CHEMISTRY THAT MATTERS™

2023 IPER CONFERENCE

SABIC'S CARBON ROADMAP OVERVIEW UNTIL 2050: NEXT STEPS

CARBON NEUTRALITY by 2050

in line with the Paris Agreement goals

20% REDUCTION by 2030

Interim Scope 1&2 emissions target compared to 2018

We aim to collaborate with our partners in initiatives to reduce indirect SCOPE 3 emissions along the value chain

WHAT ARE WE CONSIDERING IN OUR 2050 CARBON NEUTRALITY ROADMAP?

RELIABILITY, ENERGY EFFICIENCY & IMPROVEMENTS

- Technology improvement
- Energy efficiency
- Asset improvement & reliability
- Asset rationalization

RENEWABLE ENERGY

- Increase renewable energy share in imported energy mix
- Approved strategy of facilitating 4 GW by 2025 and 12 GW installed capacity by 2030

ELECTRIFICATION

- Using renewable energy
- Electrification of different steam driven rotating equipment
- Electric cracking furnaces for olefins and aromatic based products

CARBON CAPTURE

- High concentration streams potential for utilization - Leveraging KSA CO2 Hub
- CCUS collaborations

GREEN/BLUE H2 ALTERNATIVE FEEDSTOCK

- Commercially available solutions and under early R&D
- Renewable & circular feedstock

Note: Other greenhouse gases are included and converted into CO2 equivalents according to the Greenhouse Gas Protocol.

CARBON NEUTRALITY STRATEGY: 2030 EXECUTION PLAN FOR SCOPE 1 & 2 GHG EMISSIONS

	CO2	MAIN INITIATIVES	MAJOR MILESTONES / ENABLERS / APPROACH UP TO 2030
Work Harder	35-45%	Reliability, Energy Efficiency (EE) & Improvements	Developing Sites CN Roadmaps, Accounting for the combined impact of EE & CN (2022) → 2025: Expected ~7.2 MMT CO_2e reduction; Enhancing EE, via SEEC Project Portfolio & Decommissioning Energy Intensive Sites (2022–2030)
Work Harder	35-45%	Renewable Energy	2021: MOU signing with REPDO; 4 GW Installed Capacity of renewable energy (2025); Ambition of 12 GW Installed Capacity of renewable energy (2030)
Work Smarter	0.8%	Electrification	Kick-off construction of the world's first demonstration plant for large-scale electrically heated steam cracker furnaces. (2030); E-Furnaces development collaboration with BASF (2021–2023); 1st Commercial E-Furnace
Work Smarter	8 - 10%	Carbon Capture, Utilization & Sequestration	Utilizing CO_2 for methanol (2022); 2027: Increased CO_2 capacity exported to KSA CO_2 hub; Target supply to KSA CO_2 hub (2022–2030)
Work Smarter	0.5%	Blue/Green H2	2020: Collaboration with Aramco for first blue ammonia shipment; Launch blue ammonia product with Aramco (2030)

Renewable Energy projects will be executed through PPA

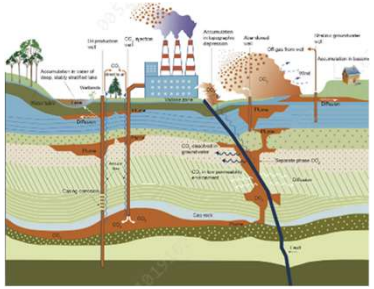
SABIC 3 + 1

Hydrogen Fuel Switching

- Minimal process changes; retain fired heater systems
- Green H2 costs are prohibitive absent subsidies
- SMR hydrogen requires sequestration
- Can be phased – no PSA initially
- Subsidy plays are risky

Carbon Sequestration

- Need existing infrastructure
- Works best for process CO2 scenarios – just compression and sequestration
- Flue gas capture costs hard to overcome
- Political risk is non-zero and geographically varied



Electrification

- Can be significant process changes especially w.r.t convection sections
- Need carbon free power
- Intermittency is an issue – can be solved on utility or process side, depending
- Cost can be an issue

+

Nuclear Power

- Politically fraught
- Gen IV technologies a decade away
- Co-location is key for CHP level integration
- Seems to be a rising play

NUCLEAR RISING?

August 9, 2022

Dow, X-energy to drive carbon emissions reductions through deployment of advanced small modular nuclear power

Dow and X-energy announced that they have signed a letter of intent which will help Dow advance its carbon emissions reduction goals through the development and deployment of X-energy's advanced small modular nuclear technology in the U.S.

China puts pioneering 'pebble bed' nuclear reactor into operation

Reuters

SHANGHAI, Dec 20 (Reuters) - China has launched a new high-temperature gas-cooled nuclear plant in the eastern coastal province of Shandong, the first to make use of 'pebble bed reactor' (PBR) technology developed by state-run China National Nuclear Corporation (CNNC).

The first unit of the Shidaowan reactor project, built near the city of Rongcheng in collaboration with the energy group Huaneng and Beijing's Tsinghua University, has now been connected to the grid, CNNC said on Monday.

Fluor-backed NuScale secures small modular reactor deal with Poland's KGHM

Feb. 14, 2022 1:55 PM ET | **Fluor Corporation (FLR)** | By: Carl Surran, SA News Editor | 2 Comments

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SK Group
1w · Edited

SK Inc. and SK Innovation announce a collective $250 million investment in TerraPower LLC, a U.S.-based company creating technologies that advance carbon-free energy. The investment is part of SK Group's commitments to #GreenEnergy and reducing #CarbonEmissions by 200 million tons across companies.

TERRESTRIAL ENERGY

ABOUT US TECHNOLOGY UPDATES IDEAS

KBR AND TERRESTRIAL ENERGY AGREE TO COLLABORATE ON THE APPLICATION OF ZERO-EMISSIONS THERMAL ENERGY FOR GREEN HYDROGEN AND AMMONIA PRODUCTION


THANK YOU