

Industry

NAVIGATOR

SUSTAINABLE DEVELOPMENT
STRATEGIES FOR T&D

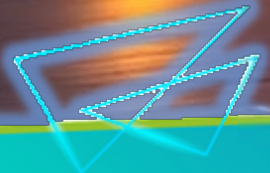
CONFERENCE 2025

The ester transformer market – trends and developments

RICHARD NEW
Managing Director, Shell MIDEL

9th April 2025

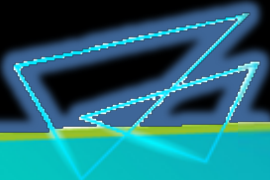
A timely reminder



Imagine your life without electricity



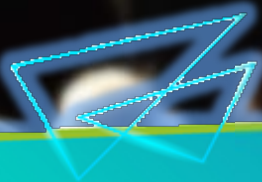
**What would you
miss most?**



What is happening in the world right now?

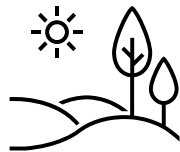
The world's population is growing by over **200,000** people a day

Source: World Population Clock Live



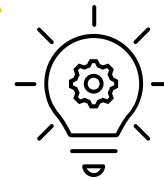
The World Energy Trilemma

Environmental sustainability
Represents the transitions of a country's energy system towards mitigating and voiding potential environmental harm and climate impact.

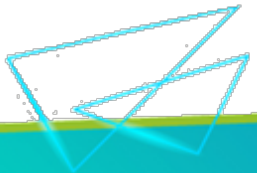


Energy Security
Reflects a nation's capacity to meet current and future energy demand reliably, withstand and bounce back swiftly from system shocks with minimal disruption to supplies.

Energy equity
Assesses a country's ability to provide universal access to affordable, fairly priced and abundant energy for domestic and commercial use.



Source: [World Energy Trilemma Report 2024](#) | [World Energy Council](#)



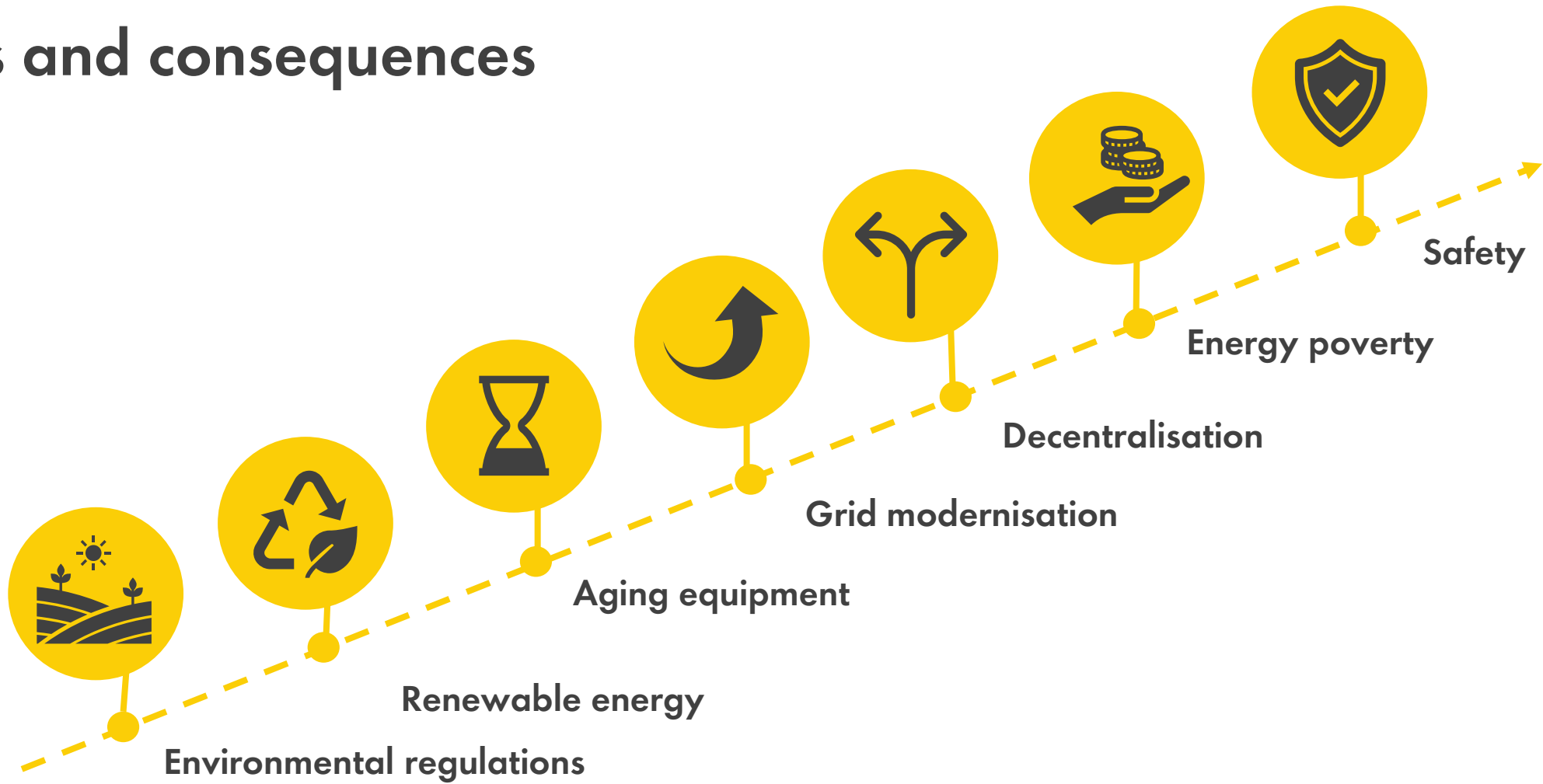
“...**grid investment** needs to nearly **double** by 2030
to over **USD600 billion per year**
...in support of **tripling global renewable capacity** and
strengthening energy security.”

“...we must **extend electricity systems resilience and flexibility**
...increase deployment of storage systems, distributed energy resources, smart
grids, digitalised demand response, PV self-consumption and promotion of
...prosumers and renewable energy communities.”



Climate, Energy and Environment Ministers'
Meeting communiqué, 30 April 2024

Trends and consequences



Increasing need for reliability and safety



Tighter environmental restrictions and controls

Cost savings



Power Sector Challenges

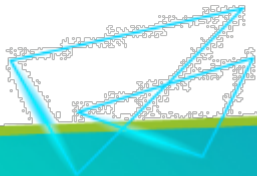


Asset life extension

Improved total ownership costs



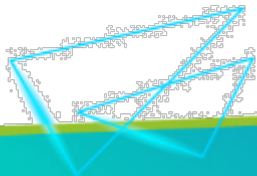
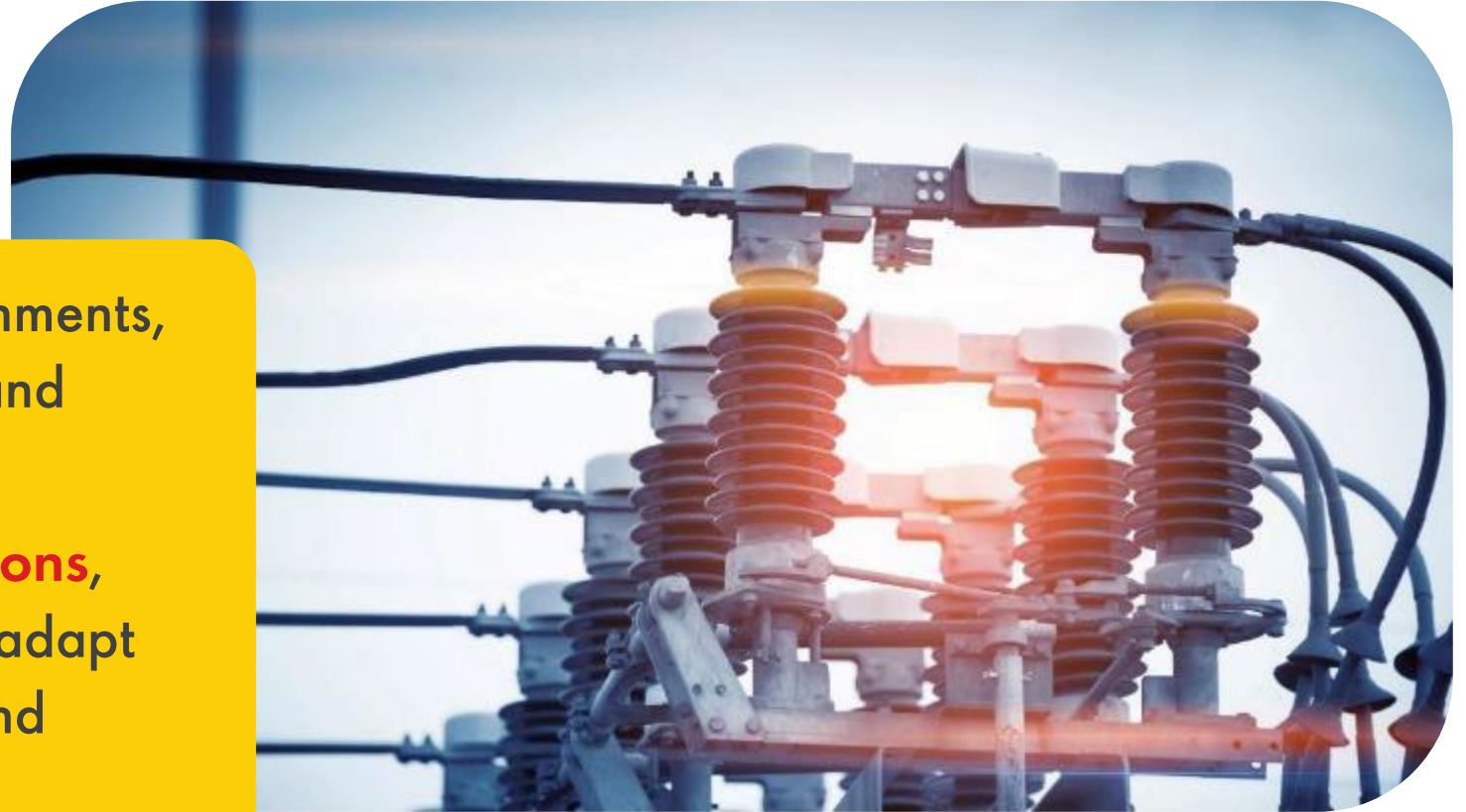
Better asset management guidance and tools



Addressing challenges requires

collaboration among ...governments, utilities, technology providers and other stakeholders

...to develop **innovative solutions**, invest in the infrastructure and adapt to evolving market dynamics and consumer preferences.



Shell's Unified Transformer Portfolio

Shell MIDEL

Synthetic and
natural ester fluids

Fire safe, biodegradable
and FM approved



Shell Diala

Gas-to-liquid (GTL)
transformer oils

Enhanced protection, longer
oil life and greater systems
efficiency



A strategic acquisition, with the ambition to grow:



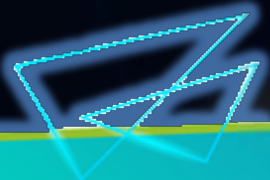
Increase synthetic ester production



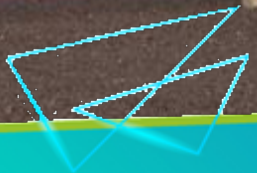
Migrated to Shell operating platform



Leverage Shell global supply-chain network



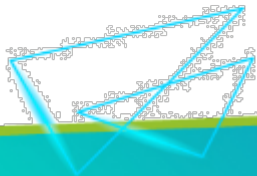
Conclusion



Tomorrow, Shell MIDEAL presents...



- James Reid, Shell MIDEAL Technical Manager
- 10th April at 10.50am
- Life Cycle Analysis project for Shell MIDEAL synthetic ester fluid that looks beyond carbon footprint.
- We will examine the project's scope, methodology, and sustainability considerations, including an update of the ISCC audit.
- We also cover a recent use case of MIDEAL Regen and a look at how Shell MIDEAL complements the Shell transformer liquids offering.



Cautionary Note

The companies in which Shell plc directly and indirectly owns investments are separate legal entities. In this content “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 content refer to entities over which Shell plc either directly or indirectly has control. The term “joint venture”, “joint operations”, “joint arrangements”, and “associates” may also be used to refer to a commercial arrangement in which Shell has a direct or indirect ownership interest with one or more parties. 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.

Forward-Looking Statements

This content 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”; “commit”; “commitment”; “could”; “estimate”; “expect”; “goals”; “intend”; “may”; “milestones”; “objectives”; “outlook”; “plan”; “probably”; “project”; “risks”; “schedule”; “seek”; “should”; “target”; “will”; “would” 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 content, 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, regional conflicts, such as the Russia-Ukraine war, and a significant cybersecurity breach; 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 content 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, 2023 (available at www.shell.com/investors/news-and-filings/sec-filings.html and www.sec.gov). These risk factors also expressly qualify all forward-looking statements contained in this content and should be considered by the reader. Each forward-looking statement speaks only as of the date of this content. 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 content.

Shell’s Net Carbon Intensity

Also, in this content we may refer to Shell’s “Net Carbon Intensity” (NCI), which includes Shell’s carbon emissions from the production of our energy products, our suppliers’ carbon emissions in supplying energy for that production and our customers’ carbon emissions associated with their use of the energy products we sell. Shell’s NCI also includes the emissions associated with the production and use of energy products produced by others which Shell purchases for resale. Shell only controls its own emissions. The use of the terms Shell’s “Net Carbon Intensity” or NCI are for convenience only and not intended to suggest these emissions are those of Shell plc or its subsidiaries.

Shell’s net-zero emissions target

Shell’s operating plan, outlook and budgets are forecasted for a ten-year period and are updated every year. They reflect the current economic environment and what we can reasonably expect to see over the next ten years. Accordingly, they reflect our Scope 1, Scope 2 and NCI targets over the next ten years. However, Shell’s operating plans cannot reflect our 2050 net-zero emissions target, as this target is currently outside our planning period. In the future, as society moves towards net-zero emissions, we expect Shell’s operating plans to reflect this movement. However, if society is not net zero in 2050, as of today, there would be significant risk that Shell may not meet this target.

Forward-Looking non-GAAP measures

This content may contain certain forward-looking non-GAAP measures such as cash capital expenditure and divestments. We are unable to provide a reconciliation of these forward-looking non-GAAP measures to the most comparable GAAP financial measures because certain information needed to reconcile those non-GAAP measures to the most comparable GAAP financial measures is dependent on future events some of which are outside the control of Shell, such as oil and gas prices, interest rates and exchange rates. Moreover, estimating such GAAP measures with the required precision necessary to provide a meaningful reconciliation is extremely difficult and could not be accomplished without unreasonable effort. Non-GAAP measures in respect of future periods which cannot be reconciled to the most comparable GAAP financial measure are calculated in a manner which is consistent with the accounting policies applied in Shell plc’s consolidated financial statements.

The contents of websites referred to in this content do not form part of this content.

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