

Can Oil & Gas Industry Lead the Energy Transition?



United Nations Sustainable Development Goals*



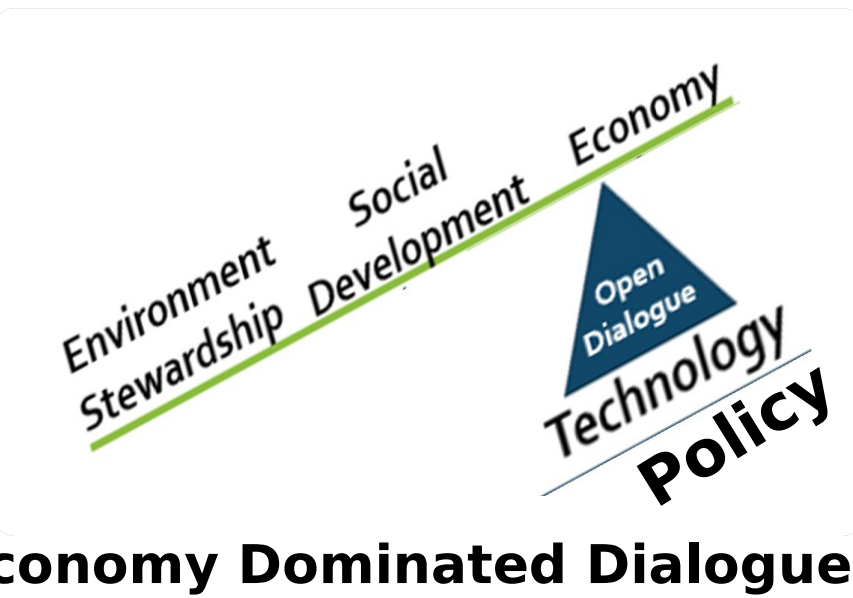
**Dr Sami Alnuaim, 2019 SPE President
Washington DC, USA, April 7, 2021**

Disclaimer

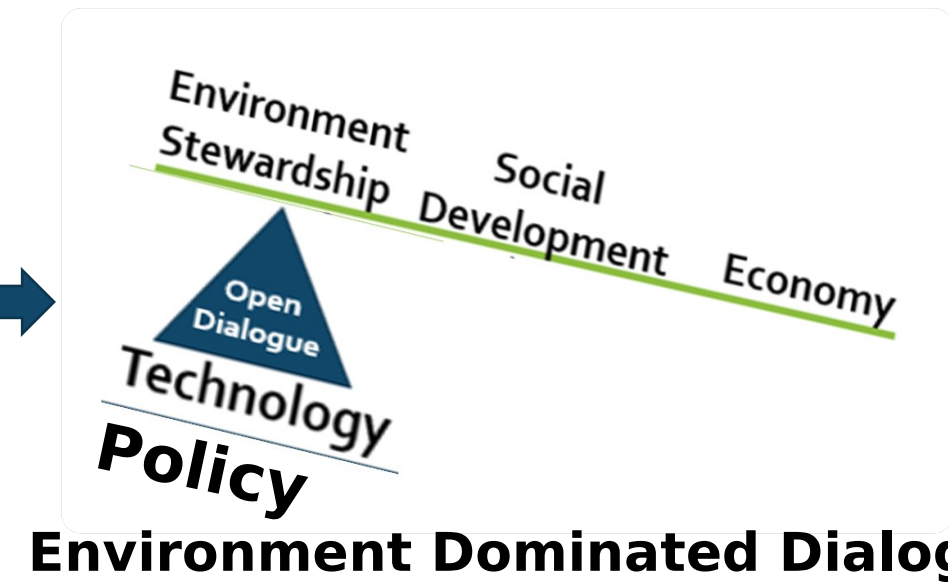


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Background: Global Energy Transition Debate



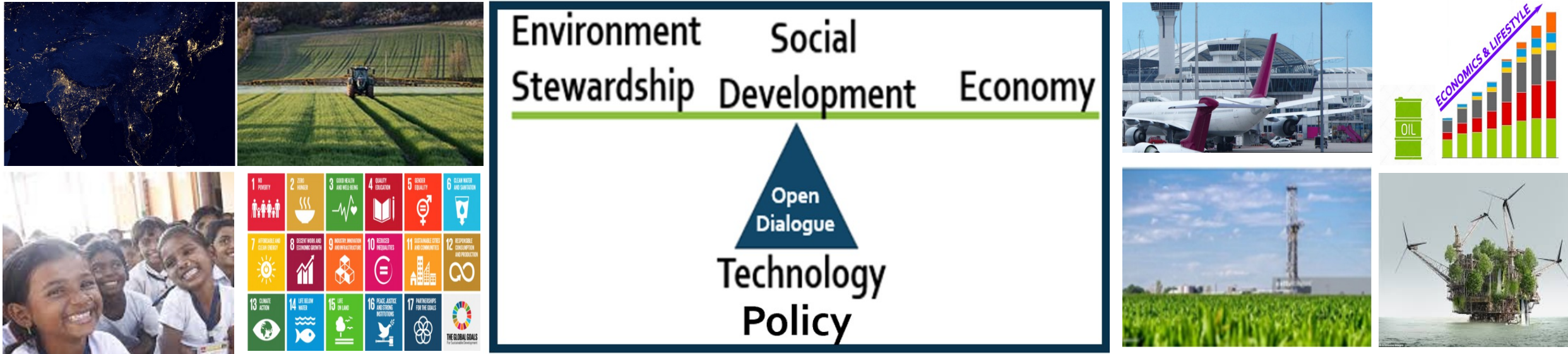
Debate



Background: Global Energy Transition Debate



The balanced energy model*



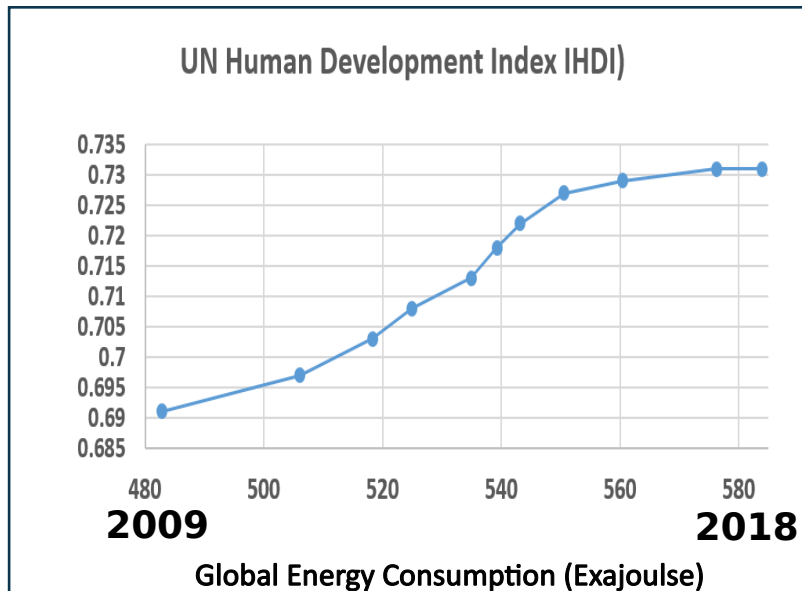
Economy & Environment Balanced Dialogue

Energy Transition Evolution*: Cleaner & more efficient O&G complemented by renewables and others, towards near zero net CO₂ & Methane emissions with positive economical, social, energy access and environmental impacts.

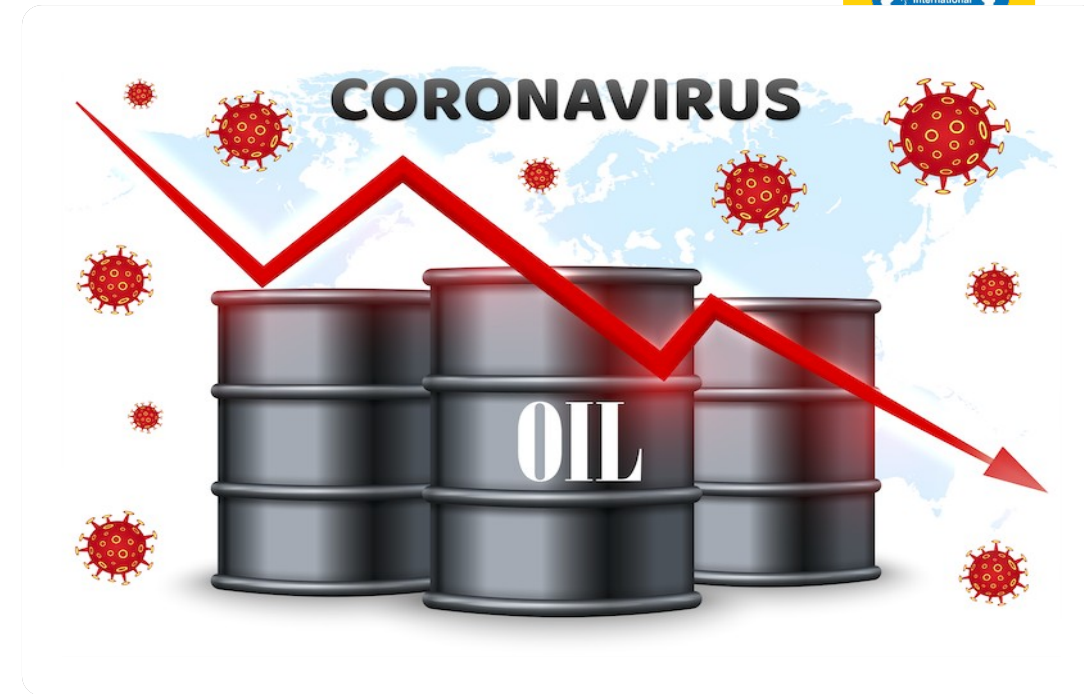
O&G Industry's Reality

Unseen Reality: Great impact on global economy, human lifestyle and prosperity with environmental and social development responsibility

+G = 55% of energy m



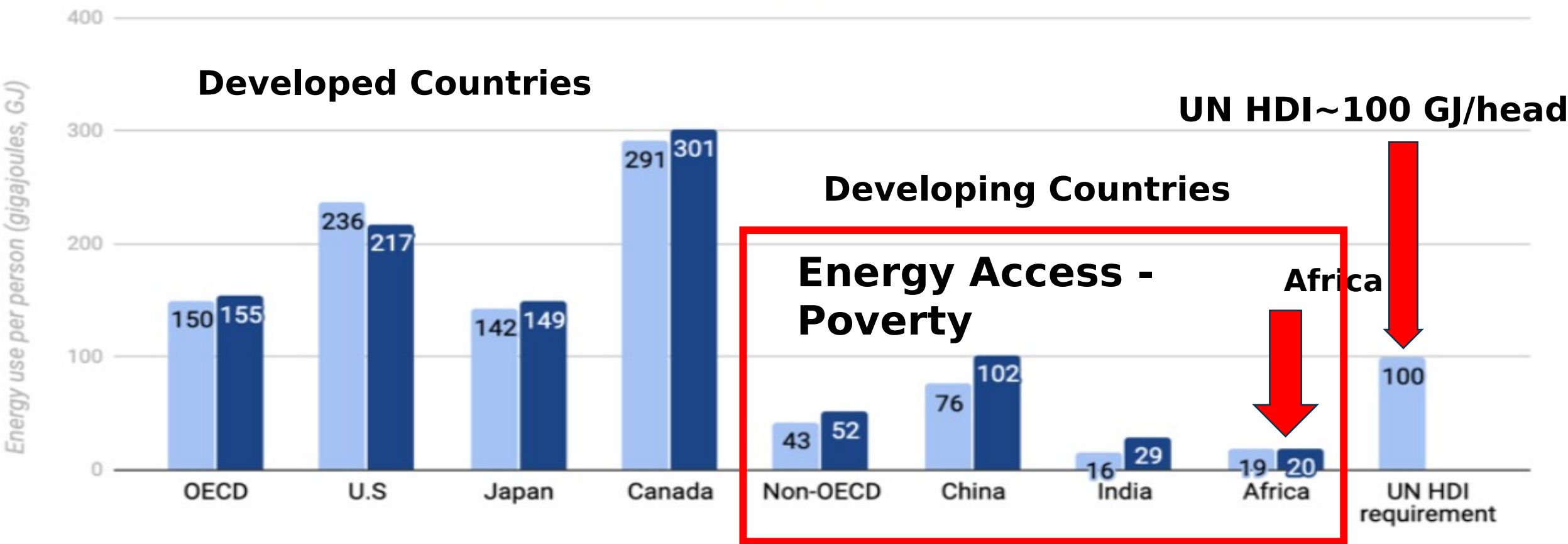
Direct Link Between Energy Use and UN SDGs & UN Human Development Index



United Nations 17 Sustainable Development Goals (SDGs)

Why Do We Need to Continue Stronger

Energy Use (Gigajoules/Person) - HDI



Why Do We Need to Continue Stronger

Energy Poverty/Access

2013 (billion people)*:

- High income (GDP**>\$11,116), 1
- Upper-middle income (GDP=\$3,596-\$11,115) 2
- Lower-middle income (GDP=\$906-\$3,595) 2
- Low income (GDP<\$905) 2.4 (**<\$2.5/day**)

2020:

- “Poverty levels could be set back 8 to 10 years”

Source: UN Development Program, the 2020 Global Multidimensional Poverty Index

- The world population has increased by 10%
- UN SDG#7, Global Energy Poverty Index = 0 by 2030!

Africa Energy Poverty



Europe

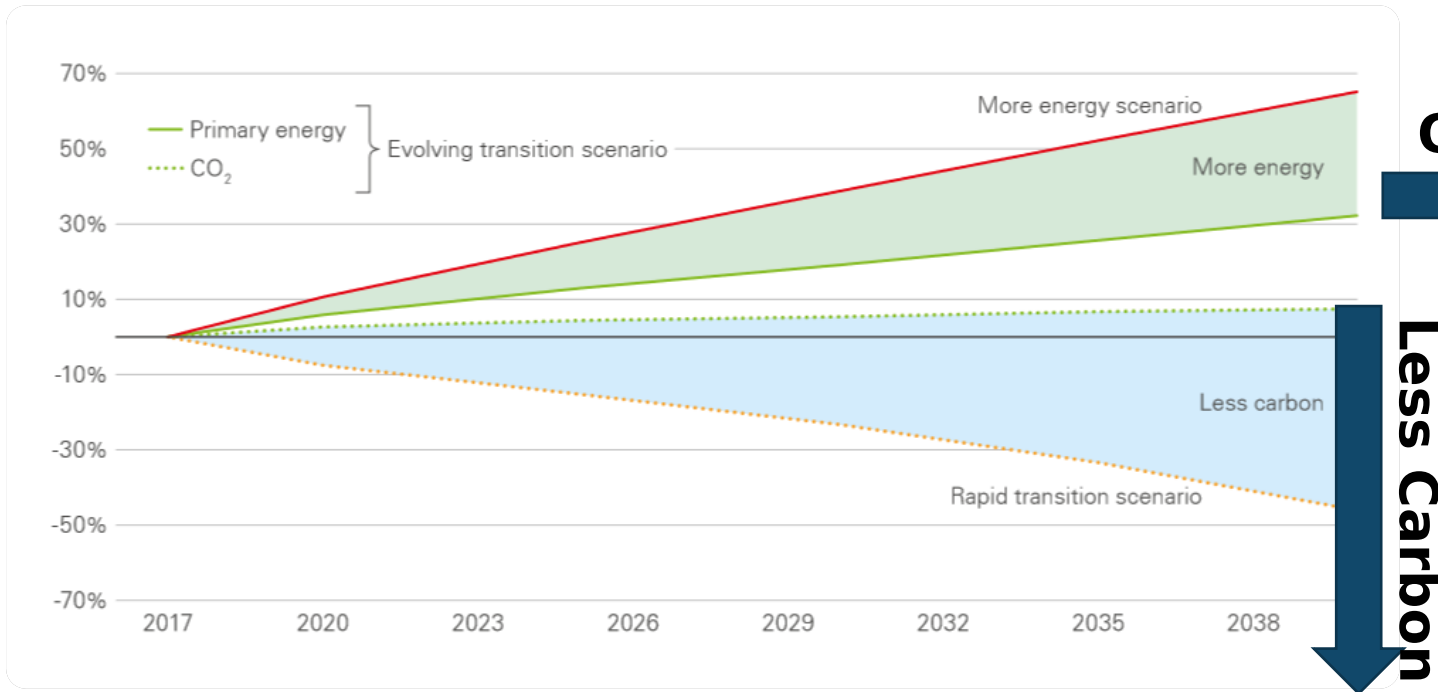
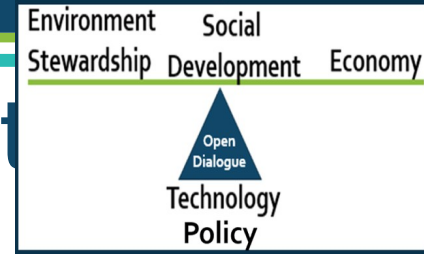


*Source: NASA



**GDP per year per capita

Oil & Gas Energy Balance – Leading Transition Energy Security

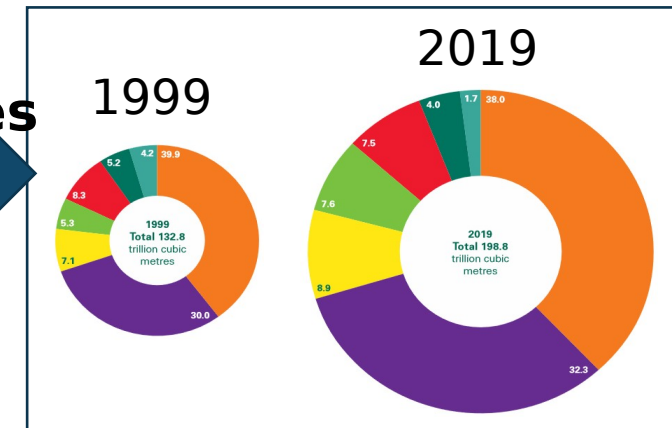


O&G Reserves

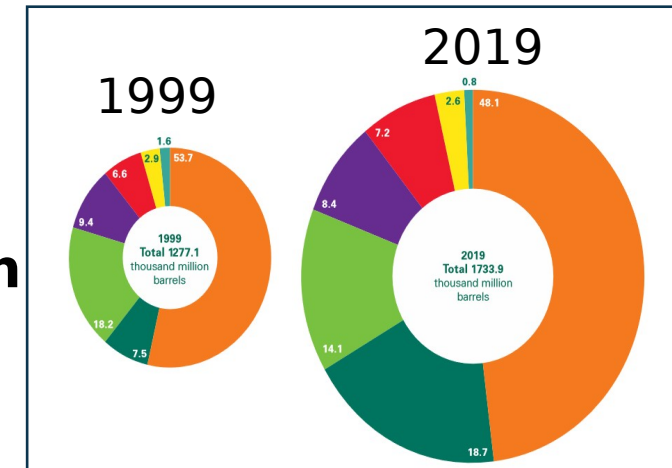
More Energy

Less Carbon

Global Gas Reserves ^50%



Global Oil Reserves ^36%



- **Gas in Power (+116% last 10 Years)**
- **Crude-to-Chemicals**
- **Methane Emission Reduction**
- **Renewables in Power**
- **Energy Efficiency & Co2 Conversion**
- **Carbon Capture & Seq.**
- **Carbon Circular Economy (E.g. KSA O&GCI Initiative)**

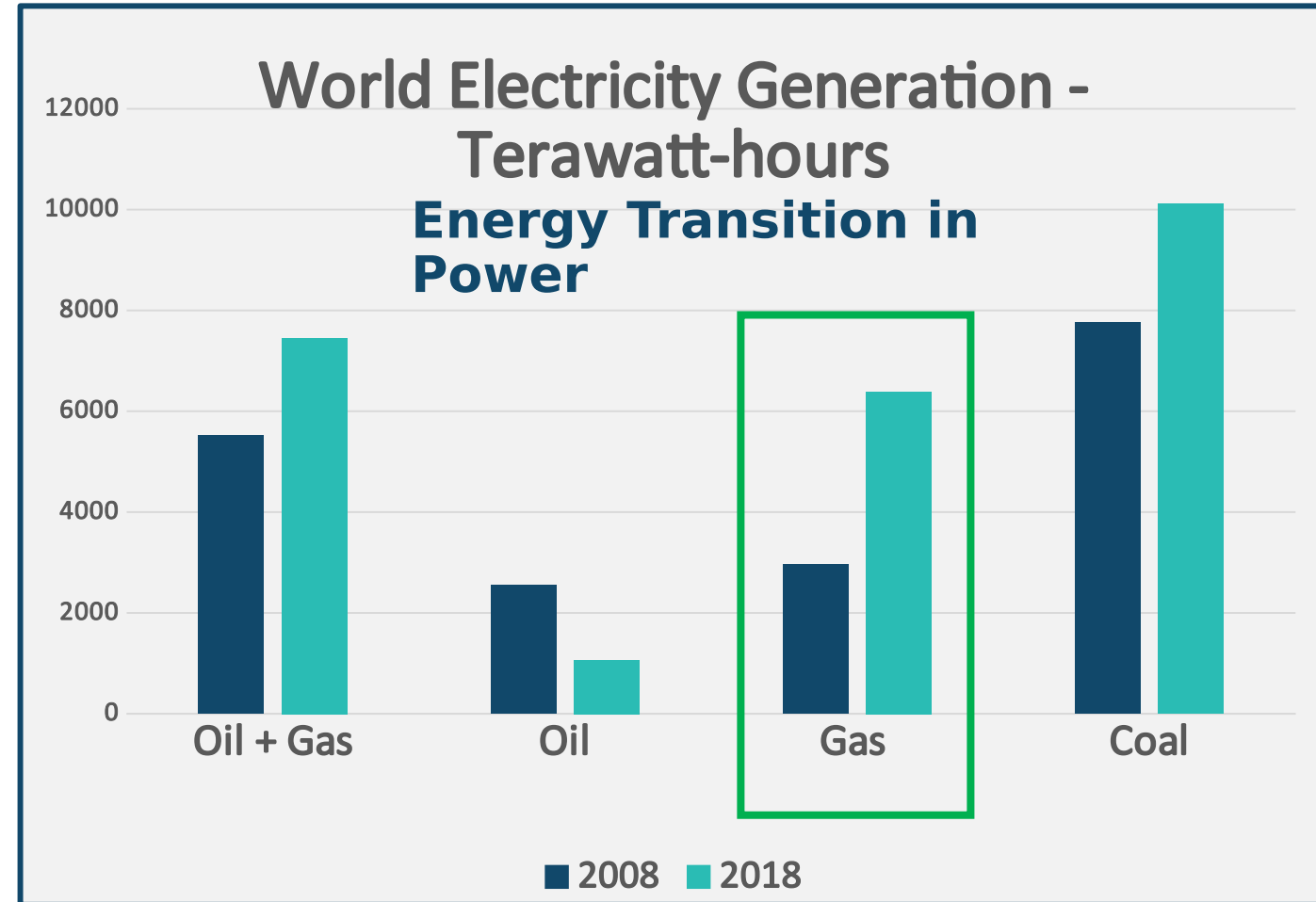
Oil & Gas Energy Balance – Leading Transition



Env. Stewardship in Power

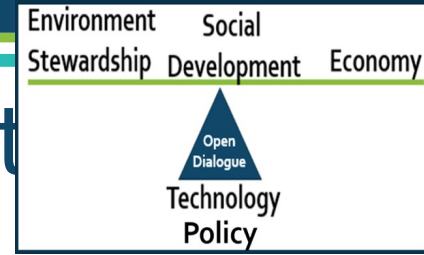
2008 - 2018:

- Oil & Gas share in the electricity generation has increased by 35%.
- Gas has increased by 116% and Oil has decreased by 58% to arrest CO2 emission.
- The significant reduction in Oil-to-Power CO2 emission has been washed by 30% increase in Coal-to-Power.



Oil & Gas Energy Balance – Leading Transition

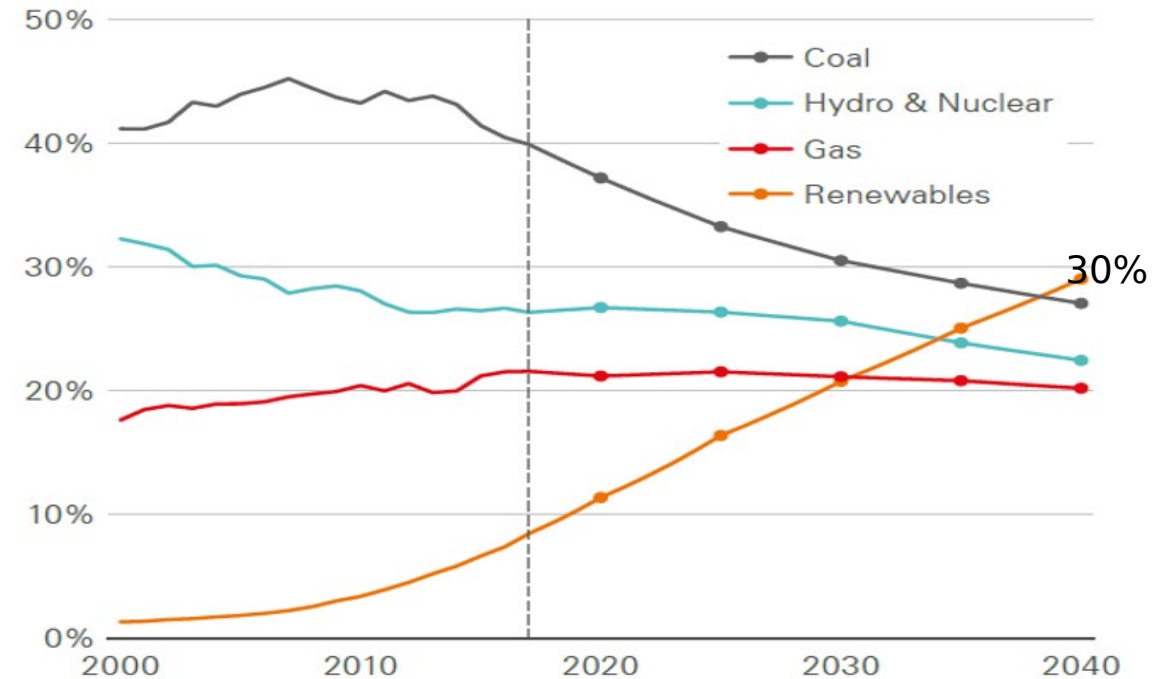
Env. Stewardship in Power



Renewables in

- IEA: 28% drop in US CO₂ emission from power generation between 2015-2017
- BP: 30% of power in 2040 from renewables (excluding hydro)
- IEA: 70% of additional power in the next 5 years from renewables
- KSA: 50% of Power from renewables by 2030

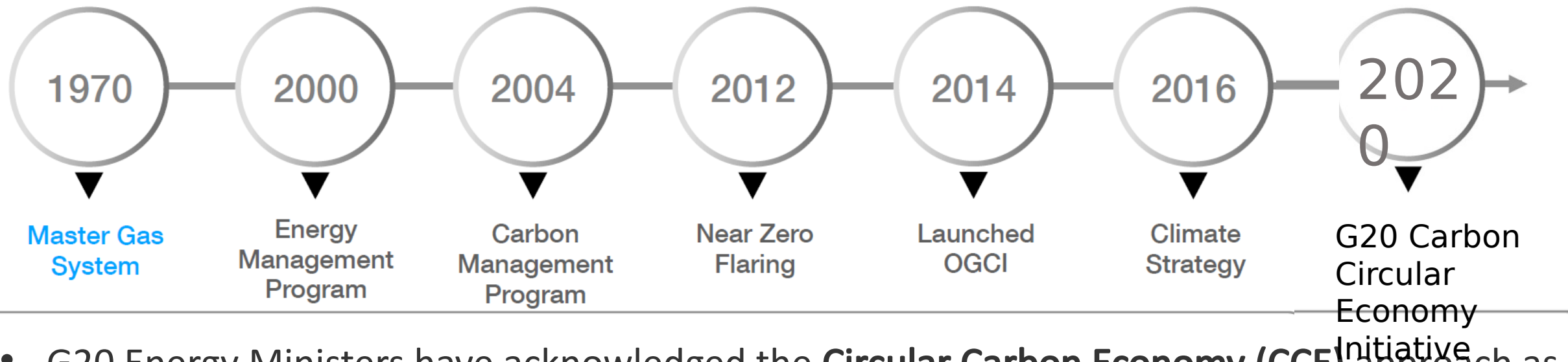
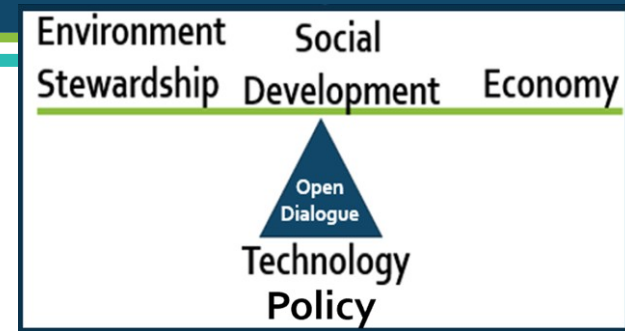
Fuel shares in power



Source: 2019 BP Energy Outlook

Can We Strike the Balance?

KSA: Decarbonization in Action



- G20 Energy Ministers have acknowledged the Circular Carbon Economy (CCE) approach as a holistic, integrated, inclusive, and pragmatic approach to managing emissions that aims to provide new pathways towards economic growth.
- **CCE 4R: Reduce, Reuse, Remove, Recycle**

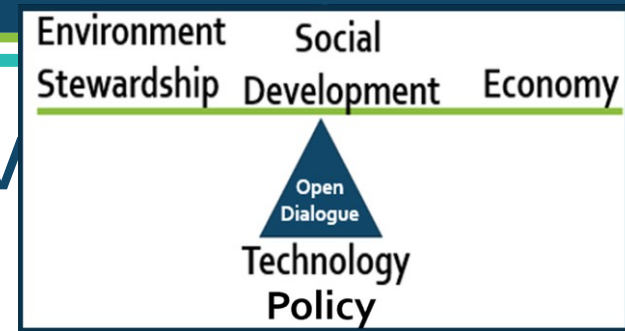
Can We Strike the Balance? KSA Initiative

Kingdome Green Initiatives – March 27, 2021

- NEOM, the Line Smart City - Zero CO2 emission city.
- KSA Energy Minister committed to carbon neutrality.
- KSA Green Initiatives – March 27, 2021 to reduce carbon emissions by 60% in the region and plant 50 billion trees in the world's biggest afforestation project.



Can We Strike the Balance? KSA Initiative Energy Policy

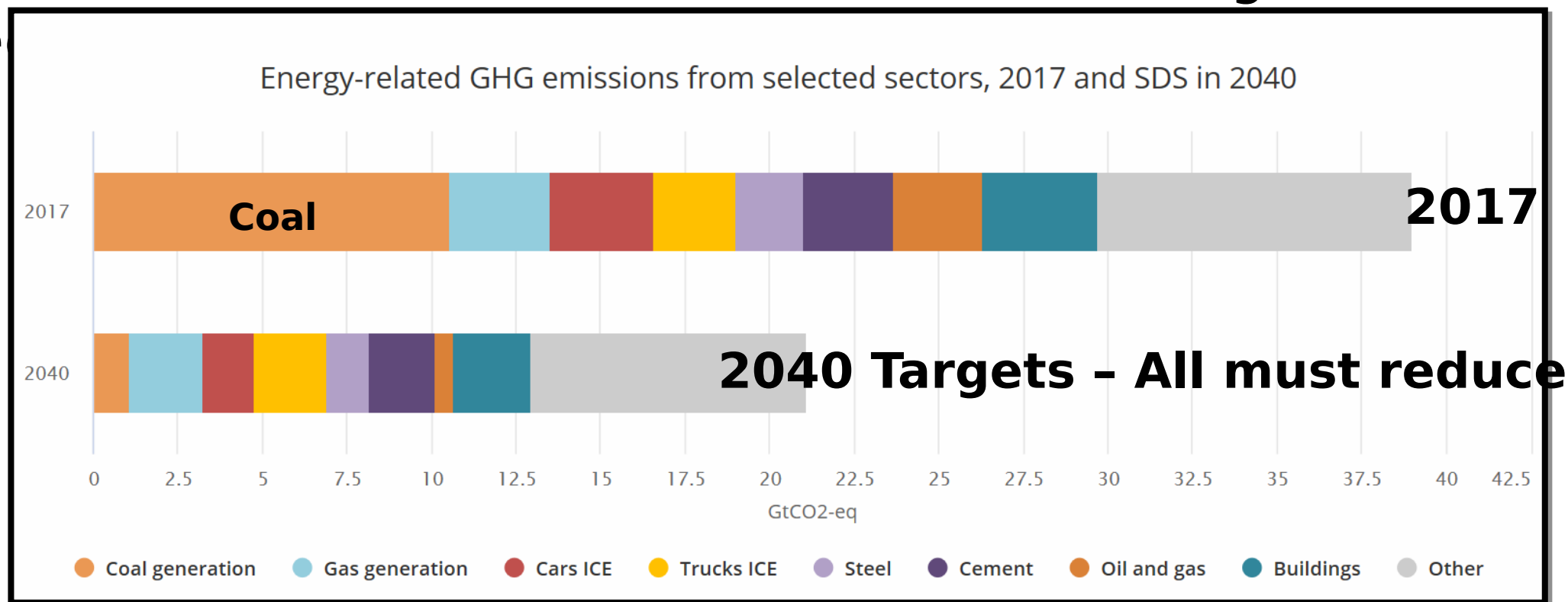


- Launched the first CO₂ Sequestration pilot project for EOR in part of the king of all onshore oil fields, Ghawar injecting more than 800,000 tons of CO₂ per year.
- Launched two reforms of fossil fuel subsidies, raising prices and reducing demand for transport fuels, electricity, and desalinated water. These reforms serve double-duty as environmental policy, since they also reduce growth in the kingdom's GHG emissions.
- Established national energy conservation program (Kafa'a)
 - Reducing energy intensity by 8%
 - Increasing Energy Efficiency in industrial, construction & transport
 - Reducing fuel consumption in passenger cars by 11%
 - Improving AC Power (consuming ~ 70% of Power) by 57%

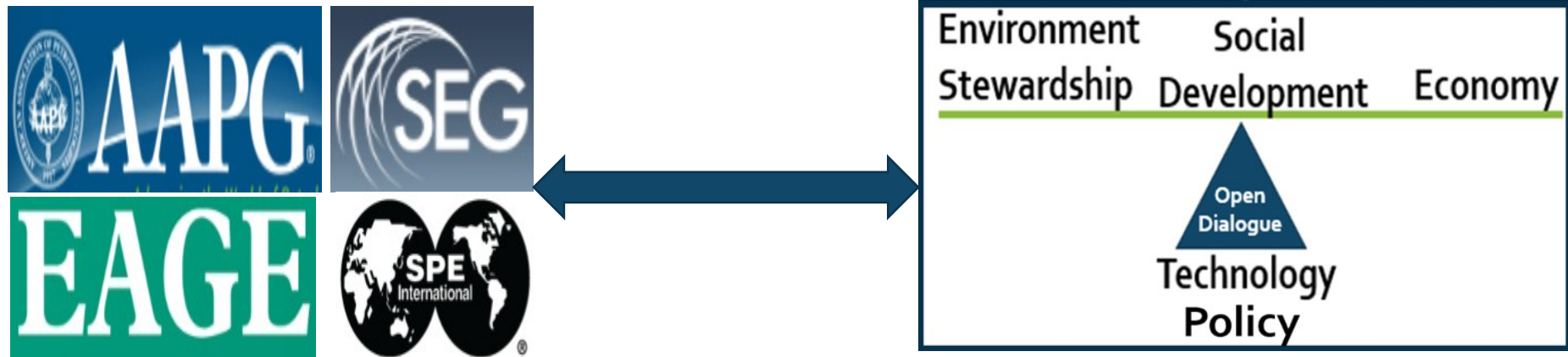


Can Oil & Gas Industry Do It Alone?

- IEA: Growth in China & India in coal-fired power generation more than offsetting the declines in coal use in US & Europe!
- Other sources of GHG are so critical to achieving Paris agree

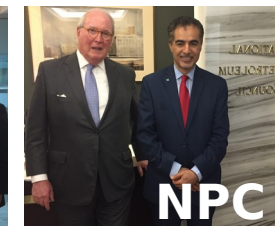
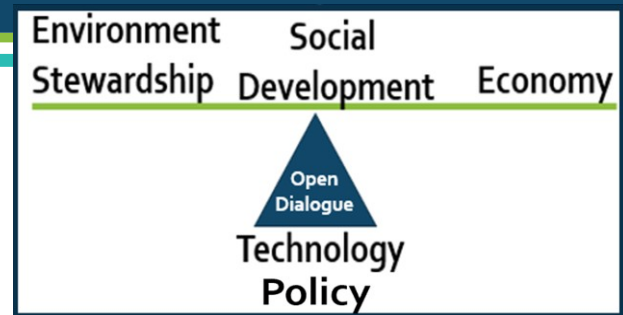


The Role of the Professional Societies

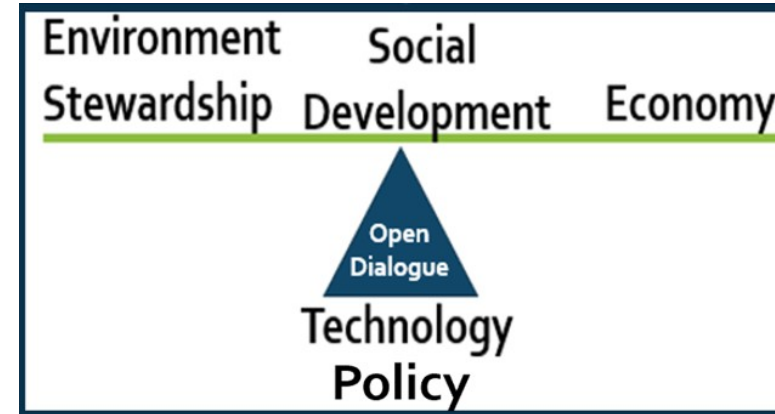


- Global outreach with more than 250,000 members.
- Presence in most of global universities teaching Geo-Science & PE.
- We in SPE:
 - Created Sustainability regional and international awards.
 - Started energy debates and summits series (Bahrain 2019, DC 2021, ...).
 - Launched a global campaign to collaborate and engage with all parties.

Leading - Increase External Stakeholders' Engagement

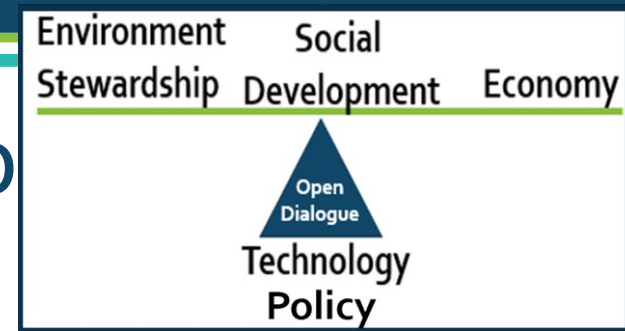


The Role of the Professional Societies

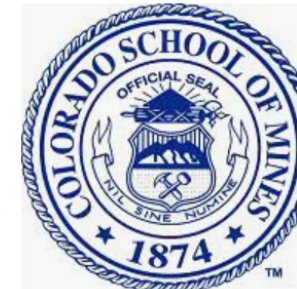
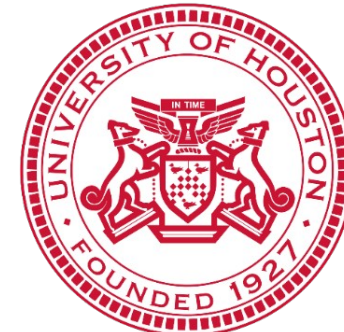


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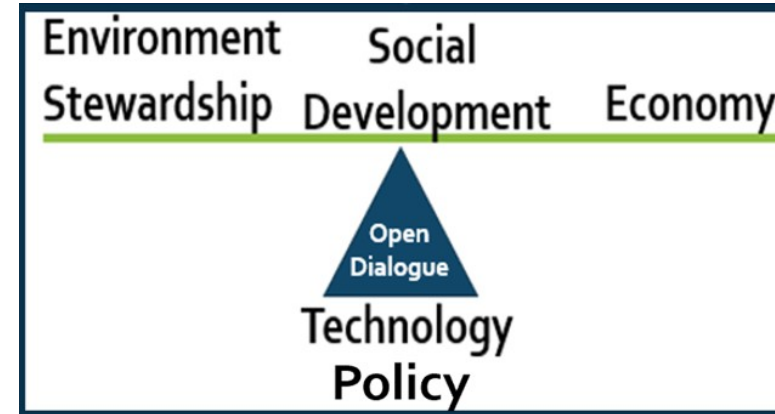
Leading - Increase Academic Collaboration Engage & Collaborate with Several Universities



- SPE Sustainability Promotion in Academia includes:
 - U of Houston Carbon Management Initiative
 - U of Houston Social Responsibility Initiative
 - U of Texas Water Management Initiative
 - U of Texas Sustainability Human Behavior Initiative
 - U of Texas Sustainability Quantification Initiative
 - KFUPM Prince Abdul-Aziz Bin Salman Energy Sustainability Research Center Proposal*
 - Introducing the Concept of **Citizen Engineer**
 - Adding Sustainability to ABET Accreditation Requirements



The Role of the Professional Societies



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 - Increased Sustainability academic research, culture & engagement.
 - Jointly with other societies and organizations, created global Sustainability engagement platform (GAIA).

The GAIA – Energy Sustainability Platform



GAIA Stakeholders:

- SPE
- OGCI
- IOGP
- IPEICA
- OTC
- WPC
- IADC
- AAPG
- SEG
- EAGE
- Several IOCs
- Several NOCs
- Several ISCs
- Several Academia

• Mobilize the Oil and Gas industry

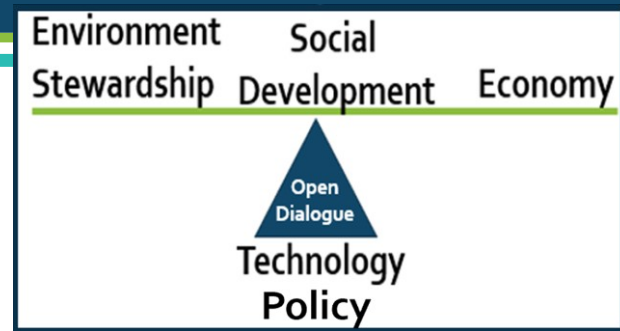
Aggregate all efforts and impacts

Engage all internal & external stakeholders

Collaborate with all stakeholders including Academia, GOs, NGOs, Public and Media



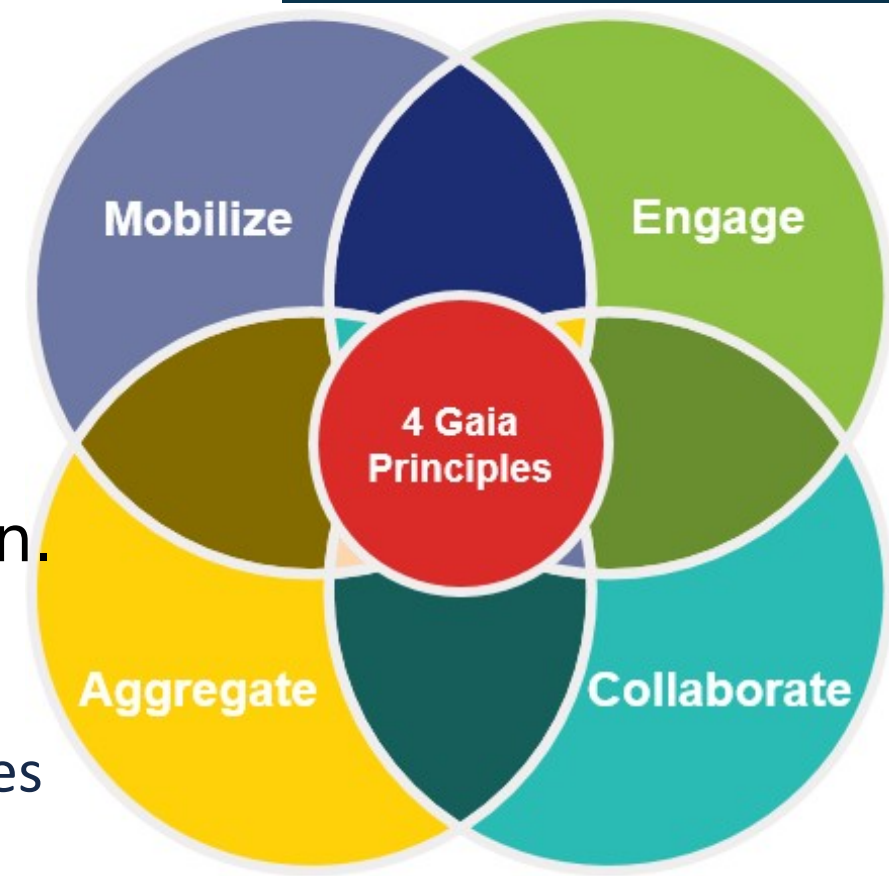
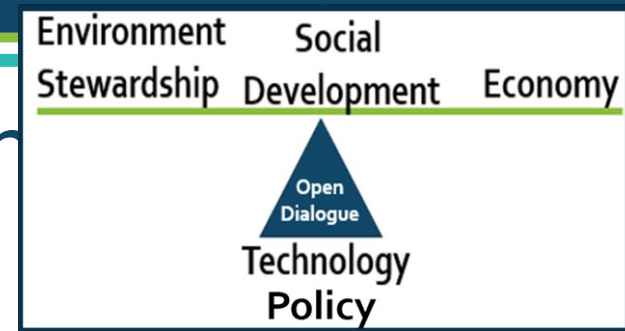
How Do We Move Forward?



- Pathway** **Execution:** Ensure swift and decisive mobilization, aggregation, engagement and collaboration?
- Pathway** **Internal Industry Collaboration:** Ensure collaboration that is consistent with the scale and urgency of the challenges.
- Pathway** **External Collaboration:** Co-create with key stakeholders? Academia, Activists, GOs, NGOs & Policy Makers etc.
- Pathway** **Innovation:** Leverage innovation and our best brainpower in service of sustainable socio-economic development that is within planetary boundaries.
- Pathway** **Measuring what Matters:** Prioritize and measure what matters most in supporting OUR own operations, commercial and R&D decisions as well as those of our stakeholder's.
- Pathway** **Listening and Communication:** Earn trust through technical knowledge and confidence building behaviors.

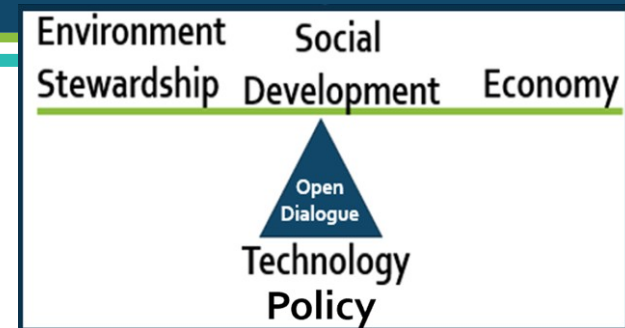
GAIA Snowball is Rolling – Keep-up Mom

- **Build** Sustainability fluency and foster urgency among SPE members.
- **Mobilize** our professional ecosystem to knowledge share, learn and engage.
- **Help** the industry transform to align with sustainable development goals.
- **Help** industry professionals upskills to find role in contributing to the energy transition evolution.
- **Expand** the dialogue beyond Carbon to include all 17 SDGs.
- **Foster** the ecosystem of bottom-up innovations and practices as manifest in SPE events papers, OnePetro, White Papers etc



The Energy Balanced and Transition Model*

Can we do it together?



Energy Mix

Results

Cleaner Oil & Gas



+

Carbon & Plastic Circular Economy



+

Renewables

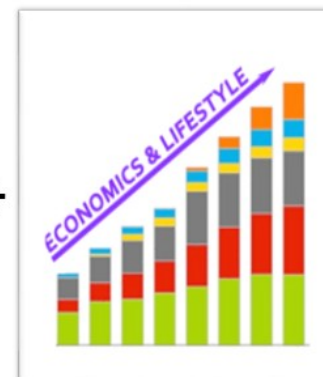


Meeting all UN 17
SDGs



+

Supporting
Global Economy



=



+



+



Protect the
Planet

Enrich Social
Development

Reduce Global
Energy Poverty

Near Zero Net CO2 & Methane Emissions

GHG Neutral Industry by 2050!

* Dr Alnuaim, SPE 2019 President

