

14 november 2017

ExxonMobil Rotterdam Hydrocracker

KIVI, afdeling Olie en Gastehnologie

Energy lives here™

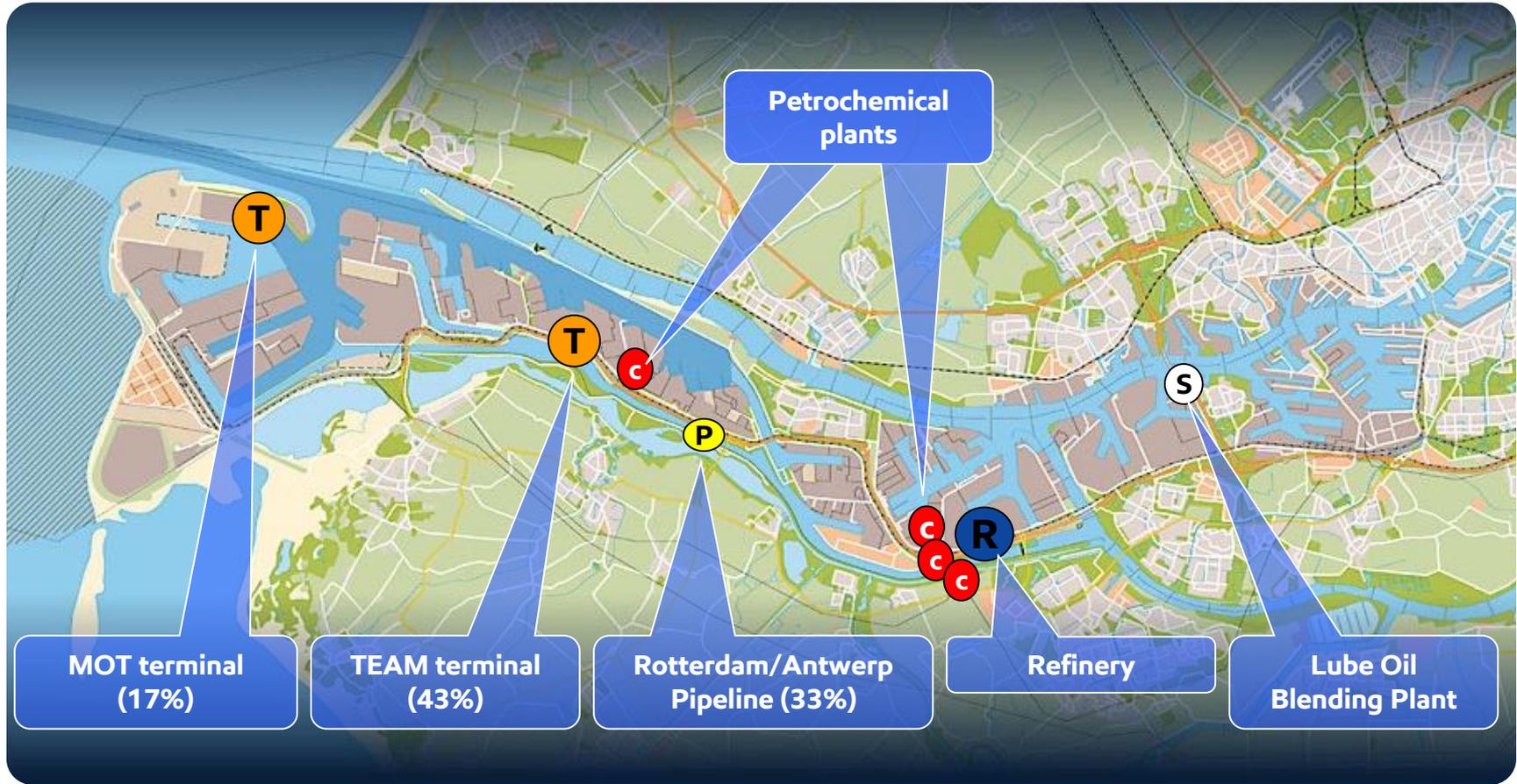
Harro van de Rhee

Directeur ExxonMobil raffinaderij Rotterdam

Agenda

- ExxonMobil in Rotterdam
- Hydrocracker investering
- Klimaat en technologie ontwikkelingen

ExxonMobil in Rotterdam

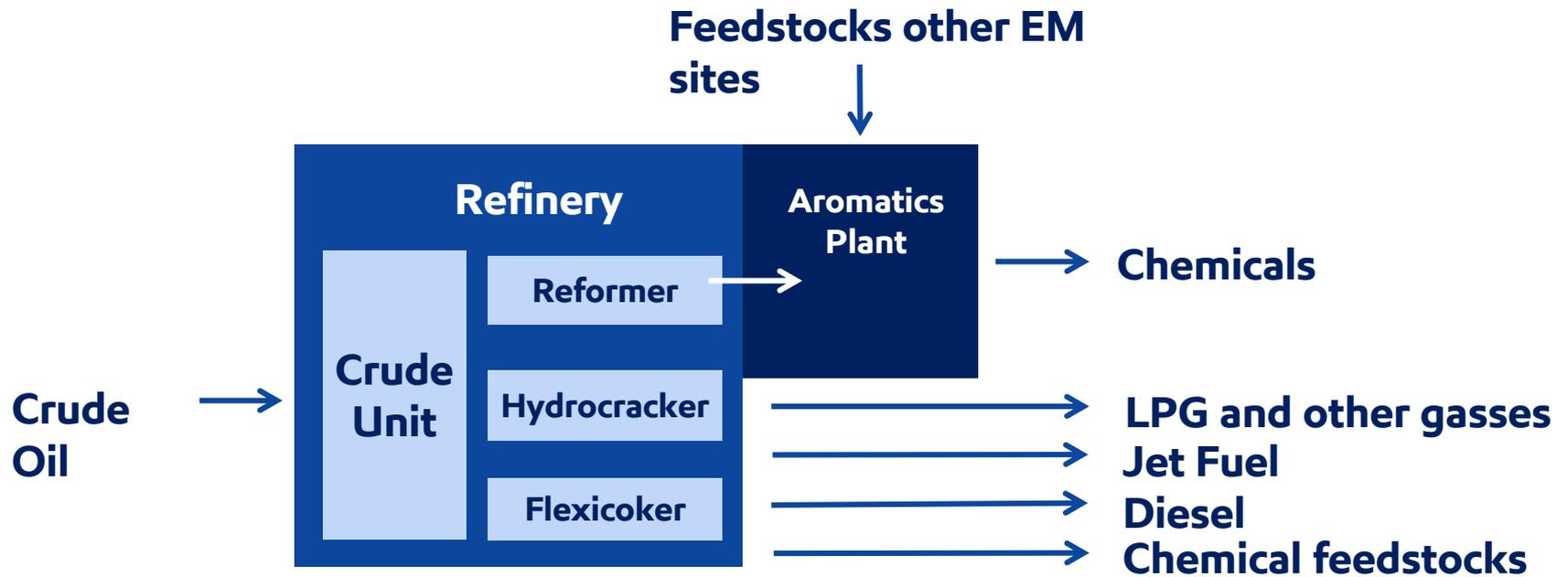


Integrated Rotterdam Petrochemical Complex

- 1960 Start Refinery
- 1964 Start Aromatics plant
- 1986 Refinery upgrade (Flexicoker)
- 2018 New Hydrocracker



Simplified Rotterdam Production Scheme



>50% Electricity demand generated by co-generation unit
All fuelgas provided by own processes
No production of fuel oils

Hydrocracker Project Rotterdam

- Integration in existing plant, synergies with existing Hydrocracker and world-class Rotterdam port
- Construction commenced 2016, start-up planned in 2018
- \$1.2 Billion investment – 1300 extra jobs at peak
- First large scale Group II base stocks producer in Europe – enabling high performance lubrication
- Additional production of low sulfur diesel
- Five percent energy efficiency improvement

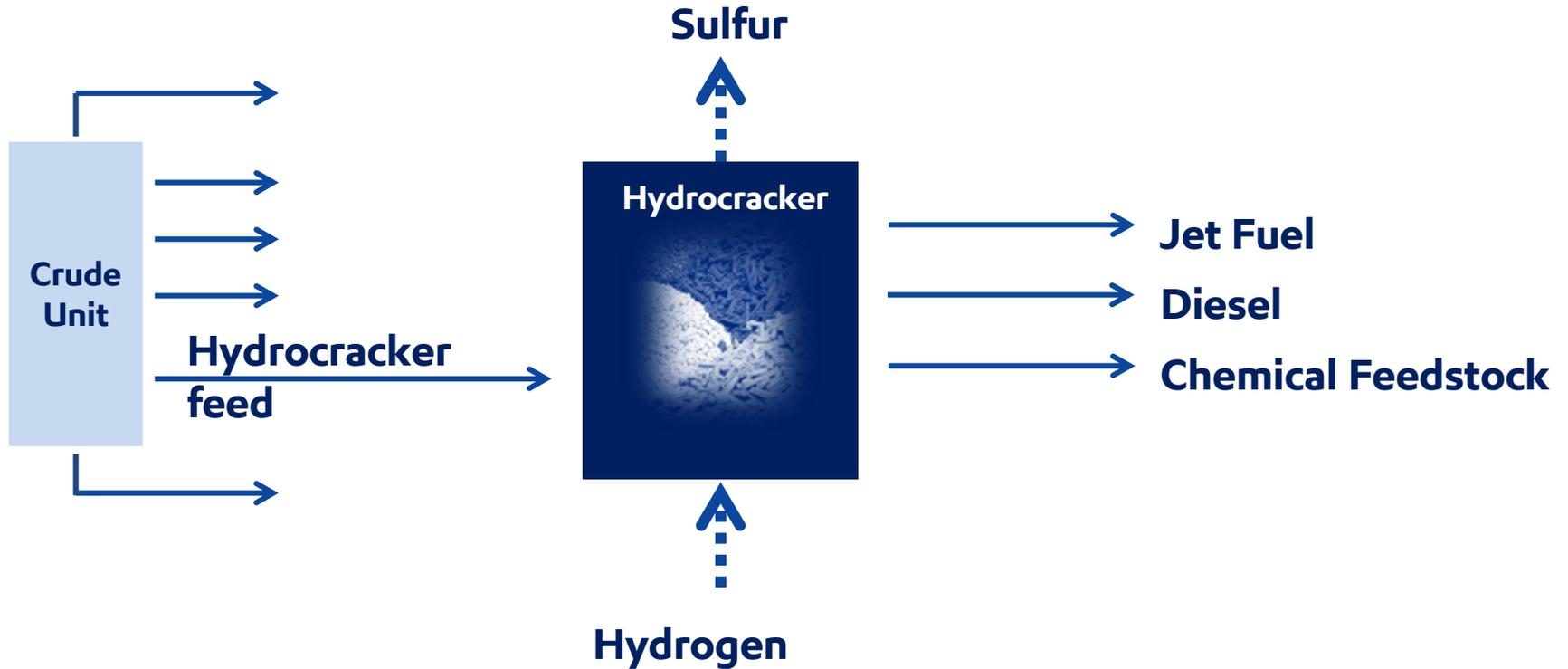


Technology as basis

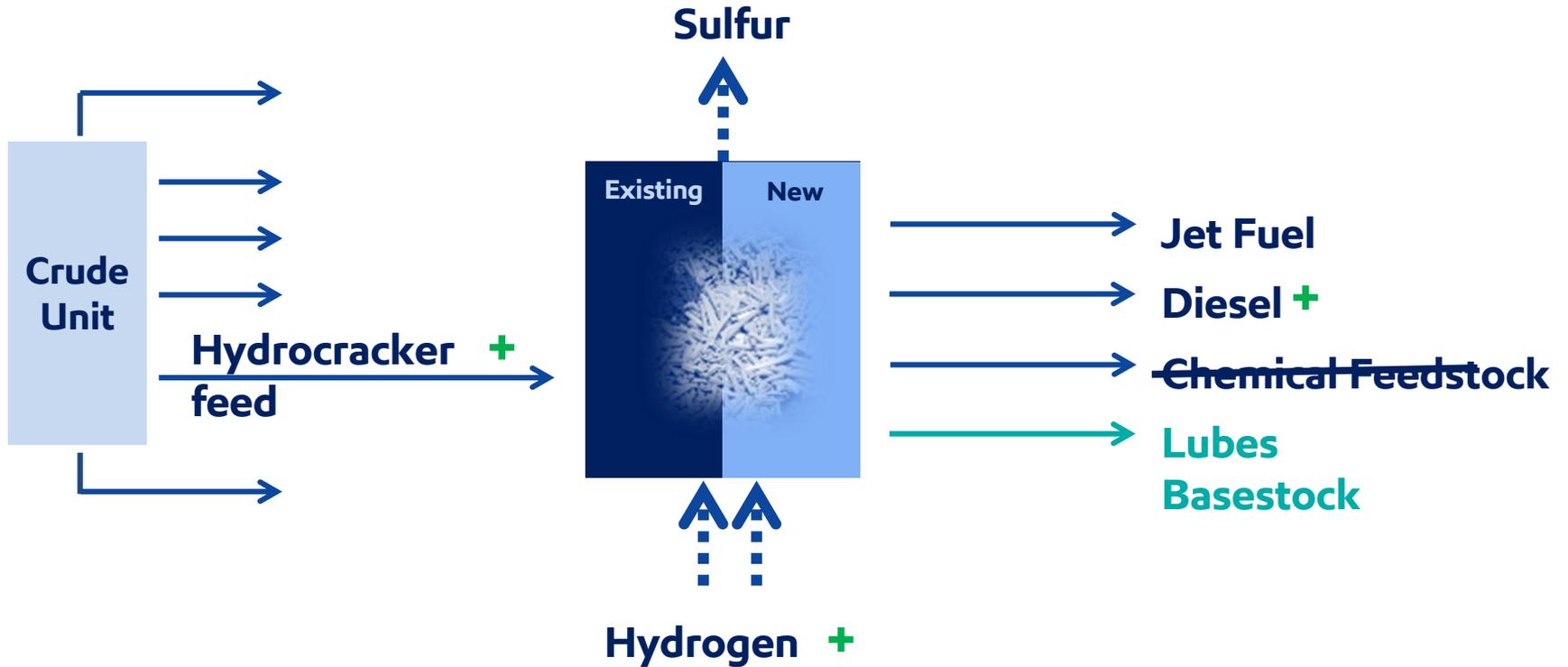
- Proprietary Technology
- From Pilot to Commercial



Existing Hydrocracker



New Hydrocracker



Klimaat en R&D

Climate Change



Mitigating emissions in our operations

- Improving energy efficiency, reducing flaring / venting / fugitive emissions
- Deploying cogeneration



Developing solutions that reduce emissions for our customers

- Providing clean burning natural gas
- Producing chemicals which increase efficiency and reduce emissions



Developing future technology

- Exploring new CO₂ capture approaches
- Researching next-generation biofuels



Engaging on policy

- Supporting efficient policy
- Advancing climate science to underpin sound policy

Fuel cell carbon capture

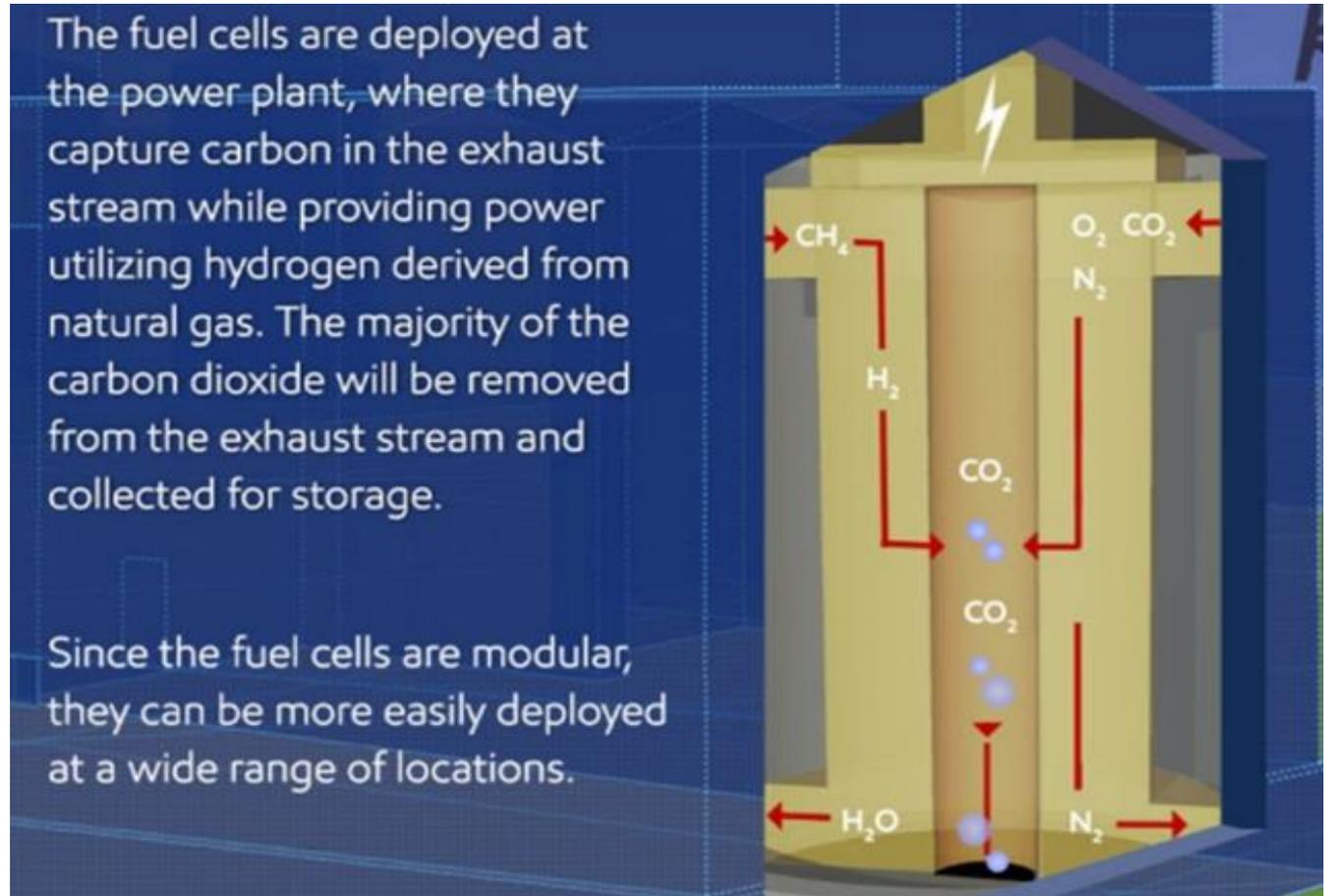
- Use of fuel cell technology to capture carbon dioxide
- Potential to become a cost-effective way to capture carbon emissions
 - Concentrates CO₂ & generates power
 - Cleaner air & customizable
- A typical 500 MW power plant might generate up to an additional 120 MW (current CCS technology consumes about 50 MW)
- More than 90 percent of a natural gas power plant's carbon dioxide emissions could be captured
- Further potential to produce up to 150 million cf/day of hydrogen



How does it work?



- Advanced-carbonate-fuel-cell-technology



Advanced biofuels

- [Advanced-biofuels](#)
- Produce lower emissions
- Do not stress global food or freshwater supplies
- Can potentially be processed in conventional refineries
- While immensely promising, algae biofuels are still very much “next generation”.
- [Empowering useful E. coli for biofuels](#)



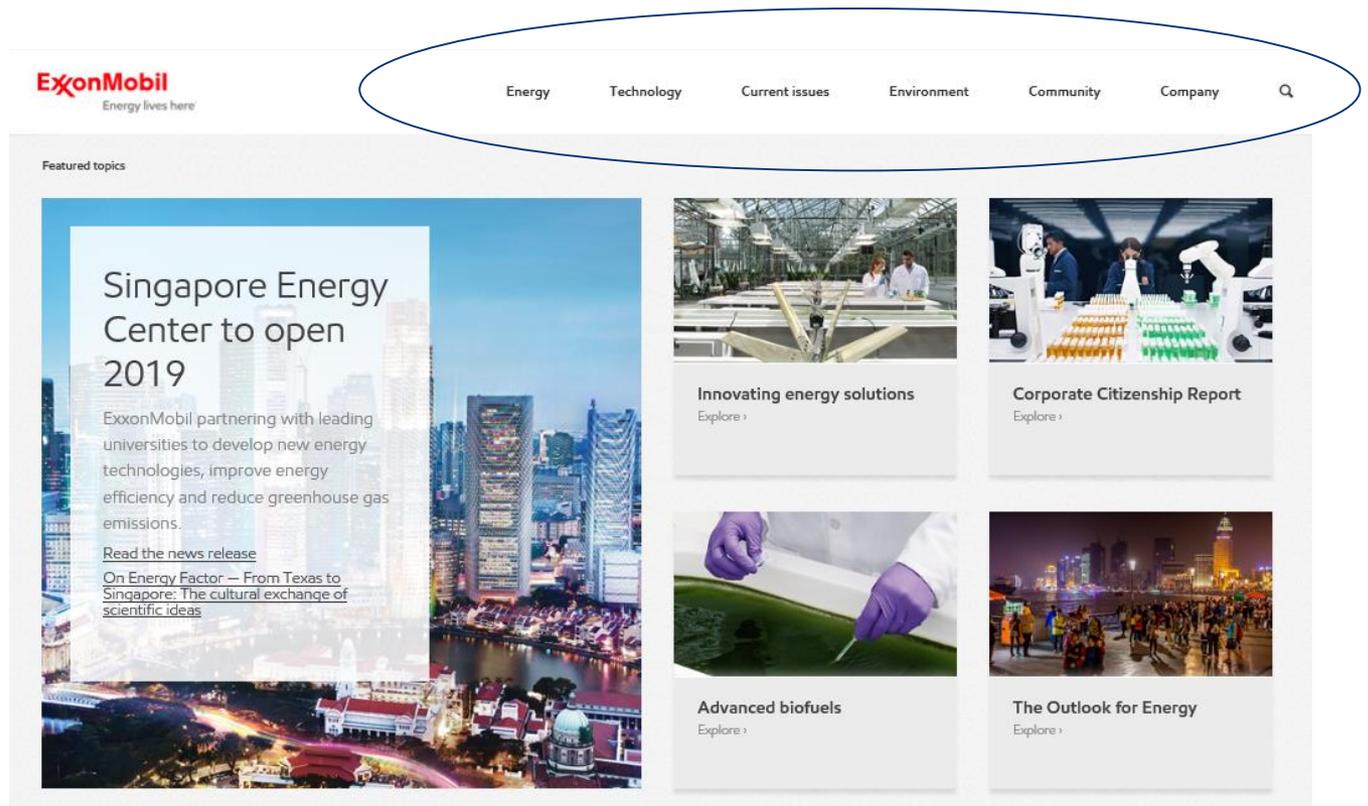
ExxonMobil



Find relevant information on our website

<http://corporate.exxonmobil.com>

<https://energyfactor.exxonmobil.com>



The screenshot displays the ExxonMobil website homepage. At the top left is the ExxonMobil logo with the tagline "Energy lives here". A navigation menu is located at the top right, enclosed in a blue oval, with links for Energy, Technology, Current issues, Environment, Community, and Company, along with a search icon. Below the navigation is a "Featured topics" section. The main featured topic is "Singapore Energy Center to open 2019", which includes a sub-headline, a brief description of the partnership, a link to "Read the news release", and a link to "On Energy Factor — From Texas to Singapore: The cultural exchange of scientific ideas". To the right of this main topic are four smaller featured topics: "Innovating energy solutions", "Corporate Citizenship Report", "Advanced biofuels", and "The Outlook for Energy", each with an "Explore" link and a representative image.

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