SUSTAINABLE SUPPLY CHAIN MANAGEMENT & RAW MATERIAL SOURCING.
20.11.2019

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SUPPLIER NETWORK

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THE BMW GROUP MANAGES THE CHALLENGES OF E-MOBILITY.

RAPID INCREASE IN ELECTRIFIED VEHICLES

BY THE END OF 2019 ON THE ROAD


17,800  32,000  62,000  >140,000  103,000  500,000

ELECTRIFIED VEHICLES

MANAGEMENT OF CRUCIAL RAW MATERIALS

NICKEL  COBALT  LITHIUM  MANGAN

GRAPHITE  COPPER  RARE EARTH  ALUMINUM

KEY CHALLENGES

SECURITY OF SUPPLY
MARKET PRICE RISKS
COST OPTIMIZATION
TRANSPARENCY
SUSTAINABILITY

RAW MATERIAL MANAGEMENT – AN INTEGRAL PART OF CORPORATE PERFORMANCE.
BMW CONSIDERS THE TOTAL VALUE CHAIN OF BATTERY CELL: FROM CRADLE TO GRAVE.

### RAW MATERIALS AND REFINING
- Environmental and social standards
- Raw material optimized for chemistry design
- Use of recycled raw materials
- Securing raw material supply

### CELL DESIGN AND PRODUCTION
- Optimized performance/costs based on BMW Group application
- Securing production capacity
- Reduction CO₂ footprint

### BATTERY »2ND LIFE«
- Cell/module/pack design
- Application on BMW Group sites
- Business Models to secure markets

### RECYCLING
- Cell/module/pack design to foster recyclability
- Development of recycling processes with ability to close material loops
- Securing recycling capacities
BMW CORPORATE FINANCE SUPPORTS THE BMW GROUP ALONG THE ENTIRE AUTOMOTIVE VALUE CHAIN IN ITS RISK MANAGEMENT FUNCTION.

**HEDGING OF MARKET PRICE RISKS HAS A LONG TRADITION AT BMW GROUP**

- **1998**: Hedging of precious metals (Platinum, Palladium, Rhodium)
- Hedging of non-ferrous metals (Aluminum, Copper, Lead)
- **2009**: Hedging steel raw materials (Iron Ore, Coking Coal)
- Hedging of energy
- Hedging of CO₂
- Complete strategy review: valuation based approach confirmed
- Support of raw material market price risk management BBA (JV China)
- Increased focus on battery materials: Hedging of Nickel
- **2019**: Hedging of additional battery materials
- **2020**: Hedging of additional battery materials

**COOPERATE GOVERNANCE ARE Fulfilled**

- ICS & KPI-Compliance
- Raw Material Committee
- 4-Eyes Principle
- Treasury Management System
- Product Handbook

Sustainable Supply Chain Management & Raw Material Sourcing © BMW Group
FINANCIAL MARKET RISK MANAGEMENT ADDRESSES THE COMPANY’S NET RISK POSITIONS AGAINST THE VOLATILITY OF THE CAPITAL MARKET.

**STRATEGIC OBJECTIVES**

- Increase planning security
- Reduce earnings risk
- Maintain opportunities

The operational implementation is selective and valuation driven – not speculative. Natural hedging improves the risk position of the BMW Group.

**OPERATIONAL CORE ELEMENTS**

- Risk bearing capacity (Minimum hedge quotas)
- Overlay Management
  - Selective Approach
    - relative value

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THE NEED FOR BATTERY MATERIALS INCREASES SUBSTANTIALLY.

**PROCUREMENT**

- **2019**
  - Nickel

- **2025**
  - Manganese
  - Graphite
  - Cobalt
  - Lithium

**FINANCE**

- **2019**
  - Derivative hedging since 2017

- **2025**
  - No financial market for derivative hedging
  - Financial market for derivative hedging slowly developing
  - Financial market for derivative hedging not sufficiently developed
  - Indication of financial market readiness

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BMW GROUP’S ROADMAP: LEADING POSITION IN MANAGING RAW MATERIAL RISKS AND SECURING LONG-TERM PROFITABILITY.

SECURING LONG-TERM, STRATEGIC ACCESS TO CRUCIAL RAW MATERIALS

To secure the long-term supply for raw materials and to improve the traceability of ESG critical materials, BMW Group is working closely with its TIER n suppliers.

RISK EVALUATION & ACTION

- SUSTAINABILITY
- SECURITY OF SUPPLY
- PRICE RISK

TIER 1

TIER 2

TIER N

RAW MATERIAL MANAGEMENT
BATTERY SUPPLY CHAIN – KEY CHALLENGES.

**SUSTAINABILITY**

**COMPLIANCE AND HUMAN RIGHTS**
- Rights of Indigenous People
- Security on Rule of Law
- Corruption
- Child Labour

**WORK**
- Working Conditions
- ASM

**ENVIRONMENTAL PROTECTION**
- River-Dumping
- SEDIMENTS
- Sensible Ecosystems

**HEALTH / CLIMATE CHANGE**
- Chemicals
- Water
- Emissions
- Land Usage
- Radioactivity

**SECURITY OF SUPPLY**

**RAW MATERIAL DEMAND**
- Innovation
- Company Strategies
- Raw Material Demand
- Financial Market

**STABILITY**
- Weather Risks
- POL. RIOTS
- Strikes
- Recycling

**PRODUCTION**
- Resource Concentr.
- By-Products
- Reaction Time

**STRATEGIES**
- Industrial Politics
- Monopolis
DEVELOPMENT OF OPTIONS FOR STRATEGIC ACTIONS REQUIRES DIVERSE SUPPLY CHAIN KNOWLEDGE AND GLOBAL EXPERTISE.

RAW MATERIAL TEAMS GOES LOCAL

Lithium
3%
6%
10%
2%
58%
3%
4%
33%
5%

Cobalt
11%
37%
3%
33%
5%
COMMITMENT TO RAW MATERIAL EXTRACTION: CROSS-INDUSTRY PILOT PROJECT TO PROMOTE SUSTAINABLE ARTISANAL MINING.

FACTS & FIGURES

- Cobalt for Development
- 3 YEARS JAN 2019 – MAR 2022
- KOLWEZI DR CONGO

INITIATED BY

- BMW GROUP
- BASF
- SAMSUNG
- SAMSUNG SDI
- IMPACT
- GOOD SHEPHERD INTERNATIONAL FOUNDATION

IMPLEMENTED BY

- giz

FORMALISATION OF ARTISANAL MINING

SUPPORT FOR ARTISANAL COMMUNITIES
THE BMW GROUP COBALT STRATEGY IS THE BENCHMARK FOR THE INDUSTRY.

BMW DUE DILIGENCE PROGRAMME

SECURING SUPPLY OF COBALT FROM MOROCCO/AUSTRALIA FOR GEN5 WITH HIGH SUSTAINABILITY STANDARDS

ININVOLVEMENT IN INITIATIVES

CROSS-INDUSTRY PILOT PROJECT TO PROMOTE SUSTAINABLE ARTISANAL MINING
WE ARE SHAPING THE MOBILITY OF THE FUTURE.