



***ENERGY TRANSITION AND THE
EVOLVING TRANSPORTATION LANDSCAPE***

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Shell Global Solutions US

Presented at APIDAP Industry Forum
April 12, 2022

DEFINITIONS AND CAUTIONARY NOTE

The companies in which Shell plc directly and indirectly owns investments are separate legal entities. In this [report] “Shell”, “Shell Group” and “Group” are sometimes used for convenience where references are made to Shell plc and its subsidiaries in general. Likewise, the words “we”, “us” and “our” are also used to refer to Shell plc and its subsidiaries in general or to those who work for them. These terms are also used where no useful purpose is served by identifying the particular entity or entities. “Subsidiaries”, “Shell subsidiaries” and “Shell companies” as used in this [report] refer to entities over which Shell plc either directly or indirectly has control. Entities and unincorporated arrangements over which Shell has joint control are generally referred to as “joint ventures” and “joint operations”, respectively. Entities over which Shell has significant influence but neither control nor joint control are referred to as “associates”. The term “Shell interest” is used for convenience to indicate the direct and/ or indirect ownership interest held by Shell in an entity or unincorporated joint arrangement, after exclusion of all third-party interest.

This [report] contains forward-looking statements (within the meaning of the U.S. Private Securities Litigation Reform Act of 1995) concerning the financial condition, results of operations and businesses of Shell. All statements other than statements of historical fact are, or may be deemed to be, forward-looking statements. Forward-looking statements are statements of future expectations that are based on management’s current expectations and assumptions and involve known and unknown risks and uncertainties that could cause actual results, performance or events to differ materially from those expressed or implied in these statements. Forward-looking statements include, among other things, statements concerning the potential exposure of Shell to market risks and statements expressing management’s expectations, beliefs, estimates, forecasts, projections and assumptions. These forward-looking statements are identified by their use of terms and phrases such as “aim”, “ambition”, “anticipate”, “believe”, “could”, “estimate”, “expect”, “goals”, “intend”, “may”, “milestones”, “objectives”, “outlook”, “plan”, “probably”, “project”, “risks”, “schedule”, “seek”, “should”, “target”, “will” and similar terms and phrases. There are a number of factors that could affect the future operations of Shell and could cause those results to differ materially from those expressed in the forward-looking statements included in this [report], including (without limitation): (a) price fluctuations in crude oil and natural gas; (b) changes in demand for Shell’s products; (c) currency fluctuations; (d) drilling and production results; (e) reserves estimates; (f) loss of market share and industry competition; (g) environmental and physical risks; (h) risks associated with the identification of suitable potential acquisition properties and targets, and successful negotiation and completion of such transactions; (i) the risk of doing business in developing countries and countries subject to international sanctions; (j) legislative, judicial, fiscal and regulatory developments including regulatory measures addressing climate change; (k) economic and financial market conditions in various countries and regions; (l) political risks, including the risks of expropriation and renegotiation of the terms of contracts with governmental entities, delays or advancements in the approval of projects and delays in the reimbursement for shared costs; (m) risks associated with the impact of pandemics, such as the COVID-19 (coronavirus) outbreak; and (n) changes in trading conditions. No assurance is provided that future dividend payments will match or exceed previous dividend payments. All forward-looking statements contained in this [report] are expressly qualified in their entirety by the cautionary statements contained or referred to in this section. Readers should not place undue reliance on forward-looking statements. Additional risk factors that may affect future results are contained in Shell plc’s Form 20-F for the year ended December 31, 2020 (available at www.shell.com/investor and www.sec.gov). These risk factors also expressly qualify all forward-looking statements contained in this [report] and should be considered by the reader. Each forward-looking statement speaks only as of the date of this [report], [insert date]. Neither Shell plc nor any of its subsidiaries undertake any obligation to publicly update or revise any forward-looking statement as a result of new information, future events or other information. In light of these risks, results could differ materially from those stated, implied or inferred from the forward-looking statements contained in this [report]. The content of websites referred to in this [report] does not form part of this [report].

We may have used certain terms, such as resources, in this [report] that the United States Securities and Exchange Commission (SEC) strictly prohibits us from including in our filings with the SEC. Investors are urged to consider closely the disclosure in our Form 20-F, File No 1-32575, available on the SEC website www.sec.gov

THE WORLD NEEDS MORE AND CLEANER ENERGY

The world today is dynamic and fast-changing, and for many, energy is a defining feature.

Lives and livelihoods, economies and communities depend on convenient, reliable and affordable energy to thrive.

As the global population increases and incomes rise, demand for energy will grow.

Meanwhile the need to address stresses on the environment – especially climate change – has never been more important.



2015 
~500 EXAJOULE
Energy Consumption per year

2100 
~1.000 EXAJOULE
Energy Consumption per year

SHELL IS A GLOBALLY INTEGRATED ENERGY COMPANY WITH THE SCALE, EXPERTISE, AND DEMONSTRATED ABILITY TO DELIVER.

~ 30
MILLION
customers per day

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46
THOUSAND
Shell-branded retail stations

> 80
THOUSAND
electric vehicle charging
points and growing.

>1 MILLION
B2B
customers in >160
countries

ATA GLANCE

70+ countries

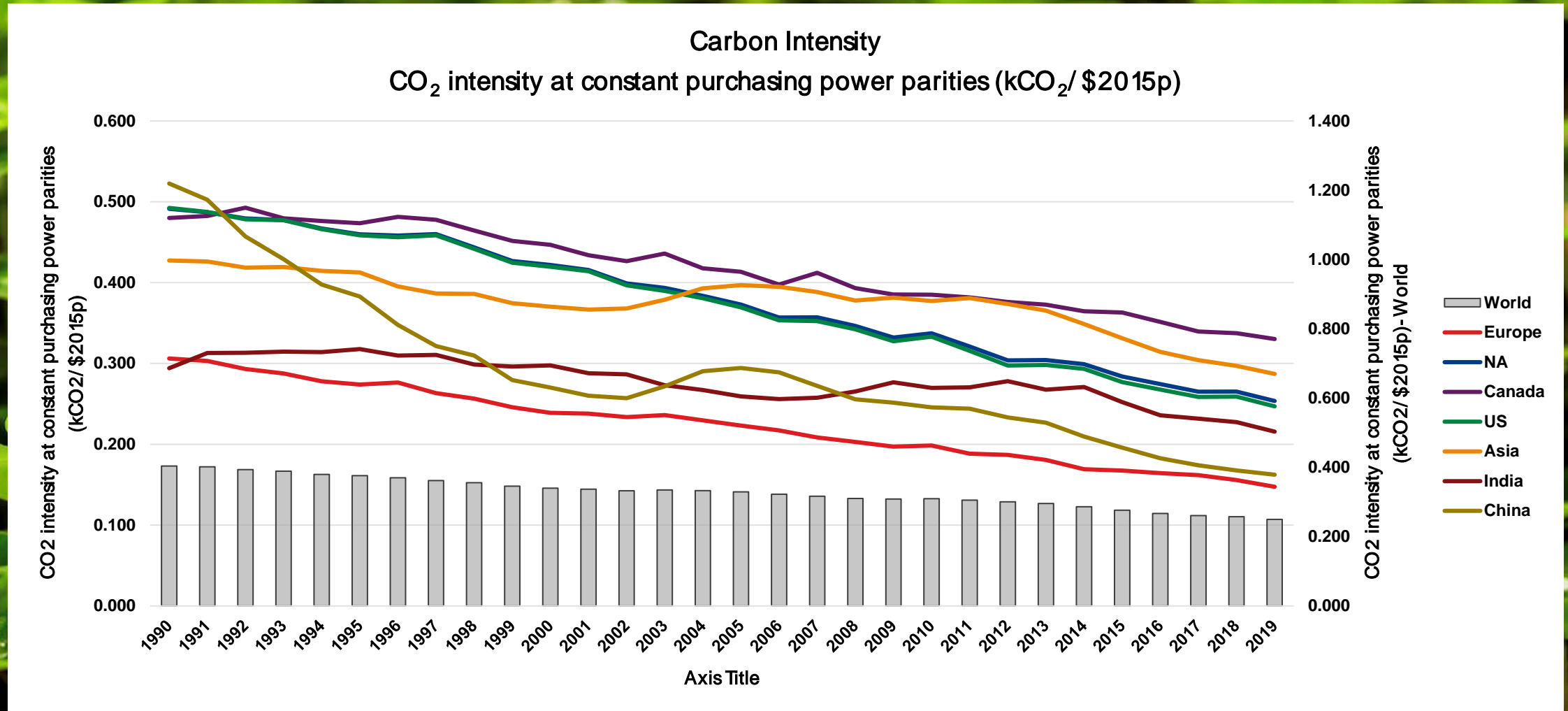
83,000 employees (2020)

70 million
tonnes of liquefied natural gas (LNG) sold
in 2020

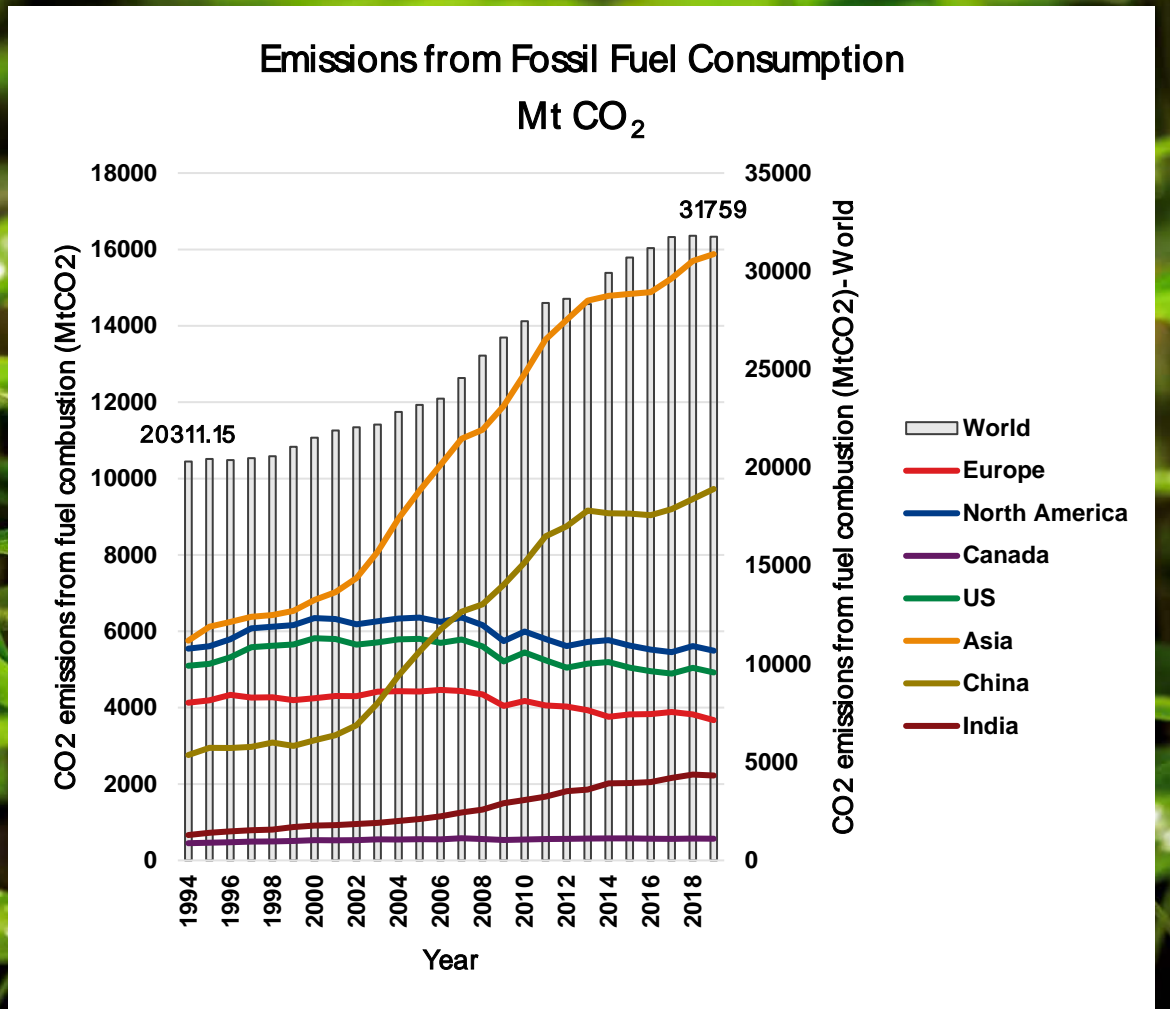
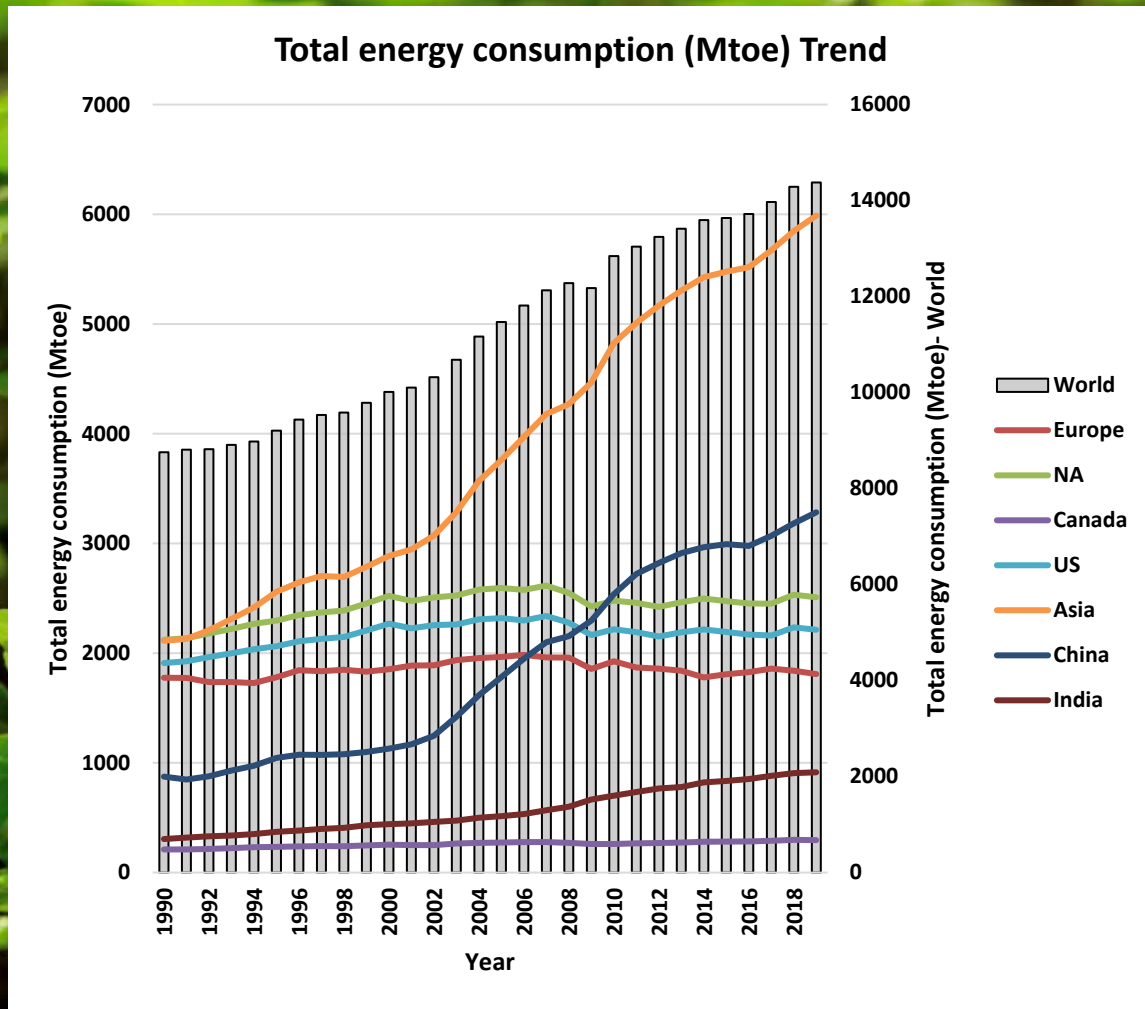
255+ TWh
global power sales approx. to end customers
in 2020

5.6+ GW
operating renewable capacity access globally

Case For Change

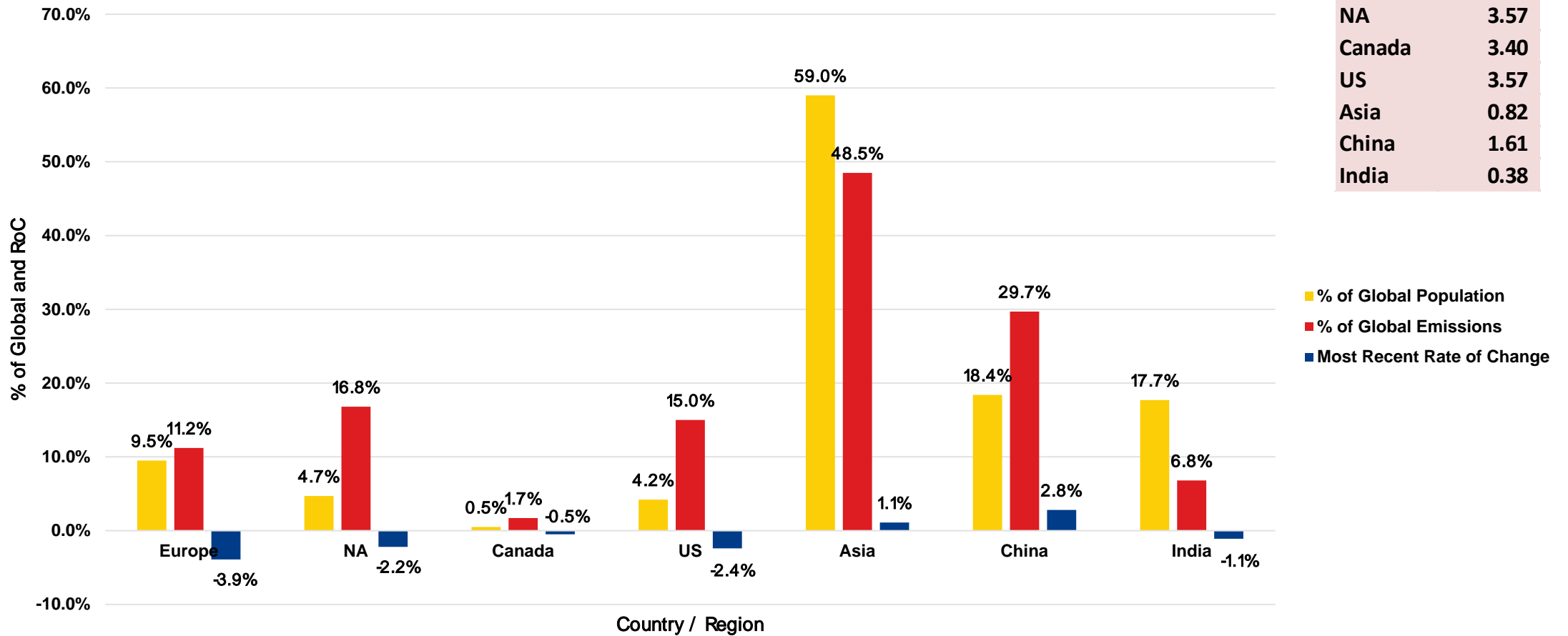


Case For Change



Case For Change

Population and CO₂ Emissions from Fossil Fuel



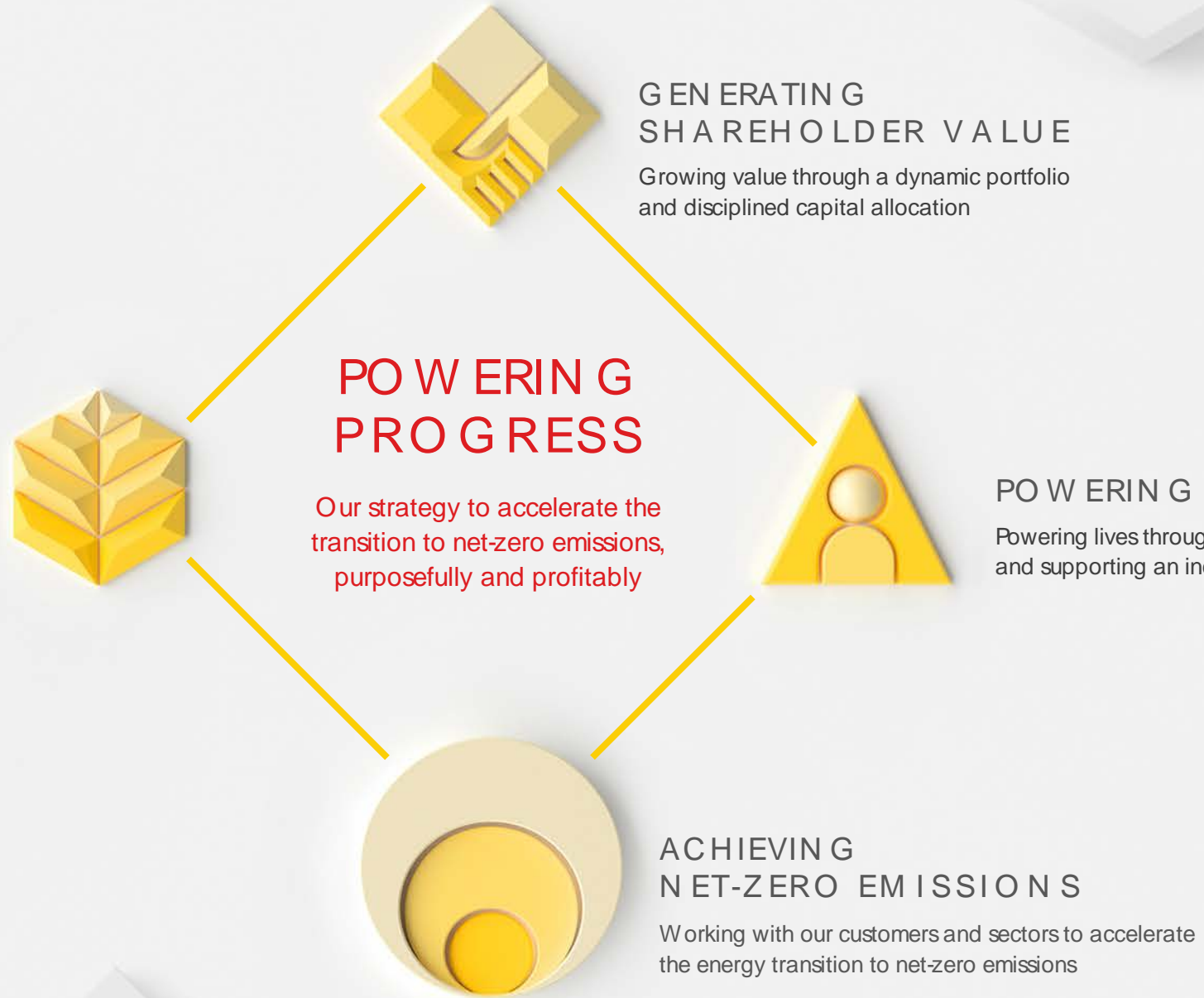
OUR PURPOSE

To power progress together by providing more and cleaner energy solutions

RESPECTING NATURE
Protecting the environment, reducing waste and making a positive contribution to biodiversity

UNDERPINNED BY OUR CORE VALUES AND OUR FOCUS ON SAFETY

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Our Climate Target:
become a net zero emissions energy
business by 2050 in step with society



Energy efficiency

- Own Operations
- Customer Operations



Use of low carbon energy

- E-mobility
- Hydrogen production, supply
- Biofuels, Renewables, Natural Gas



Carbon sinks

- Carbon capture, utilisation and storage
- Nature-based solutions

A NET-ZERO EMISSIONS ENERGY BUSINESS BY 2050 IN STEP WITH SOCIETY

OUR CLIMATE TARGET

NET ZERO BY 2050

Net-zero emissions energy business by 2050 including all emissions (Scope 1, 2, and 3)

FROM 1.7 GTPA TO ZERO

Total carbon emission from energy sold peaked in 2018 at around 1.7 Gtpa and will be brought down to 0 by 2050

NO SINGLE SOLUTION, BUT MANY

The three-part answer: avoid, reduce, and compensate



Avoid emissions



Reduce emissions



Compensate emissions

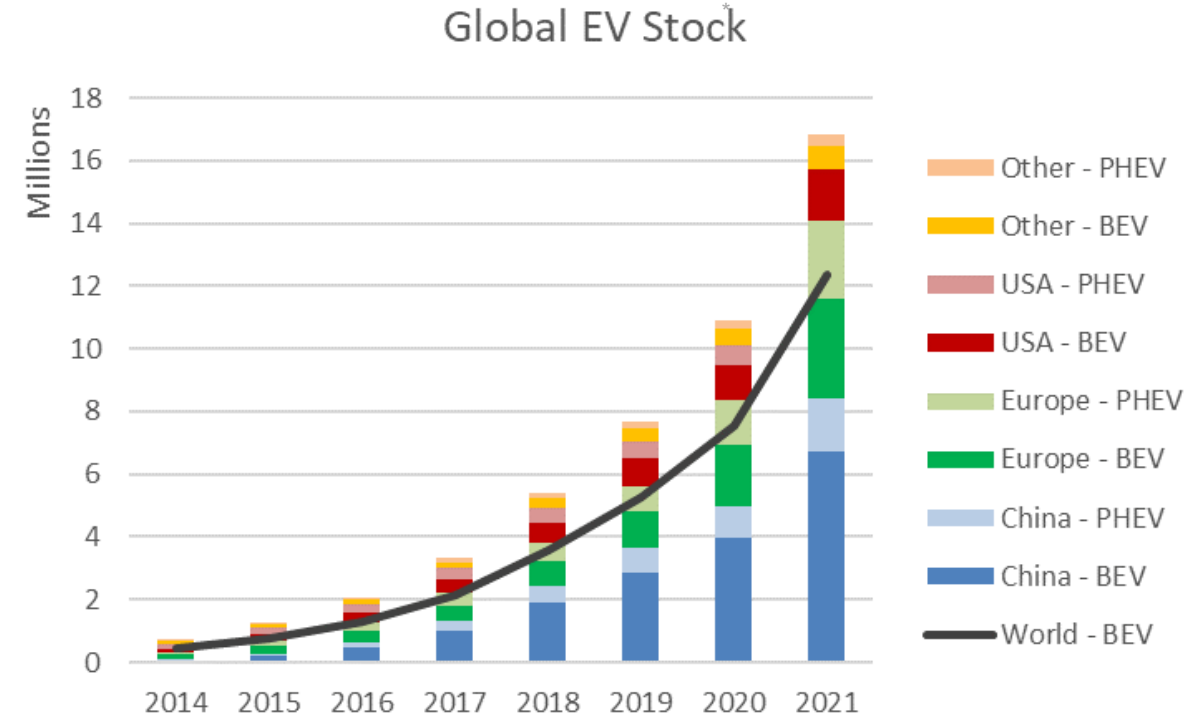
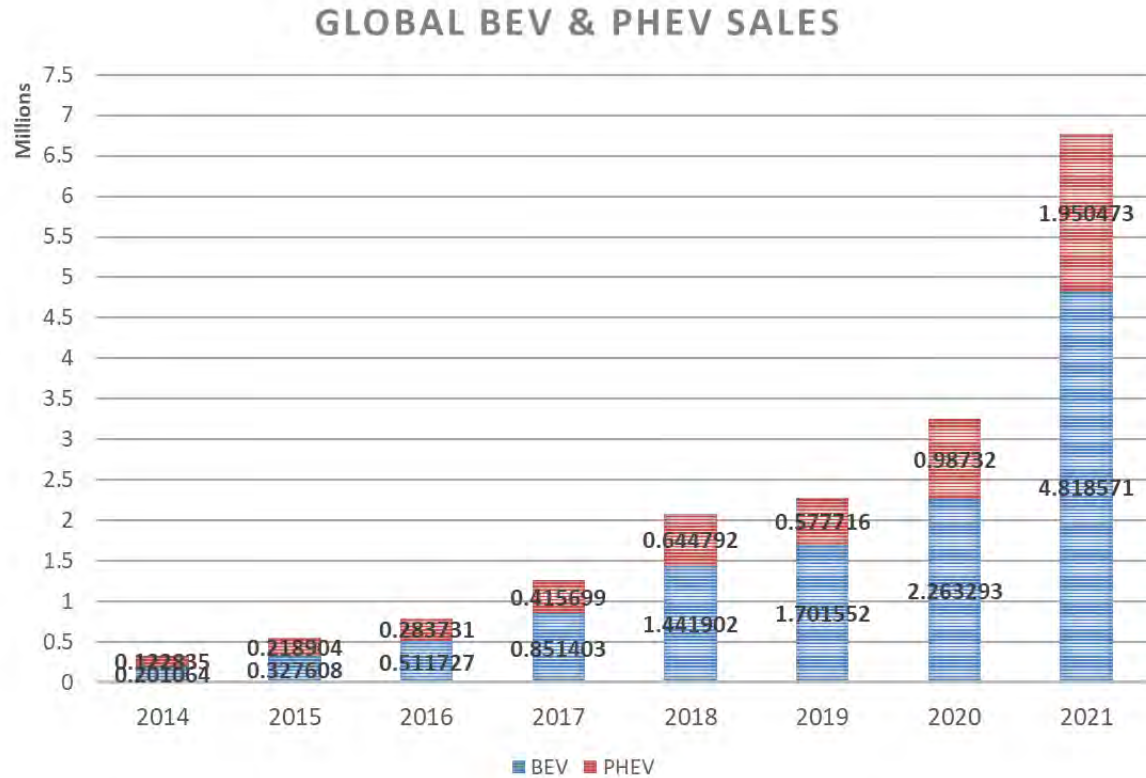
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WORKING TOGETHER, SECTOR BY SECTOR

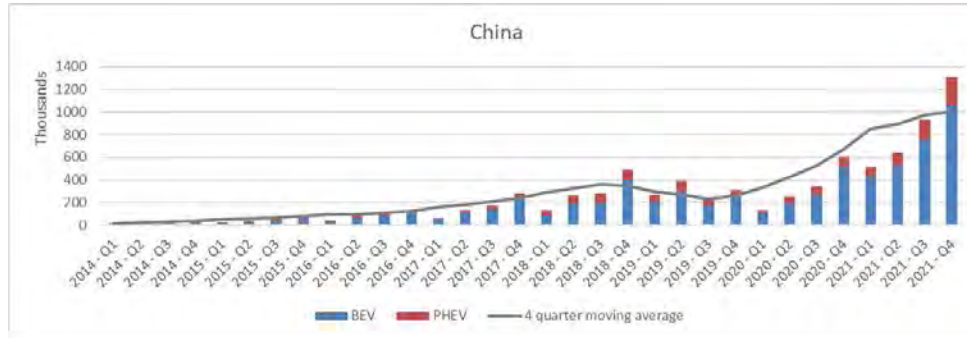


Helping customers reduce their emissions from their use of our energy products to net-zero by 2050

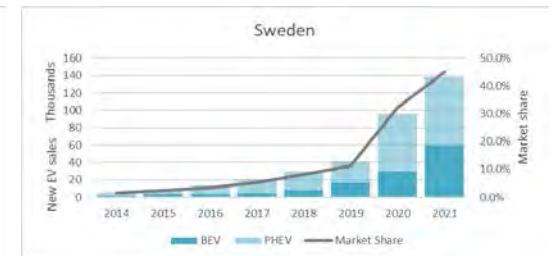
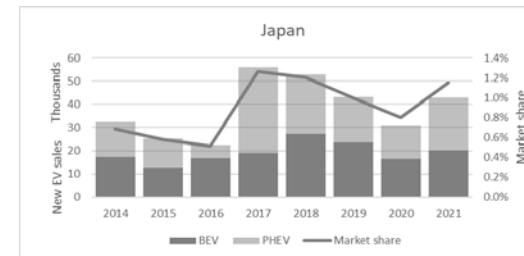
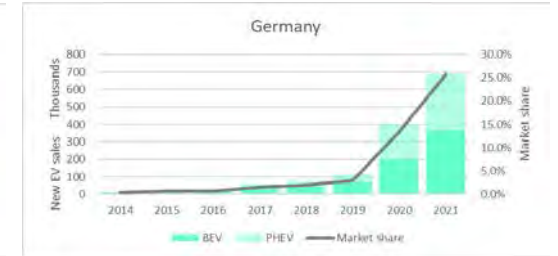
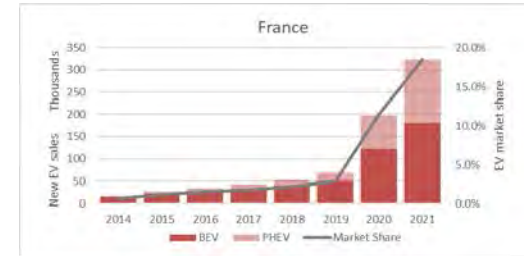
Mobility Sector: The global passenger electric car stock surpassed the 16M mark, BEV & PHEV sales more than doubled in 2021 compared to previous year



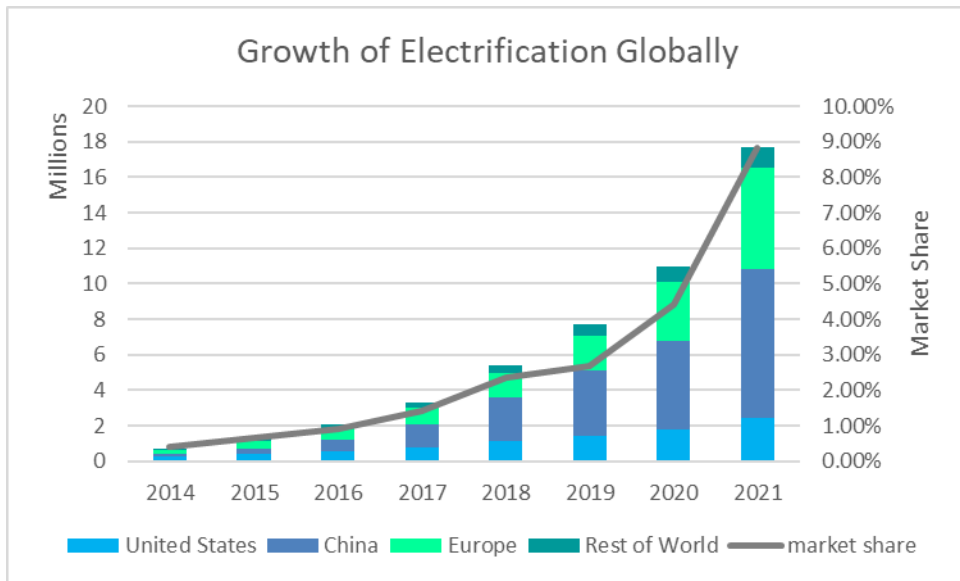
Passenger car sales recovering after Covid-19 shock in all key geographies



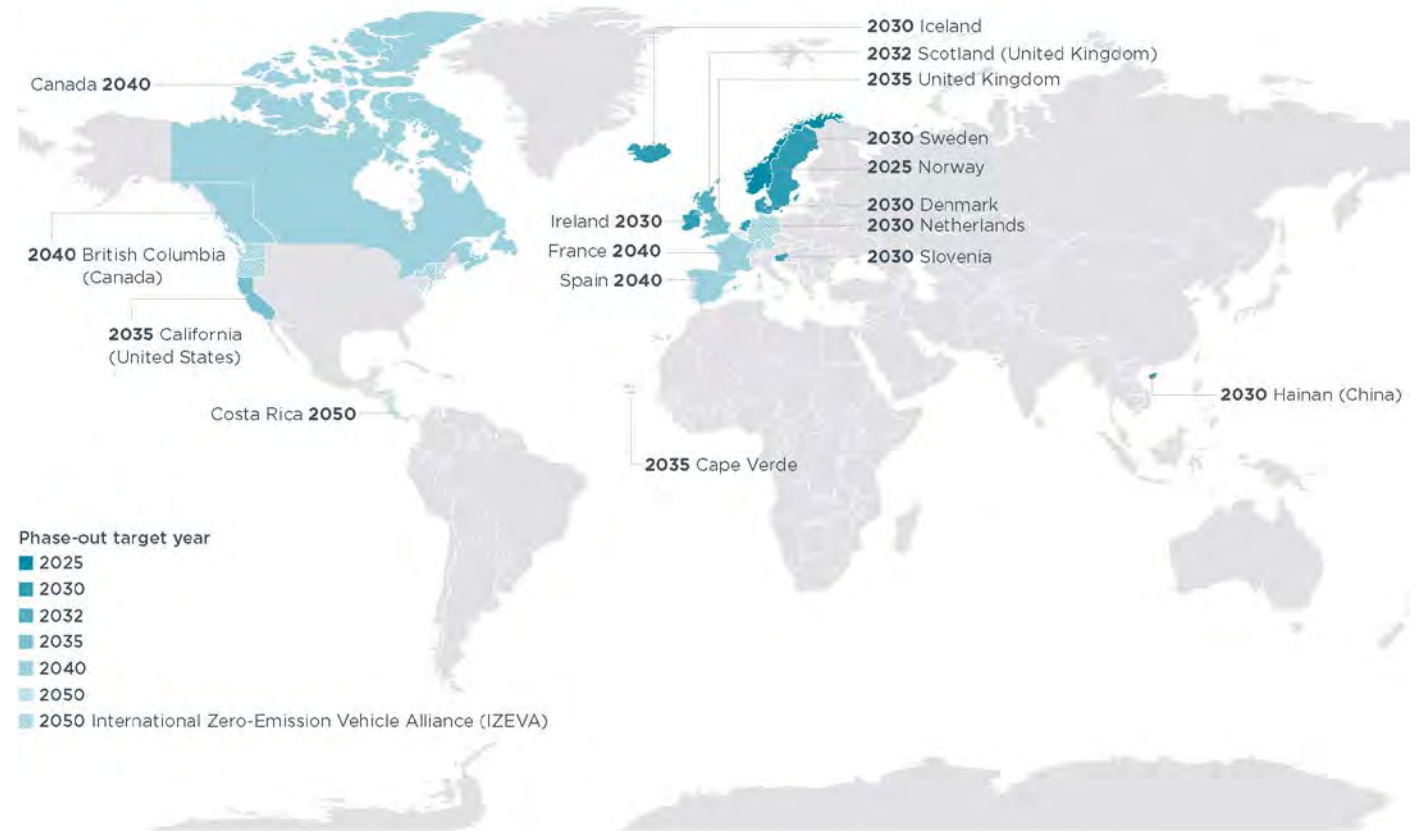
EV Sales Penetration



Growth in electrification & ICE bans...not globally uniform

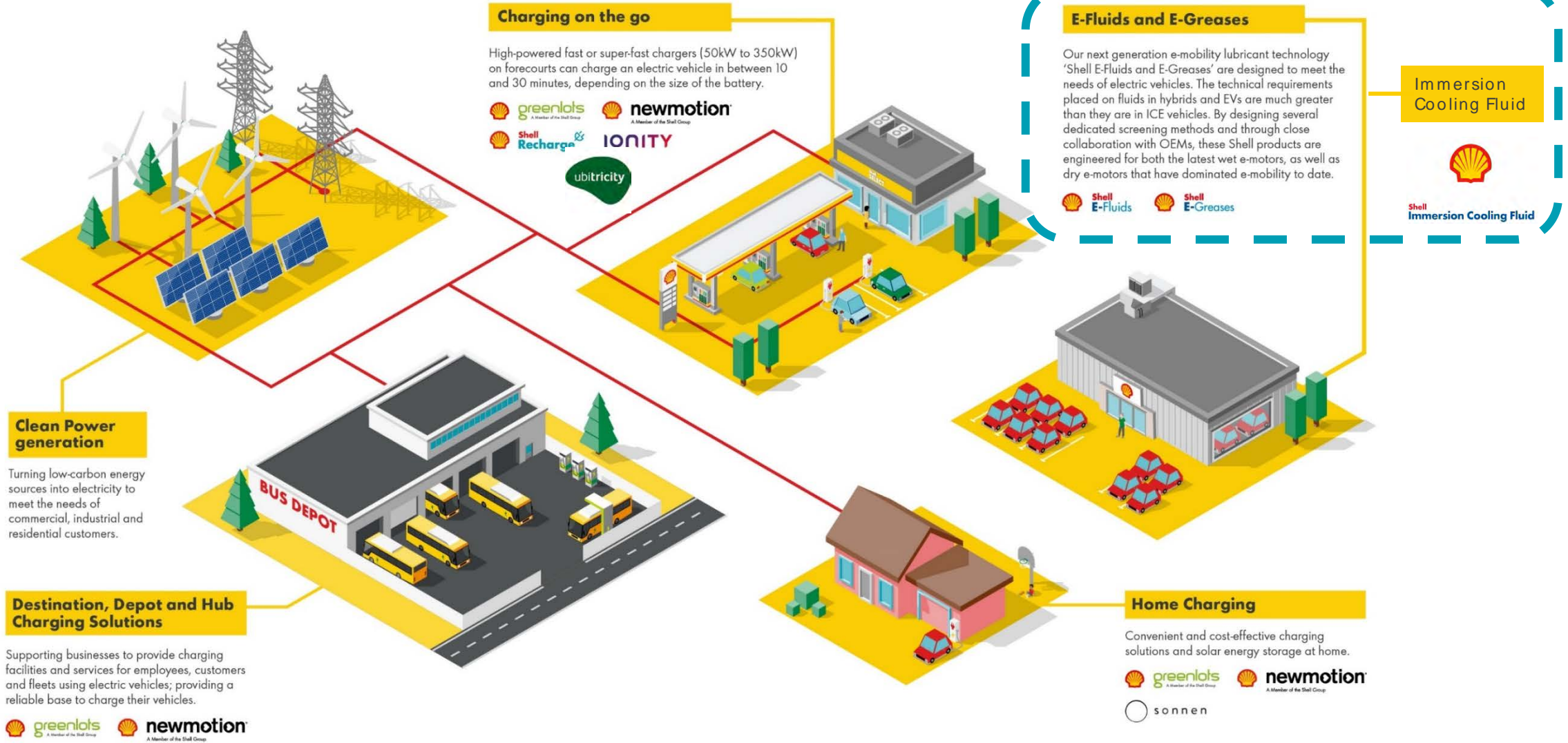


Governments with set targets for phasing out all new sales of internal combustion engine passenger cars



Increasingly, OEMs and energy companies will need to meet the needs of very different markets transitioning at different rates

SHELL'S ROLE in E-MOBILITY



RENEWABLE POWER GENERATION

SOLAR

Our portfolio of solar activities include:

Developing greenfield solar and storage projects

- Acquisition of Savion IIC
- 46.5% interest in Silicon Ranch, US
- Deploying solar at our own assets
- Acquisition of EOIFI, French solar & wind developer
- 49% interest in Cleantech Solar, Singapore
- 49% interest in ESCO Pacific, Australia



18 GW +
Savion capacity



1.1+ GW

Silicon Ranch's
operational capacity

WIND

Our wind projects in operation and in development have the potential to generate > 6 GW of power

2 GW

Shell Share US
offshore wind in
development



236 MW

Shell Share US
onshore wind
installed capacity

- US onshore wind —Investing since 2001- four operating wind farms in the US that produce enough electricity to power ~ 97,000 homes
- US offshore wind in development:
 - Mayflower – 1.6 GW estimated, Shell Share 50%
 - Atlantic Shores – 2.5 GW estimated, Shell Share 50%

SHELL IS SEEKING COLLABORATIVE SOLUTIONS FOR A CHANGING WORLD, OFFERING LOW CARBON ALTERNATIVES TO REFLECT MARKET, SECTOR AND CUSTOMERS' CHOICE



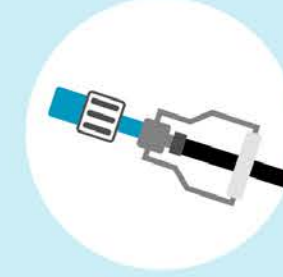
Hydrogen
Building Retail Sites for Hydrogen



Biofuels
Conventional & Advanced



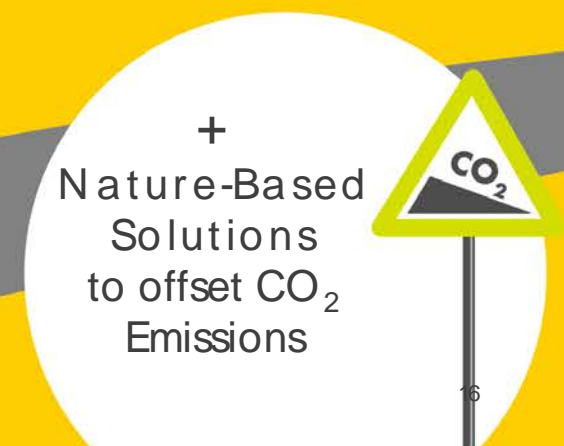
Electricity
Slow & fast charging offer for EVs
E-Fluids



CNG & LNG
CNG for Light Duty Vehicles, LNG for Trucks and Marine



GTL
Pioneering Gas to Liquid (GTL) Technology



+ Nature-Based Solutions to offset CO₂ Emissions

ELECTRIC VEHICLES ARE POWERING A BRIGHTER MOBILITY FUTURE

Cars and light trucks create ~ 20 % of U.S. emissions.

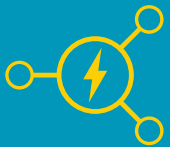
Shell is expanding electric charging infrastructure and services to fleets and consumers



Clean Power for electrified fleets



Turnkey EV charging systems



Intelligent energy management

PLANS FOR
500,000
EV-CHARGING
POINTS BY
2025



Next-Gen High Performance Charging Technology



Supercharger developed by Shell & Tsinghua University in China

Technology demonstrated at the 2022 Beijing Winter Olympics

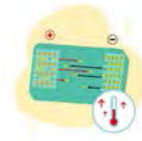


The super charger has 3 main features to enable a safe and fast charging experience in an extreme environment:

1 350kW MAXIMUM POWER



2 BI-DIRECTIONAL PULSE HEATING



3 EXTERNAL THERMAL MANAGEMENT



Performance Outcomes:

- ✓ Battery temperature only increased from 0°C to 25°C in 4 mins
- ✓ Vehicle was recharged to a range of 130km in 5 mins while maximum power is restricted to 250kW, and battery temperature was controlled below 35°C throughout the charging process

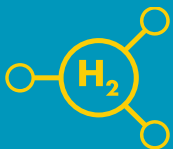
HYDROGEN CAN FUEL A SUSTAINABLE FUTURE

Hydrogen is emerging as a valuable path to a more sustainable transportation sector.

Shell is building infrastructure and supply to increase the production and availability of hydrogen.



Green & blue hydrogen supply
Building electrolyzers in Germany, China, NL



Building networks
Consortium with Toyota and Kenworth to develop the first hydrogen truck refuelling network in California



Part of the H2Accelerate collaboration in Europe for building hydrogen trucking infrastructure

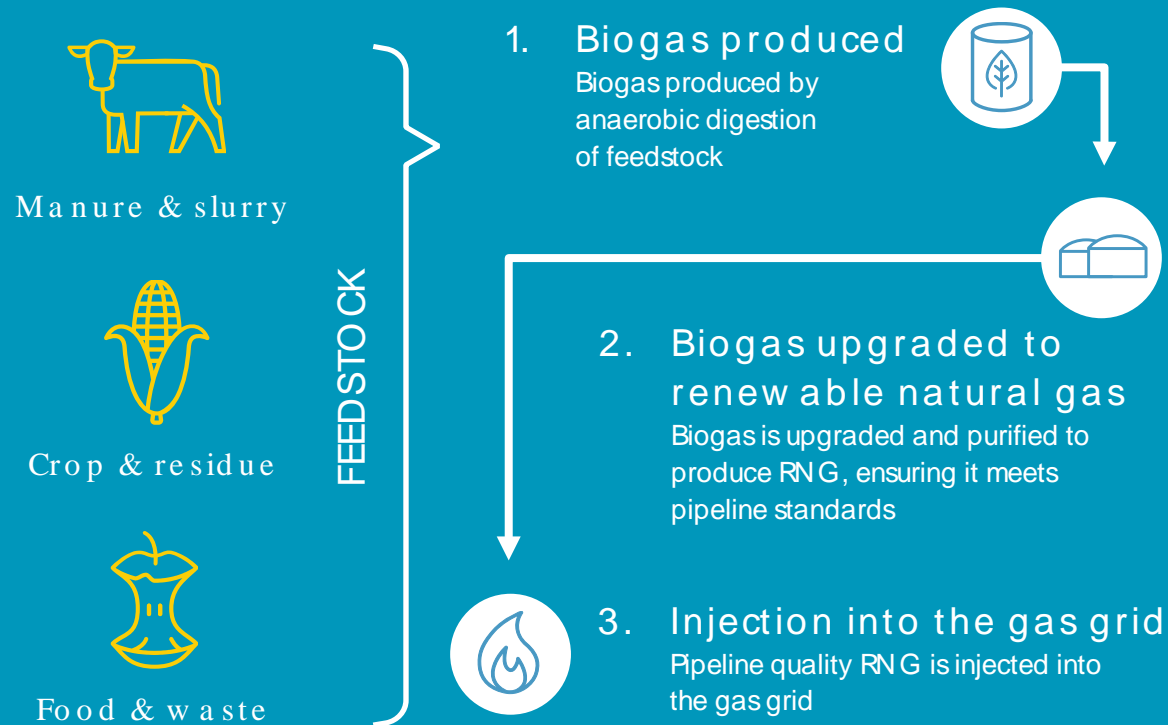


More than
**50 SHELL
HYDROGEN
FUELING
STATIONS**
open around the world
and growing

RENEWABLE NATURAL GAS

Renewable Natural Gas is most often used as a transportation fuel, but it can be used for other applications, such as a lower-carbon alternative to fossil natural gas or as a feedstock for generating low carbon grid power or green hydrogen.

How it works



First RNG production facility in Junction City, Oregon
two dairy digester projects in Kansas and Idaho.

1st R-CNG fuelling site in Carson, CA

Shell is committed to RNG and has begun start-up at
A NEW BIOMETHANE FACILITY in the Pacific Northwest

Bio Fuels

Biodiesel, bioethanol and SAF offer practical, cost-effective solutions for reducing CO₂ emissions associated with long journeys.



Production & Developments Around the World

Rheinland Refinery

Transforming manufacturing operations to produce low carbon products. Producing low carbon diesel fuel in Rheinland since 2020

Raízen JV

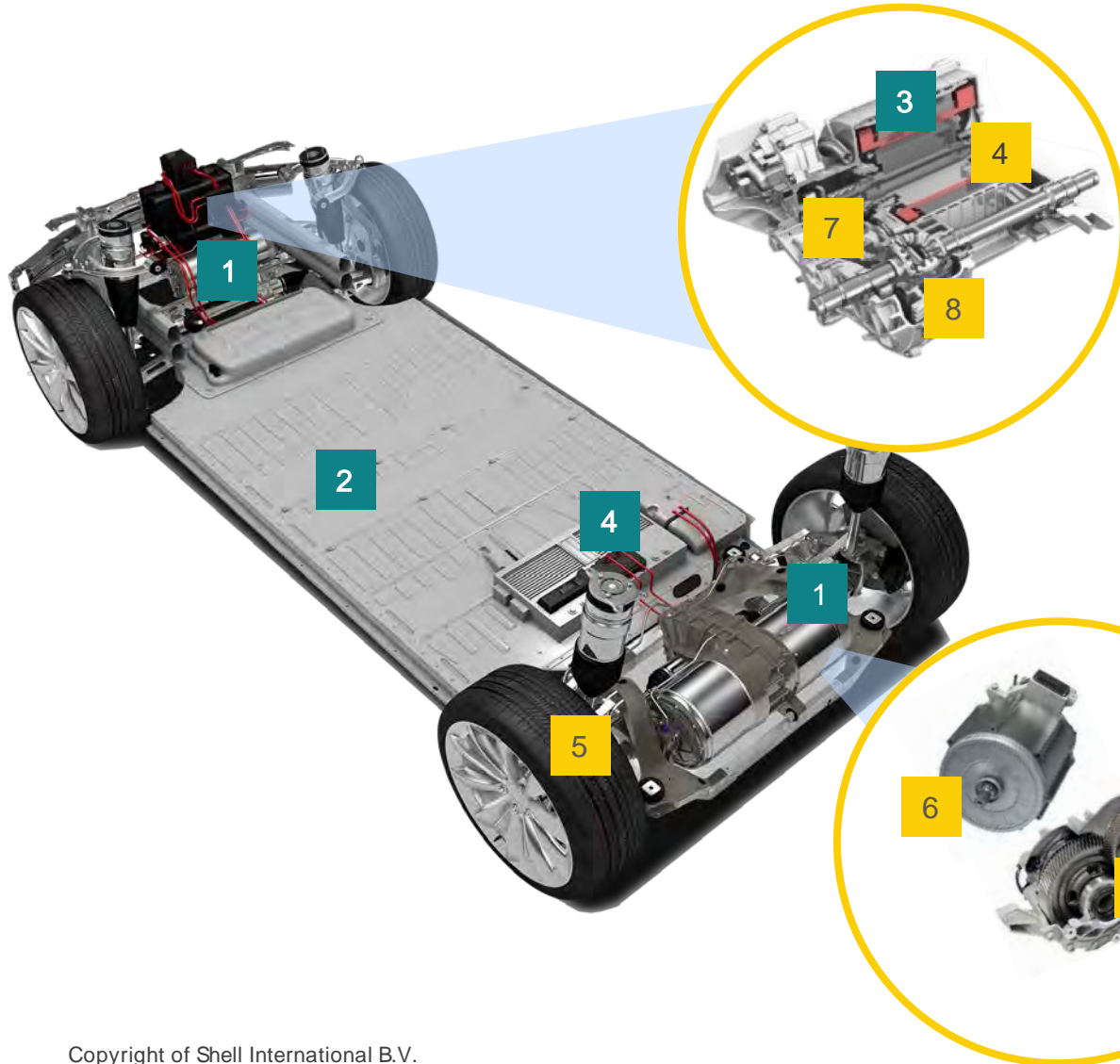
Raízen hosts one of the world's first waste to ethanol plants, and the 4th largest RNG facility in the world. In 2021, Raízen produced 2.5 bln litres of ethanol.

New Technology Developments

IH2 Technology-demo plant in Bangalore, India

Synthetic Fuels via PTL-demo plant in Amsterdam, NL

LUBRICANT INNOVATION OPPORTUNITIES IN ELECTRIC VEHICLES



1 E-motor cooling*

2 Battery thermal management

3 Potential direct cooling of e-motor windings

4 Inverter cooling

5 E-motor bearing lubrication

6 Wheel and steering bearing lubrication

7 Reduction gear lubrication

8 Differential lubrication

Plug-in hybrid transmission

Plug-in hybrid engine oil

Thermal Fluids



Grease



Transmission Lubes




Specific solutions for PHEV



* also applies for transmission lubes

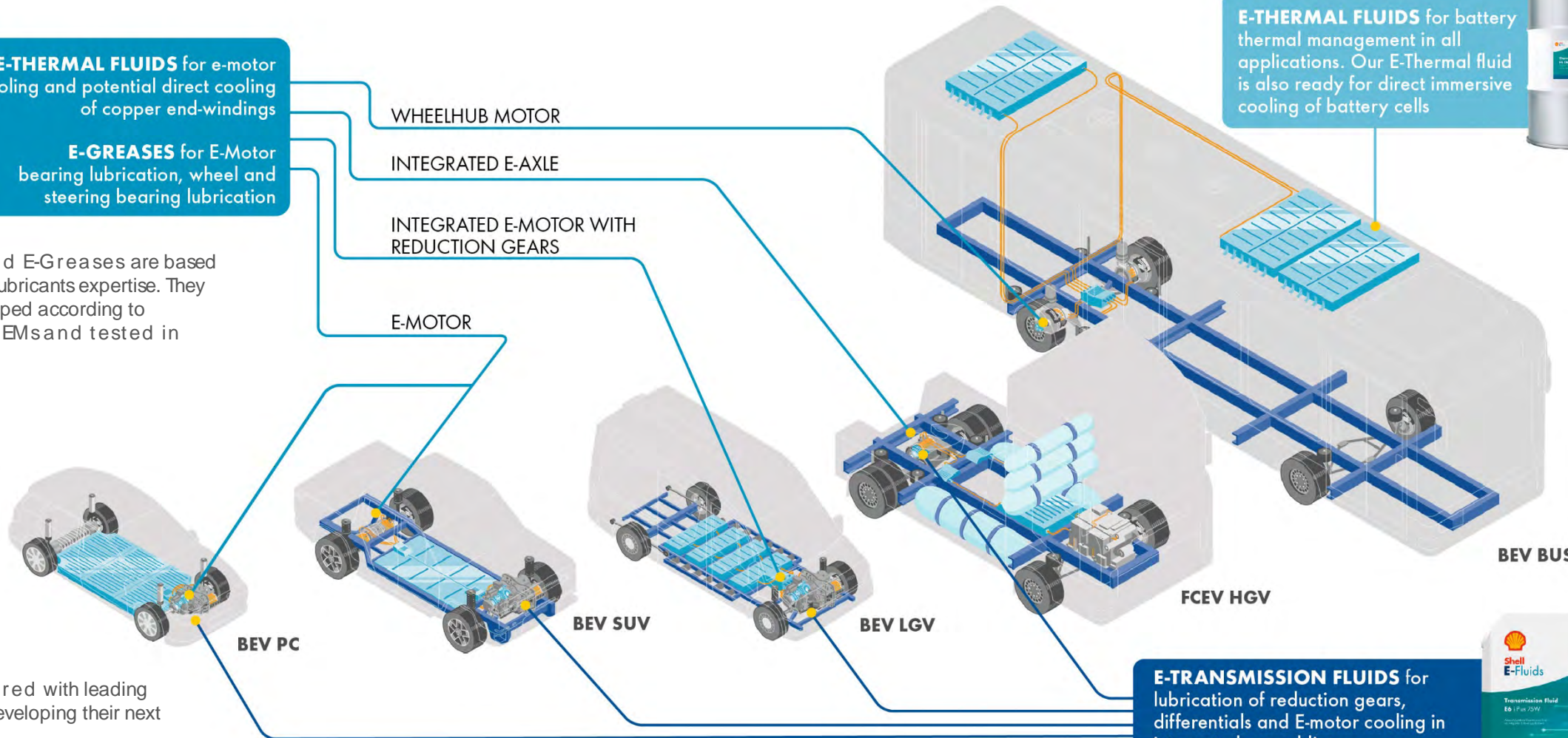
SHELL E-FLUIDS & E-GREASES PORTFOLIO



E-THERMAL FLUIDS for e-motor cooling and potential direct cooling of copper end-windings

E-GREASES for E-Motor bearing lubrication, wheel and steering bearing lubrication

Shell E-Fluids and E-Greases are based on our extensive lubricants expertise. They have been developed according to requirements of OEMs and tested in Formula E.



We have partnered with leading OEMs who are developing their next generation of EVs



E-TRANSMISSION FLUIDS for lubrication of reduction gears, differentials and E-motor cooling in integrated assemblies



Innovation –
Systems Thinking Approach
Improving Efficiency of Existing Technologies:

Shell Starship Initiative



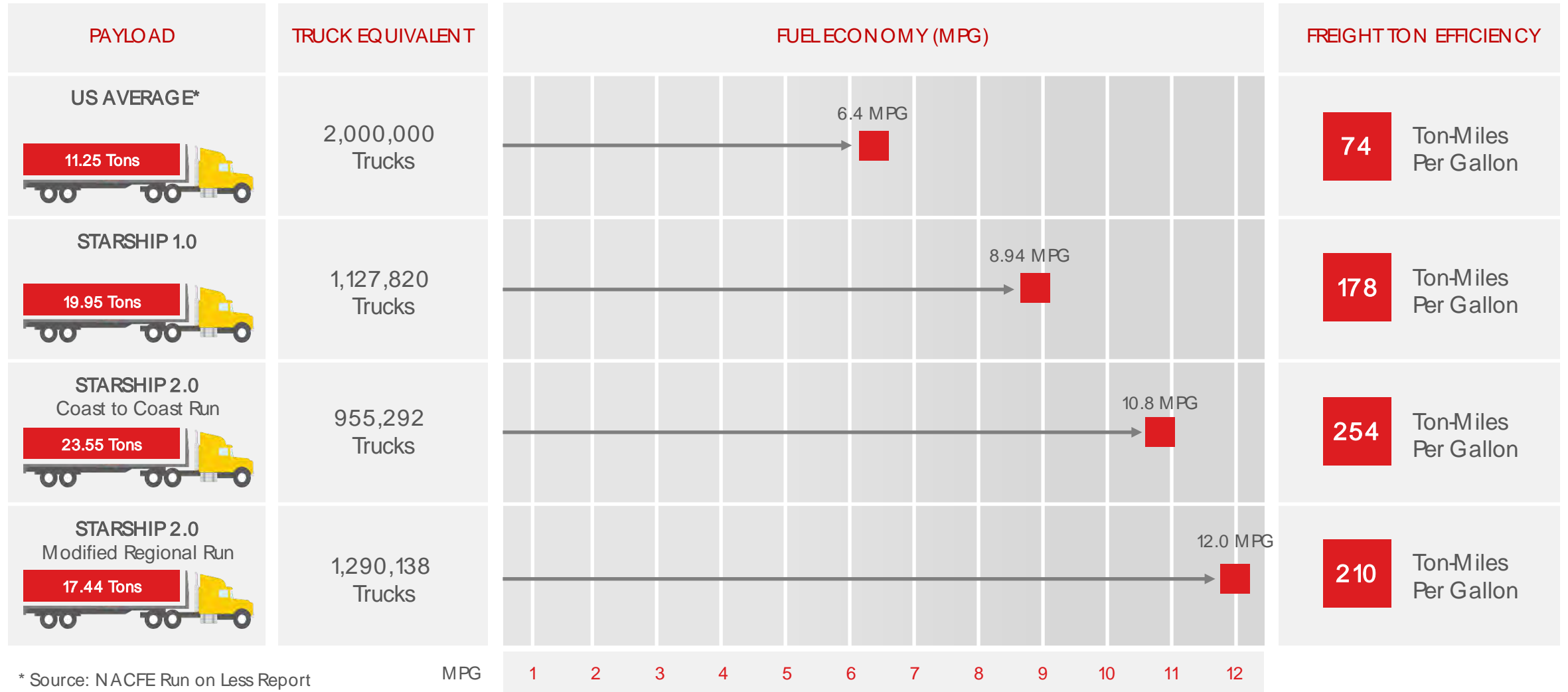
- *Hyper-fuel efficient Class 8 tractor-trailer*
- *Designed to push boundaries of existing technologies to improve fleet efficiency*

https://www.linkedin.com/posts/shell-lubricant-solutions_starship-20-ugcPost-6773411989063651329-C_PA






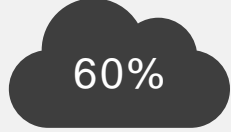



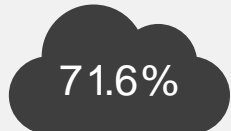



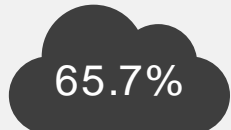
Shell Starship 2.0 maximizes on FTE, Fuel Savings and Emission reductions by integrating best in class industry technologies...

EFFICIENCIES GAINED*



* Source: NACFE Run on Less Report

EMISSIONS REDUCTION vs NORTH AMERICAN AVERAGE

	TEST FORMAT	ANNUAL CO ₂ REDUCTION U.S. TONS	CO ₂ REDUCTION TONS %
<p>STARSHIP 1.0</p>  <p>19.95 Tons</p>	 <p>Coast to Coast</p>	 <p>229,000,000</p>	 <p>60%</p> <p>Reduction of CO₂</p>
<p>STARSHIP 2.0</p>  <p>23.55 Tons</p>	 <p>Coast to Coast</p>	 <p>275,000,000</p>	 <p>71.6%</p> <p>Reduction of CO₂</p>
<p>STARSHIP 2.0</p>  <p>17.44 Tons</p>	 <p>Modified Regional Run</p>	 <p>252,000,000</p>	 <p>65.7%</p> <p>Reduction of CO₂</p>

