity to participate in a share price-based compensation program. The need for provisions for this program varies according to the development of the BASF share price and the MSCI World Chemicals Index; this leads to a corresponding increase or decrease in personnel costs.

From 2020 onward, the previous long-term incentive (LTI) program for senior executives will be replaced by a new LTI program in the form of a performance share plan. The new LTI plan incentivizes the achievement of strategic growth, profitability and sustainability targets and takes into account the development of the BASF share price and the dividend. The need for provisions for this program varies according to assumptions on the degree of strategic target achievement, the development of the BASF share price and the dividend. This leads to a corresponding increase or decrease in personnel costs.

**Risks from pension obligations**

Most employees are granted company pension benefits from either defined contribution or defined benefit plans. We predominantly finance company pension obligations externally through separate plan assets. This particularly includes BASF Pensionskasse VVaG and BASF Pensionsstreuhand e.V. in Germany, in addition to the large pension plans of our Group companies in North America, the United Kingdom and Switzerland. To address the risk of underfunding due to market-related fluctuations in plan assets, we have investment strategies that align return and risk optimization to the structure of the pension obligations. Stress scenarios are also simulated regularly by means of portfolio analyses. An adjustment to the interest rates used in discounting pension obligations leads immediately to changes in equity. To limit the risks of changing financial market conditions as well as demographic developments, employees have, for a number of years now, been almost exclusively offered defined contribution plans for future years of service. Some of these contribution plans include minimum interest guarantees. If the pension fund cannot generate this, it must be provided by the employer. A permanent continuation of the low interest rate environment could make it necessary to recognize pension obligations and plan assets for these plans as well.

**Long-term opportunities and risks**

**Long-term demand development**

We assume that growth in chemical production (excluding pharmaceuticals) will be slightly stronger than global gross domestic product over the next five years and will be considerably stronger than the previous five-year average. Through our market-oriented and broad portfolio, which we will continue to strengthen in the years ahead through investments in new production capacities, research and development activities and acquisitions, we aim to achieve volume growth that slightly exceeds this market growth. Should global economic growth see unexpected, considerable deceleration because of prolonged restrictions due to the coronavirus pandemic, an ongoing weak period in the emerging markets, protectionist tendencies or geopolitical crises, the expected growth rates could prove too ambitious.

For more information on the corporate strategy, see page 26 onward

**Development of competitive and customer landscape**

We expect competitors from Asia and the Middle East in particular to gain increasing significance in the years ahead. Furthermore, we predict that many producers in countries rich in raw materials will expand their value chains. We counter this risk through active portfolio management.

We continuously improve our processes in order to remain competitive through our operational excellence. We are streamlining our administration, sharpening the roles of services and regions, and simplifying procedures and processes as part of our ongoing Excellence Program.

In order to achieve lasting profitable growth, tap into new market segments and make our customers more successful, our research and business focus is on highly innovative business areas, some of which we enter into through strategic cooperative partnerships.

For more information on the Excellence Program, see page 21

**Innovation**

The central research areas Process Research & Chemical Engineering, Advanced Materials & Systems Research and Bioscience Research serve as global platforms headquartered in our regions: Europe, Asia Pacific and North America. Together with the development units in our operating divisions, they form the core of the global Know-How Verbund. Our strong regional presence opens up opportunities to participate in local innovation processes and gain access to local talent. We optimize the effectiveness and efficiency of our research activities through our global Know-How Verbund.

Research activities funded by the BASF Group promote the targeted development and enhancement of key technologies as well as the establishment of new business areas. Focus areas in research are determined based on their strategic relevance for BASF, above and beyond existing business areas.

We also address the risk of the technical or economic failure of research and development projects by maintaining a balanced and comprehensive project portfolio, as well as through professional, milestone-based project management.

Potential applications of digital technologies and solutions along the entire value chain are evaluated and implemented in the divisions and service units as well as by cross-divisional teams. They are supported here by the Global Digital Services unit. We analyze the opportunities and risks of digitalization in Production, Logistics, Research & Development and for business models as well as in corporate functions such as Finance, Human Resources, Procure-
The opportunities and risks of digitalization are steered by the divisions and service units. The trust of customers and consumers is essential for the successful introduction of new technologies. That is why we enter into dialog with our stakeholders at an early stage of development. The trend toward increased sustainability requirements in our customer industries continues. Our aim is to leverage the resulting opportunities in a growing market even more effectively in the future with innovations. This is why we applied the Sustainable Solution Steering method, which is used to evaluate the sustainability of our product portfolio, to assessments of innovation projects, and integrated it into an early stage of our research and development processes as well as the development of our business strategies. In this way, we want to benefit from the higher profitability of our Accelerator products compared with the rest of our evaluated portfolio. At the same time, we reduce reputational and financial risks by phasing out products for which we have identified substantial sustainability concerns (“Challenged” products) within five years of initial classification as such at the latest. We develop action plans for these products at an early stage to minimize any potential financial risks. These can include research projects, reformulations or even replacing one product with another.

**Portfolio development through investments**

Our decisions on the type, scope and locations of our investment projects are based on assumptions related to the long-term development of markets, margins and costs, as well as raw material availability and country, currency and technology risks. Opportunities and risks arise from potential deviations in actual developments from our assumptions. We expect the increase in chemical production in emerging markets in the coming years to remain above the global average. This will create opportunities that we want to exploit by expanding our local presence.

For more information on innovation, see page 35 onward

**Acquisitions, divestitures and cooperations**

In the future, we will continue to expand and refine our portfolio through acquisitions that promise above-average profitable growth, are innovation-driven or offer a technological differentiation and help achieve a relevant market position, and make new, sustainable business models possible.

The evaluation of opportunities and risks plays a significant role during the assessment of acquisition targets. A detailed analysis and quantification is conducted as part of due diligence. Examples of risks include increased staff turnover, delayed realization of synergies, or the assumption of obligations that were not precisely quantifiable in advance. If our expectations in this regard are not met, risks could arise, such as the need to impair intangible assets; however, there could also be opportunities, for example, from additional synergies.

Divestitures also play a key role in the development of our portfolio. Risks could arise from divestitures as a result of potential warranty claims or other contractual obligations, such as long-term supply agreements.

For more information on our acquisitions and divestitures, see page 51 onward

**Recruitment and long-term retention of qualified employees**

BASF anticipates growing challenges in attracting qualified employees in the medium and long term due to demographic change, especially in North America and Europe. As a result, there is an increased risk that job vacancies may not be filled with suitable applicants, or only after a delay. We address these risks with measures to integrate diversity, employee and leadership development, and intensified employer branding. At local level, demographic management includes succession planning, knowledge management and offerings to improve the balance between personal and professional life and promote healthy living. This increases BASF’s appeal as an employer and retains our employees in the long term.

For more information on the individual initiatives and our goals, see page 144 onward

**Sustainability**

Opportunities and risks that could arise from material sustainability topics can only rarely be measured in specific financial terms and have an impact on business activities, especially in the medium to long term.

We reduce potential risks in the areas of environmental protection, safety and security, health protection, product stewardship, compliance, supplier relationships and labor and social standards by setting ourselves globally uniform requirements. These often go beyond local legal requirements.

We verify compliance with these standards through internal monitoring systems such as global surveys or audits. In 2020, for example, suppliers were audited for sustainability at a number of sites. Our global Code of Conduct was revised in 2020 to which all employees, managers and Board members are required to adhere. It defines a binding framework for our activities. The monitoring systems are complemented by grievance mechanisms such as our compliance hotlines.

Furthermore, ongoing climate change poses both opportunities and risks for BASF. As an energy-intensive company, climate-related risks arise particularly from regulatory changes, such as in carbon prices through emissions trading systems, taxes or energy legislation. In addition, BASF’s emissions footprint and intensity could lead to a negative perception and reduced appeal among external stakeholders such as customers or investors. We counter these risks with our carbon management measures and by transparently disclosing our positions on and contributions to climate protection (such as political demands, progress in the implementation of our climate strategy and how our products help...
Risks to our production and our supply chain resulting from greater weather extremes (e.g., storms), highly fluctuating water levels and increased water temperatures are addressed by our risk management in production and in procurement. For example, we can no longer rule out extreme low-water situations or heat waves caused by climate change at our Verbund site in Ludwigshafen, Germany. In 2019/2020, we therefore implemented a package of climate resilience measures.

In addition to climate-related risks, there are also opportunities. Our broad product portfolio includes, among other things, solutions for the circular economy and climate protection (such as insulation foams for buildings, materials for electromobility and bio-based products). Increased social awareness offers additional market opportunities for these products. We are working with numerous scientific and public organizations and initiatives on solutions for sustainable agriculture that meet economic, ecological, and social demands over the long term.

Our decentralized specialists use a central decision tree to document reportable sustainability risks within the meaning of section 289b et seq. of the German Commercial Code. No reportable residual net risks within the meaning of section 289b et seq. of the German Commercial Code were identified for 2020.