OG21 - A New Chapter

Digitalization and innovation in the O&G industry strategy

Gunnar H. Lille, MD OG21
BRU21 Conference,
June 2, 2022
“Climate risk is finance risk”
“In the near future – and sooner than most anticipate – there will be a significant reallocation of capital”

Larry Fink, CEO BlackRock, 2020

“How Institutional Investors See the Future of Oil and Gas”
BCG Report, Jan.6, 2022
The world needs to reduce GHG emissions
The Ukraine war demonstrates the importance of energy and the trilemma challenge

Security
Affordability
Sustainability

REPowerEU: Joint European action for more affordable, secure and sustainable energy
But the future market for Norwegian natural gas still remains uncertain
The future is uncertain, but the desired state sets direction for R&D&I
Compete for O&G market shares – Need variety of new technologies

Secure future market - Decarbonize value chains

Create new industries - Contribute w/ knowledge and solutions

BRU21 Conference 2022
No silver bullet – need a variety of technologies to compete for market shares
Pursue technology through the innovation system

Technology leadership

Attract and develop talent
Fra data til innsikt

Hørt om deep learning og kunstig intelligens? Har du lest suksesshistorier hvor data science og datadrevne beslutninger har revolusjonert små og store bedrifter? Fra data til innsikt er et videreutdanningsprogram i data science for deg som er i jobb og ønsker å vite mer om hvilke muligheter og utfordringer data gir deg og din bedrift.

Vår bedrift

Videocation.no er en tjeneste som gjør det enkelt for bedrifter og medarbeidere å få tilgang til oppdatert kunnskap fra norske fageksperter.
Attract the young

Meaningful jobs

Exciting jobs

1.5°C
OG21
A new chapter

Oil and gas for the 21st century

THE BRU21 INITIATIVE

The BRU21 initiative is an MISO industry-engage
world-class multidisciplinary project, aiming for 21
innovative, sustainable and commercially viable
solutions to address challenges in the oil and gas
industry.

Another success from the initiative is the close collabora-
tion with the industry, where the students are engaged
to solve concrete challenges in real cases. This motivates
the students and provides real value in terms of
funding that the industry partners provide.

BRU21 program focuses on four main areas:

1. Digitalisation of the industry
2. Green and sustainable solutions
3. Data analytics and machine learning
4. Innovation and entrepreneurship

The program aims to create a platform where students
and industry partners can collaborate on real-world
projects that address industrial challenges.

“We regard BRU21 as an innovative and exciting model for collaboration between the industry and MISO.”

We participate in developing the next generation of petro-
leum technologies through the integration of digitalisation and
innovation in addressing critical challenges for the future.

Digitalisation is a necessary enabler in many future value creation. The field of interest ranges from
sub-surface technology to subsea-based maintenance, remote operations, future operation models and cyber security.
Through our participation in BRU21, we contribute to competence development and innovation and thus
high value creation in the future.”

Teilif Pedersen
Equator, Senior Advisor Innovation and Collaboration
Additional slides
Reducing CO$_2$-emissions through value chains important for long-term competitiveness
CCS

Blue hydrogen

Gas power w/CCS
Knowledge and solutions from petroleum – a steppingstone for new industries
<table>
<thead>
<tr>
<th>Norwegian geographic cluster</th>
<th>Norwegian geographic cluster</th>
<th>Field of industry competence</th>
<th>2019 Norwegian employment (f/employees)</th>
<th>Examples of relevant players*</th>
<th>Commodity industry relevance</th>
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<tbody>
<tr>
<td>Eastern Norway</td>
<td>Seismic</td>
<td>TGS</td>
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<td>Marine operations</td>
<td>TGS</td>
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<td>EPC, and shipyards</td>
<td>TGS</td>
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<td>Drilling</td>
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<td>South coast</td>
<td>Drilling-rig- and topside equipment</td>
<td>TGS</td>
<td>22 000</td>
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<td>Country Wide</td>
<td>Automation and digital technologies</td>
<td>AOS</td>
<td>26 000</td>
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<td>Other, ind. maintenance services</td>
<td>TGS</td>
<td>16 000</td>
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<td><img src="#" alt="Oil and gas" /></td>
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</tbody>
</table>

Many of the listed oil and gas companies perform work within several fields of competence, logos are placed based on their main activities.

![Indicative figures](#)

*Includes both capital and operational expenditures, in addition to historical exploration costs and assumed future exploration costs.

Source: Rystad Energy research and analysis, Innovasjon Norøyen, Statistics Norway, Norwegian Petroleum