Cautionary note regarding forward-looking statements

This presentation contains forward-looking statements. These statements are based on current estimates and projections of the Board of Executive Directors and currently available information. Forward-looking statements are not guarantees of the future developments and results outlined therein. These are dependent on a number of factors; they involve various risks and uncertainties; and they are based on assumptions that may not prove to be accurate. Such risk factors include those discussed in Opportunities and Risks on pages 158 to 166 of the BASF Report 2020. BASF does not assume any obligation to update the forward-looking statements contained in this presentation above and beyond the legal requirements.
BASF Battery Materials

1. The automotive industry transformation is accelerating

2. Electromobility is the biggest growth opportunity in chemicals

3. CAM is key to electromobility

4. BASF has a clear strategy to become a leading CAM player

5. Financials and key takeaways
The automotive industry is in the middle of a major transformation towards electromobility.

By 2030, we expect that >30% of all new cars will be BEVs and PHEVs with China and Europe representing >70% of global demand.
Major countries and OEMs have determined that battery powered vehicles are the key technology for the next decades

Examples

- **NEV Technology Roadmap 2.0**
  - Discusses target of 50% of new car sales be BEV, PHEV or FCEV by 2035
  - October 27, 2020

- **California and twelve other US states**
  - Announce ban of ICE by 2035
  - April 21, 2021

- **VW**
  - Aims to increase share to 50% BEVs by 2030 and nearly 100% by 2040
  - July 13, 2021

- **From 2025 onwards, all new Mercedes vehicle architectures will be electric-only**
  - July 22, 2021

- **GM**
  - Aspires to eliminate tailpipe emissions from new light-duty vehicles by 2035
  - January 28, 2021

- **Ford**
  - Expect 40% of global vehicle volume to be all-electric by 2030
  - May 26, 2021

- **EU**
  - Announced proposal of zero emissions from new cars by 2035
  - July 14, 2021

Fundamental shifts in regulatory environments and consumer preferences are accelerating
BASF Battery Materials

1. The automotive industry transformation is accelerating

2. Electromobility is the biggest growth opportunity in chemicals

3. CAM is key to electromobility

4. BASF has a clear strategy to become a leading CAM player

5. Financials and key takeaways
BASF is the largest chemicals supplier to the automotive industry with a proven track record to outgrow the market.

BASF Group sales 2020

€59 billion

~30%

~60%

~10%

Automotive driven sales

€12.5 billion

Industry structure

BASF products

OEM

- Coatings
- Coolants and brake fluids
- Plastics for OEMs with own processing

Supplier

- Tier-1
- Tier-2
- Tier-3+

- Plastics
- Catalysts
- Coatings for car parts

Aftermarket

- Refinish coatings
- Coolants and brake fluids

- Battery materials
- Solvents
- ...
The chemical content per car is higher in a BEV compared to ICE, with CAM as the single largest growth opportunity.

The cathode active material (CAM) as key component of any battery cell more than doubles the chemical content which can be found in today’s average ICE vehicle.

1 Only representative for relative change in projected sales
2 Emission catalyst vs. cathode active material (both incl. metals)
The market for CAM will grow by ~21% per year and reach a total size of 4,200 kt by 2030

Global CAM market forecast

CAM market size expected to reach €100 billion by 2030, driven by battery performance, safety and cost aspects – which are all key parameters for BEVs
BASF Battery Materials

1. The automotive industry transformation is accelerating
2. Electromobility is the biggest growth opportunity in chemicals
3. CAM is key to electromobility
4. BASF has a clear strategy to become a leading CAM player
5. Financials and key takeaways

We create chemistry
Within the electrified powertrain, CAM allows for the greatest level of differentiation and holds the largest material value.

CAM performance parameters, total system cost and sustainability aspects will determine the material choice of cell producers and OEMs.

Battery % of car cost: 30%¹
Cell % of battery cost: 80%¹
CAM % of cell cost: 40%¹
Metal % of CAM cost: ~60%¹

¹ Based on historical average values for NCM 811 cell chemistry, original EV platform design.
Among the CAM options, high-Ni NCM is the superior chemistry and will lead the market going forward.

NCM variants have the highest energy density today and a potential improved-cost position in the future, making them the leading CAM in 2030.
Base metals make up ~60% of the CAM cost, therefore low cost and reliable sourcing is imperative to achieve competitiveness.

Cost break-out of the value chain\(^1\)
€/kg CAM

- Class 1 nickel will be short after 2025
- New projects are expensive with lengthy ramp-up times
- Tight market throughout the decade
- Advancements in anode technology key variable
- Cobalt tightening mid-decade
- Reduced demand in batteries from cobalt replacement

Competitive and secure supply of nickel and lithium are key targets.

---

\(^1\) Source: BASF internal, metal prices derived from historical averages.
BASF Battery Materials

1. The automotive industry transformation is accelerating
2. Electromobility is the biggest growth opportunity in chemicals
3. CAM is key to electromobility
4. BASF has a clear strategy to become a leading CAM player
5. Financials and key takeaways
Already today, BASF is at the forefront of CAM innovation, meeting market and specific customers’ needs across the globe

+15 years

Experience in CAM development

Battery research centers in all 4 major regions

Extensive IP portfolio

~1,900 employees\(^1\) thereof ~300 scientists

Production capacities totaling 160 kt across all 4 major regions by 2022

Established business, fully sold-out in 2021

>50 commercialized products

Strong collaborations with academia and industry

\(^1\) As of September 1, 2021
For BASF, four interdependent areas form the key elements of success in the global Battery Materials business

We will offer our customers a seamless integration and a superior value proposition across all major regions.

Sustainability will be a differentiator across all four areas.
We combine metal sourcing by trading and recycling globally, copying the business model established successfully for PGMs.

Optimized base metal management

BASF offers a secure and sustainable supply, helping reduce customer risk exposure to volatile metal markets.
We establish a secure supply network in close proximity to our production sites across regions

Examples

BASF and Nornickel join forces to supply the battery materials market

BASF and Eramet partner to assess the development of a nickel-cobalt refining complex to supply growing electric vehicle market

BASF has strategically engaged in partnerships with leading upstream partners, ensuring a long-term secure and responsible supply of base metals
Competitive recycling capabilities will be a key success factor

We will apply a proprietary BASF process with leading recovery rates and CO₂ footprint

We will close the loop to offer a best-in-class CO₂ footprint while optimizing our input costs

- We offer long-standing expertise in the recycling industry.
- We form a strong partnership network to bundle resources.
- We will utilize end-of-life batteries¹ and chemically extract battery grade lithium with a proprietary BASF process.
- We will close the loop, meeting growing demand of critical metals, with an exceptional CO₂ footprint.

¹ In 2030, 1.5 million metric tons of end-of-life batteries expected globally
For BASF, four interdependent areas form the key elements of success in the global Battery Materials business.

We will offer our customers a seamless integration and a superior value proposition across all major regions.

Sustainability will be a differentiator across all four areas.
PCAM and CAM are high-performance materials customized for the specific requirements of each individual customer’s battery system.

<table>
<thead>
<tr>
<th>Diversity of CAM and application area for e-mobility</th>
<th>Diversity of cell design</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Li/Mn-rich, LFP CAM</strong></td>
<td>Cylindrical cells</td>
</tr>
<tr>
<td>Low range</td>
<td></td>
</tr>
<tr>
<td>Entry segment</td>
<td></td>
</tr>
<tr>
<td><strong>Mid Ni CAM (60–85% Ni)</strong></td>
<td>Pouch cells</td>
</tr>
<tr>
<td>Long range</td>
<td></td>
</tr>
<tr>
<td>Luxury segment</td>
<td></td>
</tr>
<tr>
<td><strong>High Ni CAM (&gt;85% Ni)</strong></td>
<td>Prismatic cells</td>
</tr>
<tr>
<td>High performance</td>
<td></td>
</tr>
<tr>
<td>and mass sensitive</td>
<td></td>
</tr>
</tbody>
</table>

Need of customized CAM development

Close R&D collaboration with cell producers and OEMs as well as broad technology and IP portfolio are essential.
Product innovation enables the broadest CAM portfolio in the industry, and we continue to add new solutions.

**HED™ products**
- High energy density NCA and NCM cathode materials
- Ni content ranging from 60% to >90%
- Already used in xEV applications today

**Ultra-high Ni**
- Ultra-high Ni CAM, ≥220 Ah/kg
- Ni >90%, Co <5%
- Up to stabilized LNO
- Pushing boundaries for high-performance applications

**Co-free CAM**
- Ni-rich NMx
- Over-lithiated Mn-rich, e.g., NCM-307
- Focus on lower cost and improved safety
- Candidate for mass market entry due to price advantage

Our technology toolbox offers customized solutions for all cell formats and provides a basis for innovations beyond classical lithium-ion batteries.
We bundle BASF’s broad technology and engineering expertise to significantly drive down operating costs and future capital expenditures.
BASF has production assets and R&D hubs in close proximity to the most important BEV markets in every region

- **2012**
  - First CAM production facility in Elyria, Ohio

- **2018**
  - R&D center in Beachwood, Ohio
  - R&D center in Ludwigshafen, Germany

- **2020**
  - BASF and Eramet to assess nickel-cobalt refining complex in a feasibility study in Weda Bay, Indonesia

- **2021**
  - BASF Shanshan Battery Materials, serving the largest battery materials market, China
  - Europe greenfield production under construction

- **2022**
  - CAM precursor production in Harjavalta, Finland planned
  - CAM production and recycling prototype plant (2023) planned in Schwarzheide, Germany

- **2015**
  - Foundation of BASF TODA Battery Materials, Japan, with R&D center

- **2017**
  - Tripled capacity at BASF TODA Battery Materials in Onoda, Japan

Production sites and Research & development hubs
Our unique European production set-up progresses well with available capacities already fully contracted to strategic customers

- PCAM plant in Harjavalta, Finland, and CAM plant in Schwarzheide, Germany, will start up in 2022
- Initial capacity of 24 kt has been fully contracted to strategic customers
- Harjavalta plant will utilize locally generated renewable energy sources, including hydro, wind and biomass
- High-purity, regional metal supply of Co and Ni through partnership with co-located Nornickel refinery secured
- BASF will offer highly efficient ‘closed loop’ solutions with a proprietary recycling approach

We foresee the European supply demand gap of CAM to persist (capacity shortage of >60% beyond 2023), providing further tailwind for BASF’s unique footprint
With Shanshan, we reduce our time to market, gain immediate access to further capacity and bolster our R&D capabilities

- **BASF Shanshan Battery Materials** (BASF majority-owned joint venture with Shanshan)
- **1,600 employees**, thereof ~200 in R&D
- **Four production sites** for CAM and PCAM in Hunan and Ningxia, China, with an **annual capacity of 90 kt by 2022**
- **Direct customer access** to the largest battery materials market China, and consumer electronics application fields
- Increasing BASF’s **customer proximity**, generate **significant technology synergies** and enable **tailored solutions for a broad customer base**
- Further strengthens BASF’s position in Asia and increasing **global annual capacity to 160 kt by 2022** with further expansions underway
We establish close customer collaborations and strategic partnerships across the entire battery value chain

**BASF has several long-term contractual relationships in place as well as upcoming partnerships, securing the profitable utilization of current and future capacities.**

**Recent examples**

*CATL*
- Agreement on **strategic partnership** signed for collaboration on CAM and battery recycling

*Porsche*
- Exclusive development and supply contract with Cellforce Group, a joint venture by Porsche and Customcells, signed

*Consumer electronics*
- Through the formation of **BASF Shanshan Battery Materials**, we supply an extensive list of companies active in **consumer electronics** like Apple and LG

*SVOLT*
- **Strategic cooperation agreement** signed for joint work on CAM
As a result of our holistic approach, we can offer CAM products with best-in-class CO₂ footprint with further reductions planned

**Carbon intensity**  
kg CO₂e/kg

<table>
<thead>
<tr>
<th></th>
<th>Conventional² NCM 811 (Chinese electricity mix)</th>
<th>State-of-the-art² NCM 811 (German electricity mix)</th>
<th>BASF NCM 811 with electricity from Finland and CHP³ electricity in Germany</th>
<th>BASF NCM 811 with electricity from Finland and onshore wind park in Germany</th>
<th>BASF NCM 811 with recycling and green electricity (wind park)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 g CO₂e/km¹</td>
<td>16 g</td>
<td>14 g</td>
<td>8 g</td>
<td>7 g</td>
<td>4–6 g</td>
</tr>
<tr>
<td>Carbon intensity</td>
<td>By 2022, BASF’s CAM related CO₂ burden will be 40% below benchmark players and &gt;70% lower than worst-in-class CAM producers once targeted set-up is in place</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Assumption: 100 kWh = 125kg CAM material per car and a lifetime of 200,000 km  
² Conventional and state-of-the-art NCM 811 numbers are calculated based on bill-of-material data from Argonne, 2018 (GREET-model) with German and Chinese electricity grid mix datasets from Sphera  
³ Combined heat and power plant, based on natural gas
We have established several projects to ensure that the value chain we are building is best-in-class regarding ESG criteria.

We are partnering globally to ensure a resilient and sustainable metal supply chain for our customers.

Our global production presence ensures customer proximity and energy efficient production, minimizing the CO₂ footprint.

We are investing into recycling to close the loop and to offer a best-in-class CO₂ footprint.

We engage holistically, locally – regionally – globally.
BASF Battery Materials

1. The automotive industry transformation is accelerating
2. Electromobility is the biggest growth opportunity in chemicals
3. CAM is key to electromobility
4. BASF has a clear strategy to become a leading CAM player
5. Financials and key takeaways
The Battery Materials business will become a significant earnings contributor to the BASF Group

- Continue to ramp up existing sales of the CAM portfolio and secure further commercial outlets
- Build on customer proximity with our domestic production footprint to meet customer needs
- Realize new business opportunities and further cost reductions with continued product development
- Utilize our broad knowledge of the industry to support the ongoing transformation of the sector

<table>
<thead>
<tr>
<th><strong>≥€1.5 billion sales</strong></th>
<th><strong>≥10% market share targeted</strong></th>
<th><strong>≥30% EBITDA bsi margin (excl. metals)</strong></th>
<th><strong>~€3.5–4.5 billion capital expenditure 2022–2030</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>by 2023</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>≥€7 billion sales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>by 2030</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
BASF Battery Materials: Key takeaways

- Best-in-class CO₂ footprint
- Closing the loop

- Domestic sourcing and production
- Secure and sustainable supply
- Recycling capabilities
- Most CO₂ competitive source for metals

- Broad CAM product offering
- Strong IP position
- Extensive R&D capabilities

- Unique expertise in PCAM chemistry
- Make-or-buy optionality with a global production footprint

Battery Materials business is set to become one of the key growth engines in BASF’s portfolio, establishing a leading and profitable position.