CIRCULARITY FOR A SUSTAINABLE FUTURE

TURNING CHALLENGES TO OPPORTUNITIES

October 2022

CONFIDENTIAL
SABIC SUSTAINABILITY AT GLANCE

Sustainability **aligns with our core values and ambitions** to be the preferred global leader in petrochemicals.

It provides a way to meet our **economic growth targets** while maintaining sensitivity to environmental and social needs.

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Global leadership in chemicals

- **FINANCIAL**
  - LEVERAGING KSA ADVANTAGE
- **MARKET**
  - GLOBALIZATION
- **FEEDSTOCK**
  - TOP QUARTILE PERFORMANCE
- **TECHNOLOGY**
  - SUSTAINABILITY
  - ORGANIZATION AND CULTURE
  - TALENT DEVELOPMENT

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KEY DRIVERS FOR CIRCULARITY

Global & Regional Regulations

Disruptive Innovation

Customer Expectations

Investor Expectations

Disclosure & Transparency

Turning Challenges Into Opportunities
CCE VISION AS A HOLISTIC FRAMEWORK FOR MANAGING EMISSIONS TOWARDS CREATING ECONOMIC VALUE AND PURSUING SUSTAINABLE GROWTH

Linear Carbon Economy

Circular Carbon Economy CCE (The 4 RS)

- **Reduce**: Carbon emissions as by-products
- **Reuse**: Carbon emissions for other applications
- **Recycle**: Carbon emissions to create new products
- **Remove**: Carbon emissions from atmosphere

Circular Carbon Economy (CCE) is Key Enabler for Carbon Neutrality
SABIC CARBON NEUTRALITY STRATEGY

SABIC is committed to the Paris Agreement goals and will continually pursue efforts and explore solutions to meet carbon neutrality from operations under our control by 2050, taking into account the different regional and national ambitions, commitments and initiatives.

Focusing on our direct and indirect emissions generated by our own production (Scope 1 & Scope 2), we aim to reduce our greenhouse gas emissions by 2030 worldwide by 20% compared to 2018. In addition, we aim to collaborate with our partners in initiatives to reduce indirect Scope 3 emissions along the value chain.
SABIC CIRCULAR CARBON ECONOMY (CCE) 4R,S BASED MODEL WILL ENABLE ACHIEVING OUR CARBON NEUTRALITY AMBITIONS

SABIC CCE ENABLERS

- Resources & Energy Conservation
- Innovation & Sustainability Solutions

Product Value Chain

Reduce

- Energy Efficiency enhancement
- Renewables Deployment
- Equipment Electrification
- Light Weighting Solutions

Re-use

- CO₂ Food & Beverages
- CO₂ to Industrial Applications
- CO₂ To Agri-Nutrients
- CO₂ To Chemicals

Remove

- Afforestation
- CCUS

Recycle

- Chemical Recycling
- Trucircle™
- Mechanical Recycling
- Certified Circular Products
WORLD’S LARGEST CO2 PURIFICATION AND LIQUEFACTION PLANT

Built at SABIC affiliate, United

Supplying CO₂ for converting into valuable products

• Urea
• Methanol
• Food industries

500,000 MT annually of CO₂ can be purified

We Turn the Source of Carbon Emissions Into the Source of Life
TECHNICAL GRADE UREA (TGU) FOR NITROGEN OXIDES REDUCTION

- TGU is diluted with Water to produce AdBlue

- AdBlue is used with diesel engines using Selective Catalytic Reduction SCR technology. This technology reduces harmful emissions (NOx) and converts the toxic nitrogen oxides NOx into nitrogen N2 and H2O

We Turn the Source of Carbon Emissions into the Source of NOx Reduction
40 tons of high-grade blue ammonia already dispatched for use in zero-carbon power generation, a successful demonstration of the supply network from Saudi Arabia to Japan and collaborative joint efforts national level.

SABIC in partnership with Aramco and the Institute of Energy Economics, Japan (IEEJ) have successfully demonstrated the production and shipment of blue ammonia from Saudi Arabia to Japan last year realizing setting a new milestone toward clean energy potential.
SABIC’S AFFILIATE BECOMES FIRST MIDEAST COMPANY TO GET CERTIFICATION FOR CIRCULAR METHANOL PRODUCTION

National Methanol Company (Ibn Sina)** has become the first company in the Middle East to be certified for circular methanol production by International Sustainability and Carbon Certification (ISCC), a globally leading certification body.

Ibn Sina Methanol plant can now deliver commercial quantities of certified circular methanol made from captured CO2 from our UNITED plant.

Circular methanol, which is environmentally friendly, can be used for producing various sustainable and circular products related to chemicals, medical applications and automotive industries.

We are considering to bring more circular/sustainable products as part of our carbon neutrality commitment

We Turn the Source of Carbon Emissions Into sustainable and circular products

**A joint venture between SABIC, Celanese and Duke Energy
SABIC UK Petrochemicals complex on the Wilton Site on Teesside evaluating the techno-economical viable options to decarbonize.

Blue Hydrogen could be utilized in a variety of ways to achieve both its direct and indirect GHG emission reduction ambitions.
The Transition to renewable energy to reduce carbon emissions is crucial step towered electrification and building sustainable future for our company, customers, community and the world.
SABIC’s polycarbonate facility in Cartagena will become the world’s first large-scale chemical site to operate on 100% renewable power, with a €70m investment to build a 100MW solar plant.

263,000 PV panels will be installed on land owned by SABIC and it will become the largest industrial renewable power plant in Europe once fully operational in 2024.

This project is part of a broader RE strategy by 2025 and 2030.
SABIC has signed a joint agreement with BASF and Linde to develop and demonstrate solutions for electrically heated steam cracker furnaces.

**CONVENTIONAL FURNACE**

Naphtha → Raw olefins

850°C Furnace

Natural gas

**e-FURNACE**

Naphtha → Raw olefins

850°C e-Furnace

Renewable energy

**CO₂ emissions Reduction**

90%
CIRCULAR ECONOMY: WORLD WITH MANY CHALLENGES AND OPPORTUNITIES

PUBLIC OPINION

NEGATIVE ATTENTION TO PLASTICS IN MEDIA. WASTE ISSUE OVERSHADOWS ADVANTAGES OF PLASTIC PRODUCTS

EXISTING BENEFITS

BENEFITS INCLUDING LIGHTWEIGHT, STIFFNESS, IMPACT, DURABILITY, COST, SAFETY, APPEARANCE, ETC.
SABIC’S TRUCIRCLE™ COMPREHENSIVE PRODUCT SOLUTIONS PORTFOLIO

- **Closed Loop Initiatives**
  - Value Chain Collaboration

- **Certified Renewable Products**
  - Bio-based feedstock

- **Certified Circular Products**
  - Feedstock recycling of used plastic

- **Design for Recyclability**
  - Designing to facilitate recycling

- **Mechanically Recycled Products**
  - Enabling High PCR Content

TRUCIRCLE™ program – May 2021
THE CONCEPT “FROM LINEAR TO CIRCULAR”

FOSSIL & BIO-BASED FEEDSTOCK

OCEAN BOUND PLASTICS

ADVANCED RECYCLING

ENERGY RECOVERY

LANDFILL

* Simplified process
ADVANCED RECYCLING UNIT

WORLD’S FIRST COMMERCIAL UNIT FOR THE ADVANCED RECYCLING OF USED PLASTIC

- SABIC and Plastic Energy are over one year into the construction of world’s first commercial unit to significantly upscale production of SABIC’s certified circular polymers derived from used plastic.

- Considerable milestone on the journey towards closing the loop and creating a circular economy for plastics.

- This pioneering project in Geleen, The Netherlands is expected to get mechanical completion in Q1 2023.
WHAT’S THE VALUE OF CLOSED LOOP INITIATIVES

• Full **traceability** from waste to PCR to end-product
• Economic valorization of waste
• Logistic optimization
• Influencing policies and legislation about sorting & collection

OPEN INVITATION TO SET-UP A CLOSED LOOP INITIATIVE
SABIC LAUNCHES BLOCKCHAIN PILOT FOR DIGITAL TRACEABILITY OF CERTIFIED CIRCULAR FEEDSTOCK

Collaboration with technology partner Finboot, Plastic Energy and packaging specialist Intraplas

GOAL TO CREATE
• ADDITIONAL TRANSPARENCY
• DIGITAL TRACEABILITY

LET’S EXPLORE TOGETHER

SABIC contact persons: Jelmer Faber, Laura Nieboer, Bart Van Hoof
CONCLUDING REMARKS – KEY ENABLERS FOR SUCCESS

- Collaboration across the value chain
- Innovation
- Infrastructure
- Government support
- Public Awareness
- Human capital capability and capacity
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