

WORLD PETROLEUM COUNCIL

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**RESPONSIBILITY
COOPERATION
SUSTAINABILITY**



World
Petroleum
Council



LEADERSHIP CONFERENCE

THE 2ND WPC LEADERSHIP CONFERENCE

**18 - 20 FEBRUARY 2019
MUMBAI**

SUMMARY REPORT

A global conference on industry leadership in responsible operations, international co-operation and sustainable solutions for the petroleum sector.

Programme Details

Welcome Address

Energy Transition - The Changing Role of the Oil and Gas Industry

With world population due to reach nearly 10 billion people by 2050, the need for energy has never been greater. How this energy is produced and used is pivotal in reducing the global carbon footprint. Anticipating and responding to global developments is leading to a transformation of oil and gas companies into energy businesses, who put sustainability at the top of their agenda. What are the key scenarios and how can industry meet the expectations from their stakeholders, including local communities, finance and shareholders?

CEO Panel / Round Table: Leadership Perspectives - Making Energy Access for All a Reality

One of the greatest challenges of our time is to provide safe, reliable, affordable and modern energy to a growing population. How can we do that in a sustainable way? As we are going through the energy transition, how can governments and businesses cooperate to achieve this goal? What is the industry's role and contribution to achieving the Sustainable Development Goals (SDGs)? What impact will pricing have on achieving these objectives?

Cleaner Fuels - Innovative Technologies for Safe and Clean Downstream Operations

- Refineries / petro-chemicals
- Biofuels
- Natural gas as a cleaner fuel option (CNG / LNG)
- IMO / sulphur reduction

Managing Stakeholder Expectations

- Implementing sustainability policies in industry operations
- Impact of banks and insurance provider guidelines and indices
- Building bridges - initiatives between industry and stakeholders
- Good governance and reporting mechanisms

Energy Transitional Challenges in the Wake of Growing Energy Demand in India

The upcoming energy transition is driven more by serious environmental and climate change concerns. For the developing countries, it will be a challenge to balance between economic development and a sustainable future.

Increasing Safety, Environmental Protection and Energy Efficiency: Impact of Digitalization

- Driving the next generation of secure, consistent and innovative technologies to make a more sustainable business
- Using emerging technologies to rapidly bring down costs, make operations safer, and lower the carbon footprint

Best Practices in Engaging Energy Poverty and Local Communities

What can companies do to make a difference? How can they apply their expertise, facilities, supply chain, social responsibility policies and other resources to best effect when dealing with local communities and their needs?

Demonstrating best practices for strategies and new technologies to provide access to energy and clean cooking solutions, and creating effective social responsibility projects through local initiatives, industry experts share practical case studies of their experiences in getting a social license to operate.

Interactive Closing Keynote Panel: "Taking the Next Step - What Way Forward for Sustainability in Oil & Gas?"

- Role of oil and gas in creating sustainable solutions
- Future impact on refining and petrochemical sector
- Sustainable Development Goals (SDGs)
- Strengthening industry collaboration and Creating partnerships with other stakeholders

2nd WPC Leadership Conference

Mumbai: 18 – 20 February 2019

Conference Report

Federation of Indian Petroleum Industry (FIPI) joined hands with the World Petroleum Council (WPC) to organize the second edition of WPC leadership conference from 18 – 20 February, 2019 in Mumbai, India. The WPC Leadership Conference is a global conference on industry leadership in responsible operations, international cooperation and sustainable solutions for the petroleum sector. Recent edition of the conference was even more important in the Indian context because India, one of the major demand centers for energy, has a large growing population with increasing appetite for energy and is faced with serious concerns regarding air quality and climate change. The key themes of the conference were Engaging Energy Poverty, Energy Transitions and Industry Responses to Climate Change. The conference was attended by major stakeholders from the Indian and International Oil and Gas industry, including industry leaders, experts and academia.

The two-day conference commenced with the welcome remark and setting of context by Mr. Tor Fjæran, President, World Petroleum Council and Dr. R. K. Malhotra, Director General, Federation of Indian Petroleum Industry (FIPI). Mr Fjæran underlined the rising concerns due to air quality and climate change and emphasized that the efforts of the industry will be fruitful only through collaboration, dialogue and sharing of best practices. Dr Malhotra pointed out that as the world approaches energy transition, access to energy sources at an affordable price will be of paramount importance. The first session of the conference 'Energy Transitions – The Changing Role of the Oil & Gas Industry' was chaired by Dr Sun Xiansheng, Secretary General, International Energy Forum (IEF). During the discussion, it was well established that the energy transition has already been put in motion by ground breaking developments in the industry like Electric Vehicles (EVs), emergence of renewables and digitalization. In the future, the energy transition will be driven by three major factors – efficiency, innovation and digitalization. Going forward, bringing clean energy access to even the most under privileged will be the main focus for the entire energy industry. In this direction, the success of Government of India's Pradhan Mantri Ujjwala Yojana (PMUY) scheme, that made clean cooking fuel in the form of LPG cylinders available to more than 60 million under privileged households, drew wide spread appreciation. The panelists agreed that faced with the energy transition, the Oil & Gas industry will have to shoulder a responsibility more important than ever before to ensure a smooth transition to a sustainable future.

The next session, 'Leadership Perspectives: Making Energy Access for All a Reality' was moderated by Dr R K Malhotra. During the session, it was discussed that over 3 billion people around the world still do not have access to clean cooking fuels. While shifting towards a sustainable future, it will be the responsibility of energy companies to make clean fuel available to all. It was realized that a coordinated effort from the Government, companies, investors, international organizations and the civil society is crucial for an inclusive growth. Going forward, Governments around the world will play a crucial role in the transition by creating a supportive policy ecosystem and by being more adoptive towards the new disruptive technologies. In India, the cost of renewables has been on a constant decline and has now started posing a challenge to the dominating position enjoyed by coal in the country's energy mix. Towards making clean fuel accessible to all in the country, Natural gas could play a significant role. While natural gas in power generation can be integrated with renewable to balance the grid, a shift to piped natural gas in the urban parts of the country can make more LPG cylinders available for the hinterlands. It was realized that to make energy accessible to all a reality, scope and scale that will drive affordability, digitalization and digital platforms will drive efficiency and the focus of the industry will change to customer experience.

The next session at the conference was 'Managing Stakeholder Expectation' and was moderated by Mr Rajiv Bahl, Director (Finance, Taxation and Legal), Federation of Indian Petroleum Industry (FIPI). Most Oil & Gas companies have now started moving well beyond compliance and are now embracing corporate governance goals. It was mentioned that the industry is today expected to not only generate returns but also to care for the environment and the society. In India, the Oil & Gas companies are not just trying to be responsible in their daily operations by neutralizing any environmental or societal impact but also supporting Government's welfare initiatives.

The session 'Cleaner Fuels - Innovative Technologies for safe and clean downstream operations' was moderated by Mr. Pedro Miras Salamanca, Chairman, CORES, Spain and Vice President, WPC. The session discussed the latest developments and the innovative technologies in refining, petrochemicals and biofuels industry. During the discussion, it was underlined that responsible and wise use of carbon is important. It was mentioned that to adhere to the new fuel BS – VI fuel standards, which are to come in effect from April 2020 nationwide, Indian refiners have already invested over USD 4 billion in up-gradation of refineries. Further, it was pointed out that India needs to reduce its dependence on imported fossil fuels and should explore domestic sources of energy. It was also mentioned that India wastes a large part of agricultural and food wastes that could potentially be used as a fuel. In this regard, CSIR IIP has started various initiatives to produce usable fuels from food and agricultural wastes, which will not require Government subsidy and could easily be scaled up and deployed at a national level.

The last session of the first day was 'Energy Transition Challenges in the wake of growing energy demand in India'. The session was moderated by Dr. Sun Xiansheng, Secretary General, International Energy Forum (IEF). The session discussed that India is one of the largest consumers of energy in the world and the country's dependence on fossil fuels is only going to increase in the foreseeable future. At this stage of energy transition, developing countries like India are faced with the challenge of striking a delicate balance between economic development and environmental sensitivity. It was underlined that to ensure a smooth transition, India should reduce its dependency on import of fossil fuels and make better use of renewables and technologies such as carbon capture and storage (CCS). To promote domestic production of Oil & Gas, the Government has introduced a flurry of new policies in the upstream sector. To further support exploration in the country, the Government should encourage E&P activities in the unexplored basins.

The second day of WPC leadership conference started with the session 'Increasing safety, environmental protection and energy efficiency: Impact of Digitalization'. The session was moderated by Mr. Kjell – Einar Eriksson, Vice President Digital Partnering, DNV GL - Oil & Gas, Norway. At the session, it was mentioned that digitalization has not only metamorphosed the operations in the Oil & Gas industry but has also made them safe. Mr Sengupta underlined energy transition, price volatility and increased complexities as the three major drivers in bringing the digital transformation in the energy sector. It was opined that the major challenge to digitalization in India are high initial investment and an aging work force.

The following session, 'Best Practices in engaging energy poverty and local communities' was moderated by Dr. Pierce Riemer, Director General, World Petroleum Council and Chair, Energy Access Platform. The session discussed that the three pillars to alleviate energy poverty are Advocacy, Operations and Partnership. It is important that any strategy in this direction is firmly supported by Government policy. On the Government's part, it is necessary to ensure that all structural barriers hindering new investments in the sector are removed. Further, it was realized that there is an urgent need for the Oil & Gas industry to build a favorable narrative and apprise the common people about the benefits of the industry. It was pointed out that, in India, oil marketing companies, due to their high penetration in the rural sector, are also considering to extend support to various social welfare projects.

The last session of the conference was an interactive session on "Taking the next step - what way forward for sustainability in Oil & Gas?'. The interactive session moderated by Mr. Sven Mollekleiv, Senior Vice President and Head of Corporate Social Responsibility, DNV GL and Honorary President, Norwegian Red Cross, Norway emphasized that to ensure affordable energy access to all and a smooth transition towards a sustainable future, it is imperative that all stakeholders i.e. Government, industry and society must remove the trust deficit and work together. To reduce the impact of Oil & Gas operations on the environment, the industry needs to invest in fine tuning technologies like carbon capture and storage and in

neutralizing the impact of their operations on the local ecosystem. Further, it is important that the Oil & Gas industry breaks away from its long-standing impression as a polluting industry and needs to create a favourable narrative, highlighting its benefits, to attract more youth to the industry.

The Second edition of the WPC leadership Conference brought industry leaders from the international Oil & Gas industry, experts and the youth under one roof to deliberate about the upcoming energy transition and the industry's preparedness towards it. This transition, unlike all previous energy transitions, is driven more by the very fundamental concerns over air quality and climate change and not by the emergence of a new fuel. During the course of the discussions, it was realized that for a sustainable future, affordable energy access for all will remain the central focus while the key levers in this transition will be energy efficiency, digitalization and acceptance towards disruptive technologies. It was realized that for a smooth transition towards a cleaner future, natural gas and renewables will have play a key role in the India's energy mix. In this direction, various initiatives and policy measures taken by the Indian Government like adoption of BS-VI standards, Ujjwala scheme and interventions in the upstream space attracted wide spread appreciation. During the discourse it was underlined that in a sustainable future, the Oil & Gas company will have to shoulder a responsibility much beyond generating returns and will have to engage with the local communities for an over-all socio-economic development. The petroleum companies, to ensure their place on the right side of the history, will not just have to be a stakeholder in the upcoming energy transition but will also have to be a vanguard in this major paradigm shift. The details of the sessions in the conference are mentioned in the below section.

Welcome Address



Mr. Tor Fjæran
President, World
Petroleum Council



Dr. R. K. Malhotra
Director General,
Federation of Indian
Petroleum Industry
(FIPI)

Mr. Tor Fjæran

- The world energy demand is on a constant rise. This is more pertinent in case of South East Asia, where China and India have emerged as one of the largest consumers of energy over the last few years
- Change in energy demand in India will be even more than China over the next couple of decades
- Over the last few years, air quality and global warming has posed a serious threat to the world. The recent edition of World Economic Forum was a wake-up call for all to be on the right side of the history
- The Oil & Gas sector is aware of the high carbon foot print of the industry and is working towards creating sustainable solutions through reducing emission and increasing efficiency
- As the industry grows, all stakeholders also need to remind themselves to contribute towards UN sustainability growth by bringing energy access to all at affordable prices
- World Petroleum Council (WPC) believes that only through dialogue and sharing of best practices, industry participants can benefit in their efforts for a sustainable future

Dr. R K Malhotra

- World economy expected to almost double over the next 20 years, with growth averaging 3.4% p.a. World's population projected to increase by 1.5 billion people to reach nearly 8.8 billion people by 2035
- With the developing world growing faster and countries aiming for double-digit Gross Domestic Product (GDP) growth, the role of energy in economic growth is taking centre stage
- Over 80% of the expansion in world output is driven by emerging economies, with China and India accounting for over half of that expansion
- Around 70 percent of the world's growing demand for energy has been met by oil, natural gas and coal, with renewables accounting for the rest. This also meant an increase in global energy-related carbon dioxide (CO₂) emissions. In 2016 United Nations shared 17 sustainable Development Goals (SDG) of which Energy is a key feature. Goal number 7 of the SDGs aims to correct this enormous imbalance by ensuring everyone has access to affordable, reliable, and modern energy services by the year 2030
- To expand energy access, it is crucial to enhance sustainability and energy efficiency. The Oil & Gas Industry

Energy Transitions – The Changing Role of the Oil & Gas Industry

Session Chair



Dr Sun Xiansheng
Secretary General,
International Energy
Forum (IEF)



**Dr Abhishek
Deshpande**
Head Global Oil Market
Research and Strategy,
J.P. Morgan, USA

Dr Sun Xiansheng

- Environmental concerns and climate change has forced the Governments and Oil & Gas Companies from around the world to revisit their strategies and diversify their portfolios
- An increasing number of energy companies around the world are now focusing on reducing emissions and heavily investing in renewable sources of energy

Dr. Abhishek Deshpande

- Last few years have witnessed a spectacular rise in Oil & Gas demand coming from both OECD and Non-OECD countries. The demand in OECD countries was mainly driven by the energy demand from US
- The international oil prices have seen a downward trend mainly due to two main reasons – firstly its correlation with risky assets and secondly because smart capital is getting out of the market due to lack of investor confidence
- Even in the face of falling oil prices, countries like the US, Libya and Russia have flooded the oil market, Market will balance only if OPEC+ commits to the decided production cuts
- In the later part of 2018, both OPEC and Non-OPEC countries have successfully stuck to the decision of production cuts. Presently, compliance from Russia is low but is expected to increase towards the end of this year
- Contribution to the world oil market from Angola (where productions are not rising), Iran and Venezuela (due to political challenges) has fallen significantly in the previous year
- The US has established itself as a major player in the world energy market in 2018. As the oil prices reach in the range of USD 60 – 65, many producers in the US will be in a position to start new operations. However, factors such as lack of capital discipline and infrastructure might pose a significant challenge for these new projects
- In 2018, the US economy witnessed a slowdown in growth and even the productivity gains have also not increased as per expectations. Economic growth in the US will further slow down significantly in next two years and there is an impending risk of a recession in the US market in 2020
- In 2019 and further, the performance of the world economy will heavily depend on the success of US, China talks and their trade policies



Ms. Linda Padon
General Manager –
Policy, Government and
Public Affairs
Chevron

Ms. Linda Padon

- In the recent years' climate change has been extremely evident and human activities have contributed towards it. There will be an energy transition in the long term through a continuous process of efficiency
- Any new transition will have to acknowledge the new realities of the world. Though transition is happening in various regions but a global transition will take time due to its inherent complexities
- The world needs to spend USD 28 trillion to ensure energy availability to all. The future of energy will be shaped by the demand for energy and a need for cleaner environment. Any new source of energy has to be both reliable and cost effective
- Chevron has joined the Oil & Gas climate change Initiative and has contributed USD 100 million towards it. The company has also launched the Future Energy Fund to support the ongoing energy transition
- Whenever the energy transition takes place, Chevron will be a major contributor towards it. Chevron believes that dialogue, debate and inclusive thinking will be imperative for a smoother transition



Dr. S S V Ramakumar
Director (R&D) Indian
Oil Corporation Ltd

Dr. S S V Ramakumar

- India has reduced the growth rate of carbon dioxide emissions over the last few years from 4.9% in 2015-16 to 3.8% in 2016-17. This has been made possible by the progressive new policies introduced by the Government
- India is on course to meet its INDC targets by reducing emissions and promoting renewables in a big way
- Matured carbon emission technology in combination with renewable sources such as wind and solar will help in keeping the global warming in check
- Wide scale adoption of biodiesel and Gas to Liquid (GTL) technologies could be intermediate options to cut emissions before the country moves to ultimate cleaner solutions like EVs or hydrogen fuel cell technology for transportation
- Presently, there is a strong push from the Government to encourage ethanol availability. The country has now moved beyond 1G and is exploring the viability of 2G and 3G ethanol production technologies. Twelve 2G ethanol plants are being setup by Indian companies at various parts of the country
- India is also actively promoting the use of natural gas and increase its share in the primary energy mix. After the recent city gas distribution (CGD) bidding rounds, the potential natural gas coverage will be in about 53% of the country's area covering 70% of country's population



Dr. Purandar Chakravarty
Vice President & Head –
Innovation and
Alternate Energy
Nayara Energy

Dr. Purandar Chakravarty

- There are largely three aspects that will drive the energy transition in the future – Efficiency, Innovation and Digitalization
- EVs have caused a major disruption in the industry. Net emissions at manufacturing stage is higher than during operation in case of EVs
- EV penetration in India will face the below mentioned challenges:
 - The electricity used for charging is mostly fueled by coal – so no zero emission story
 - Lack of charging infrastructure and grid
 - Dependent on nickel and cobalt imports (expensive and in limited supply – no security)
- The largest contributor of poor air quality in India is presence of particulate matters – PM 2.5 and PM10. Only 2% of particulate emission is because of fuel*, rest 98% is contributed by tire wear, brake and street abrasion. Upgradation to BS-VI fuel standards can reduce PM emission by 82%
- The complete transition BS VI engines may not be available till 2022. In that case, it is estimated that the benefit of BS 6 fuel in BS4 engine cars ~ 10-20% fuel efficiency.
- Seamless integration of Machine learning and Artificial Intelligence (AI) with plant operations can increase efficiency and also with IoT inputs can:
 - predict critical equipment failures
 - reduce unplanned shutdowns
 - Improve asset reliability and throughputs – Yield productivity
 - E.g. Repsol with Google Cloud will use Big Data and artificial intelligence (AI) to optimize management of its 186,000-b/d refining complex in Spain

Leadership Perspectives: Making Energy Access for All a Reality

Session Moderator:



Dr. R K Malhotra
Director General
Federation of Indian
Petroleum Industry
(FIPI)



Mr. Michael Deal
Vice President, Asia
Pacific and Middle East,
ExxonMobil

Dr. R K Malhotra

- The world economy is set to double in the next 20 years. The energy consumption is not just on a rise not only at a global level but also at a per capita level
- 80% of the world's future economic output is expected to come from developing countries, as on account of their pursuit for double digit GDP growth, they will drive the energy demand in the future
- The Paris Climate agreement of 2015 was the first agreement of its kind, where 195 countries around the world signed a legally binding agreement on climate change and limiting temperature increase
- There are still over 3 billion people around the world, who do not have access to the cleaner cooking fuels. Accessibility and affordability do not always go hand in hand. The major question that the world needs to ponder upon today is how to make cleaner energy available to these people at affordable prices.
- The Hon'ble Prime Minister of India Mr Narendra Modi has clearly identified four pillars: energy access, energy efficiency, energy sustainability and energy security.
- To achieve the objectives laid out by the Prime Minister, the Government's Ujjwala scheme has proven extremely successful in bringing access to clean fuel for over 60 million households of poor people in last few years.

Mr. Michael Deal

- There are two major factors that influence the decision in the E&P business – Geology and Fiscal terms
- Over the last few years the Government of India has introduced a flurry of policy initiatives in the E&P sector that have benefitted the industry and attracted investment
- Natural gas is important for reducing emissions. Natural gas should find greater usage in power generation in the country
- Natural gas can help in grid stabilization by integrating gas based power with renewable sources like solar and wind
- ExxonMobil is researching long-term pathways for decarbonization. The company is presently working on scalable solutions, which could be deployed world wide



Mr. Sashi Mukundan
Regional President and
Head of Country, BP
India



Mr. Jim Herbertson
Technical Director,
International Petroleum
Industry Environmental
Conservation
Association (IPIECA)

Mr. Sashi Mukundan

- India is a big country with a large young population. The standard of living in the country is on a constant rise and factors like education health and energy will play a major role towards an inclusive growth of the country
- Due to challenges relating to availability and affordability, energy still remains a luxury for most Indians
- Faced with energy transition, India will have to find a middle path for managing people's expectations and the goal for a cleaner environment
- As India embraces the energy transition, scope and scale will bring the transition costs down
- To make energy accessible to all a reality it is scope and scale that will drive affordability, digitalization and digital platforms will drive efficiency and the focus will change to customer experience.

Mr. Jim Herbertson

- There are three major pathways for achieving the Paris Climate Commitments: improve efficiency and save energy, reduce emissions from power generation and reduce emissions from refining and the end use segment
- To address climate change while meeting global demand and supporting economic development, following steps will be necessary:
 - Plan strategically for a net zero emissions future
 - Self-assess carbon resiliency
 - Strengthen resilience and adaptive capacity to climate change impacts
 - Mitigate emissions within Oil & Gas operations
 - Developing Carbon Capture and Storage (CCS) technology
- In this globalized and interconnected world, commitment to global partnership is important for coordinating the effort of the Government, companies, investors, international organizations and civil society
- An efficient partnership among various stakeholders has the following advantages:
 - Connects complementary skills
 - Reduces risks for companies
 - Allow companies to better leverage their core competencies
 - Leads to higher quality, long term, sustainable outcomes than any individual stakeholder can achieve on their own
- Significant policy action, technology development and business response will be crucial to meet the long term aims of the Paris agreement



Mr. S K Moitra
Director (Onshore)
ONGC

Mr. S K Moitra

- There is a correlation between GDP and Energy consumption. The poorest ¼ of the people only consume 10 per cent of the energy
- The Indian Government has been phenomenal in pushing for greater penetration of cleaner energy. Over the last four years more than 60 million BPL households have been distributed LPG connections through Direct Benefit Transfer (DBT)
- Over the last decade, the developing countries have developed at a brisk pace. Growth of energy has now taken a center stage in these developing countries. Access to affordable energy is a necessity for a responsible, vibrant and sustainable economic growth
- The growth in demand for fossil fuels is expected to flatten by 2035. It is expected that the demand for oil will flatten by 2037. Natural gas is expected to play a dominating role in the energy mix by 2035, which will mainly be driven by the Chinese policies
- The cost of renewable sources of energy has been on a constant decline and is now posing a challenge to the dominating position enjoyed by the coal. The transition towards renewables will be further accelerated by the falling cost of energy storage
- To reduce emissions, it is imperative for Oil & Gas companies to reduce gas flaring
- Natural gas needs to play a more significant role in power generation. A new gas based power plant produces 40-50% less carbon emissions compared to coal based power generation
- To maintain pace with the rising demand of natural gas in the world, Oil & Gas companies need to invest over USD 700 billion annually
- For Oil & Gas companies innovation will play a pivotal role in bringing efficiency, cutting emissions and addressing sustainability challenges

Managing Stakeholder Expectation

Moderator:



Mr. Rajiv Bahl
Director (Finance),
Federation of Indian
Petroleum Industry
(FIPI)



Mr. James McFarland
Member of the Board,
Valeura Energy, Canada

Mr. Rajiv Bahl

- To succeed and prosper in the future, it is important for Oil & Gas Companies across the world to be responsible about their operations with sustainability as the major focus area
- Most of the Oil & Gas companies around the world have now started reporting sustainability under GRI standards
- To promote sustainability in the project operations, financing organizations are also evaluating the impact of the projects on the environment
- Going forward, below mentioned will be the key areas that will require attention from Government, industry and civil society for a responsible and sustainable growth:
 - Sustainability & the challenges associated with it in the Oil & Gas Industry
 - Corporate policies to promote sustainability
 - Disclosure norms for sustainability
 - Role of natural gas in promoting sustainability
 - Financial Institutions & Sustainability norms
 - Government & Regulatory impetus for sustainable energy
 - Preparedness of the Oil & Gas industry for meeting global sustainability targets

Mr. James McFarland

- Most progressive companies have started moving well beyond compliance and are now embracing much broader corporate governance goals
- In recent years, the investment community has also grown more sensitive towards Environment, Social and Governance (ESG). In this direction, the UN has also put together principles for responsible investment
- Due to a large number of reporting protocols available from various organizations such as UN, UK and various investment banks, it gets confusing for the companies to decide which one fits their requirements best
- Most companies are now reporting their sustainability under GRI standards and are investing huge sums in minimizing carbon footprints in their area of operation
- The Community Benefit Agreement (CBA) helps a company improve stakeholder relationships and provides benefits to the local community. It also holds the local leadership to account



Mr. Andrew Smart
Global Industry
Managing Director for
Oil & Gas Accenture, UK

Mr. Andrew Smart

- Today the industry is expected to deliver efficiency and generate returns while caring for the environment
- The industry is now increasingly moving towards a model where it requires the support of the local citizen in the form of customer, investor and employee
- Adoption of newer technologies like Hydrogen fuel cells, EVs and Biofuels in the transportation sector will lead to over 50% reduction in oil demand from the sector
- Using the emission reduction technologies like Carbon capture and Storage and Smart Energy systems can renew the value of carbon value chain, avoid regulatory costs and lead to reducing emissions by a third in next 50 years
- Keeping pace with the transition in the energy industry, Accenture has undergone a major transformation in its businesses over the last few years.



Mr. Biswajit Roy
Director (Business
Development & HR)
OIL India Ltd

Mr. Biswajit Roy

- OIL's sustainability report is produced every two years, which provides a detailed account of the company's sustainability related initiatives
- OIL spends over 4% on CSR activities. OIL's flaring is almost zero and the company is now employing the services of a start-up company, which will make the flaring of natural gas usable for OIL
- E&P operations are extremely water intensive and OIL has been working towards neutralizing the impact of its operations through processes such as rain water harvesting, used water treatment and re-injection of produced water in the wells
- OIL energy spent to energy produced ratio of OIL has now drastically come down from an earlier 80-90% to 10-15%
- To support the Government's commitment of setting up renewable capacity of 175 GWs, OIL has also set up a renewable energy capacity of 200 MWs



Mr. Vinod Tahlilani
Chief Executive Officer
India Gas Solutions
Limited

Mr. Vinod Tahlilani

- Energy consumption is important for human development. 80 % of the countries in the world have an average energy consumption of less than 100 KJ
- New technologies will play a vital role in cutting down emissions in the future
- Policy interventions will be crucial in moving towards a low carbon future. In this regard, the OECD countries have banned power generation from coal based plants after 2030
- In this direction, a stronger support for deployment of nuclear and hydro power in the energy mix can bring the emissions down significantly
- Higher R&D spending and incentivizing investment in technologies like CCS in gas and coal can further cut the emissions



Mr. Gerardo Uria
Senior Director,
Membership & Global
Industry Services,
American Petroleum
Institute (API), USA

Mr. Gerardo Uria

- API is known for setting standards for the petroleum industry. Environment Partnership (EP) is one such initiative from API to measure to improve the Oil & Gas industry's environment performance
- Environment Partnership's objective is to care for the environment. Major principles of Environment Partnership are: Take Action, Learn and Collaborate
- The programme has attracted interest from many Oil & Gas companies and the list of members has increased from initial 26 to 52 companies recently
- The Initial focus for the members was to further reduce emissions, both methane and volatile organic compounds, from the oil and natural gas production segment.
- To control emissions, member companies have incorporated the following steps:
 - Detection and timely repair (within 60 days) of leaking equipment using optical gas imaging cameras or portable analyzers
 - Replacement or retrofitting of high-bleed pneumatic controllers with lower-emitting or zero-bleed controllers
 - Implementation of a best practice to minimize emissions by monitoring manual liquids unloading events



Mr. P. Balasubramanian
Chief Financial Officer
(CFO) Ratnagiri Refinery
and Petrochemicals
Limited

Mr. P Balasubramanian

- Climate Change along with health and safety and global preparedness have emerged as crucial elements for future success of any company
- There are three levers to sustainability: Digital transformation, up-scaling talent and fund allocation. For a sustainable growth policies and strategies need to be carefully framed and observed
- India has come a long way and the standards set by the Indian Government are at par with those of international
- Investors are increasingly integrating sustainability into their investment decisions through ESG framework. Below mentioned have proved to be the drivers in this direction:
 - Indicators of future volatility
 - Identifying hidden risks
 - Risk of fine and settlements
 - Threat of climate change
 - Achieve value based goals and
 - Depletion of resources

Cleaner Fuels - Innovative Technologies for Safe and Clean Downstream Operations

Moderator



Mr. Pedro Miras Salamanca

Chairman CORES, Spain
and Vice President
World Petroleum
Council (WPC)



Mr. Prabhakar Nair
Vice President (BD)
LanzaTech



Mr. Gajendra Kumar
Manager, Downstream
Stratas Advisors
Singapore

Mr. Pedro Miras Salamanca

- Efficiency and new technology will usher the world into a new, sustainable and low carbon age
- In India, rising population growth and increasing demand for energy along with declining air quality and global warming has raised the serious concerns
- To address the environmental concerns, the Government of India has been proactive and has introduced many policy interventions with the objective of reducing import dependency and supporting alternative fuels

Mr. Prabhakar Nair

- We have to find ways to use carbon wisely. Globally the industry has found ways to move to decarbonize to the extent feasible
- Carbon in some of its uses is indispensable. Issue is not to avoid the use of Carbon but using it wisely. In this direction, LanzaTech has developed a technology called gas fermentation
- Gas fermentation converts the gas into olefins and some precursors to plastic. This tech is commercial. The process is presently being used in China and various cities in Europe

Mr. Gajendra Kumar

- Total refined product demand globally is going to increase from 35 Mmbblpd in 2017 to 107 Mmbblpd by 2035. Gasoline, kerosene and jet oil will be the major driver towards this rise in demand of refined products.
- Gas oil demand will increase by 1Mmbbl/d in the period 2018 – 2035. Asia will be dominating the demand growth, where the demand will increase by 10 Mmbblpd between 2017 – 35. CIS and Middle East demand will grow by 2 Mmbblpd, Africa and Latin America will increase by 1 Mmbblpd while Europe and North America will decline by 2 Mmbblpd
- Diesel and gas oil demand will increase from 27.5 Mmbblpd to 28.7 Mmbblpd by 2035 due to on road transport and population growth. Demand in Asia will increase by 4 Mmbblpd, Latin America and Africa will



Dr. Anjan Ray
Director
CSIR - Indian Institute of
Petroleum

grow at 0.76 Mmbblpd and Europe and North America will decline by 0.7 – 1 Mmbblpd while the demand from CIS and Russia will remain flat. The reason for decline in Europe and North America is the demand for EVs

- Marine Bunker fuel demand: 4.2 mmbblpd of high Sulphur fuel oil will shift to low Sulphur fuel oil to meet the demand. Demand for marine bunker oil will grow at 30,000 bbl/d. In Asia 1.17 Mmbblpd will shift to low S fuel oil to meet the demand. Demand for marine gas oil demand will increase by 3.2% while low Sulphur fuel oil will increase by 0.6%. Asian refiners will have undergo significant capacity increase to match the demand for fuel oil after 2020
- Vessel owners will have an option of installing scrubbers at an investment cost of USD 1 Million to 7 million depending on the size and type of the ship. This will increase the cost of operation for the vessel owners and they might have to face penalties if they do not stick to the regulation
- After 2020, there will be a spike in the demand and hence the price of low Sulphur fuel oil. There are 1000 ship with scrubbers at the end of 2018 and by 2030 not more than 3000 ships will have scrubbers
- Small container ships will not be able to install scrubbers due to power limitations. 75% Ships built between 2018 – 19 will have scrubbers as this will be cost effective for them. Higher operating cost might force ship owners to scrap some of the ships before operable time due to high operations cost

Dr. Anjan Ray

- India imports 350 million tonnes of carbon in a year. To reduce the imports replace these Carbon atoms with domestic sources of energy weather renewable or non-renewable
- India imports large volume of cooking every year and after used a large part of it is thrown away because only 20% is used in the food rest is wasted. This used cooking oil needs to be used top produce energy
- India has 160 – 200 million Hectares of Arable land. Only half of that is irrigated, further, half of the irrigated land is used to produce a single crop during the year. There is a possibility for short rotation crops.
- Agricultural residue is burnt on field while forest residue catches fire. This is wastage of a possible fuel and CO₂ emitted for no good reason. All these are reusable carbon in addition to more than 3 trillion tonnes of coal reserves.
- If the carbon wasted in the country is brought to account, India can significantly contribute to the reducing world carbon foot prints.
- While selecting a fuel the factors considered are performance, scalability, cost and lastly sustainability. To support the bio resources based fuels, India has the necessary logistical chain in place. In Pune, there is already a project running that is making use of waste for pipeline quality natural gas



Mr. Vinod S Shenoy
Director (Refineries)
Hindustan Petroleum
Corporation Ltd (HPCL)

- Indian Institute of Petroleum (IIP) has started a programme in Schools in Dehradun, where each school will produce 20 Litres of drop-in biodiesel every day. This is a scalable solution and could be deployed across India.
- IIP has also launched a mobile pyrolysis system for biomass. Where the system will go to fields and use the available biomass to bio tar and bio oil. Energy will be used to run the truck carrying the system, Bio tar will be given to the farmer and bio oil will be given to the truck owners to earn profits. This is a completely zero subsidy model for biomass utilization

Mr. Vinod S Shenoy

- India is in a state of transition, where economic growth is very important. Lot of initiatives at state and central Government levels to uplift people to a decent level of living and join the middle class. Energy will be key determinant as it will drive health, education and productivity in the future
- India is heavily import dependent and energy security is of paramount importance. We need to move more towards domestic resources and technologies to reduce imports
- The country is focusing on alternative fuels like gas, biomass and renewables. Oil & Gas Companies are also actively moving in this direction.
- The shift in fuel standards over last 20 years speaks volumes about the country's capability to adopt to changes. City Gas coverage to more than 400 districts in the country will bring a change to the citizen's daily lives
- Technology has played a crucial role to providing clean, affordable and accessible energy. Oil marketing companies are making sure that fuels reach all parts of the country. Many new retail outlets are being opened to make the fuel accessible even at the remotest places
- HPCL is investing in Vizag refinery. It is focusing on bottom of the barrel upgradation through Hydrogen cracking process. New technologies are being implemented to produce clean fuel and eliminate fuel oil and convert it to more desirable distillate
- Upcoming Rajasthan refinery along with a petrochemical complex and naphtha cracker will be very modern refinery. HPCL is making a transition from being a petroleum company to a petrochemical company
- The company is also looking into drop-in fuels and partnering with other research companies to convert biomass to produce 2G and 3G ethanol.
- HPCL has outsourced 50% of the power to grid and is sourcing clean power through the exchange. Power constitutes a large part of net CO2 emission
- The industry needs to look at enabling technologies like big data, analytics etc. to ensure safety in operations



Mr. N K Bansal
Director (Oil Refining & Marketing)
Federation of Indian Petroleum Industry (FIPI)

Mr. N K Bansal

- India is shifting to BS-6 standard fuels from April, 2020. Refiners have to make the fuels available by December 2019. Marketing network and a large number of retail outlet have to be suitably enabled to dispense the new fuel
- Presently, most refineries are equipped to produce BS-VI standard fuels. Refineries are using technology to treat the high Sulphur fuels. Indian refiners have spent over USD 4 billion in upgrading refineries for the new standards
- BS-VI gives specifications of 95 and 91 octane. Presently, most refiners are targeting 91 octane. As the number of BS-6 vehicles increase, eventually Indian refiners will have to shift to 95 octane
- India imports a large part of its hydrocarbon requirements. It imports the cheaper heavy crude from Venezuela. To process heavy crude, coker has to be implemented
- High Sulphur Coke is also seeing lot of resistance from the government and various other groups. Therefore, refineries will have to adopt some technologies that are specific to Indian situation and could ensure that the undesirable heavy residue is removed
- India has provided 90% of the eligible consumers with LPG. 6 crore connections have already been given out under the Ujjwala scheme. However, last mile connectivity of LPG still remains a challenge
- As piped natural gas availability increases, LPG will move to smaller towns and rural area. In land LPG transportation through pipeline will be important to make its transportation cleaner
- 2G Ethanol is also picking up in transportation. Refiners are setting up plants to produce ethanol from agricultural and municipal wastes. There has to be a win-win situation between farmers and industry and will also help in reducing the import bills There is a need to establish an efficient supply chain for biomass to support the ethanol blending programme

Energy Transitional Challenges in the Wake of Growing Energy Demand in India

Moderator:



Dr. Sun Xiansheng
Secretary General
International Energy
Forum (IEF)

Panelists:



Mr. A K Dwivedi
Director (Exploration)
ONGC

Dr. Sun Xiansheng

- India and China have emerged as the largest demand center for energy across the world. For India, being a developing country, it will be important to strike a delicate balance between its economic growth and the rising sensitivity towards environment and climate issues
- In the future, Renewables will play a major role in the world's energy mix and replace fossil fuels in some functions. However, fossil fuels are still expected to play a significant role in bringing affordable energy access for all in a sustainable future

Mr. A K Dwivedi

- Energy demand is increasing due to three major factor: population growth, urbanization and economic growth. By 2050, it is expected that 60% of the world will be living in urbanized areas. Over the past 50 years the GDP has also grown at a robust 4%. Energy policies and industry development have contributed to GDP and supported economic development
- Renewables are new technologies and their contribution still very restricted. This Energy transition will be unique as this transition is driven more by environmental and climate challenges than emergence of a new fuel.
- Around the world, a country's energy challenges are defined by its outlook, shaped by production, distribution and consumption of energy. Urbanization is important driver of energy demand
- Developing countries have the challenge of striking a balance between their economic growth and environmental concerns. Increasing focus on climate change and change in growth dynamics is leading a move towards cleaner forms of energy.
- Focus of Government policies internationally is starting to align to address climate change imperatives. The energy sector, responsible for 80% emission, has to be committed to decarbonizing and COP 21 commitments.
- For renewables to play an important role in the overall energy mix, technological disruption will be required to bring down the cost of renewables. Further, people need to be more accepting towards the new technologies. Misconception and lack of knowledge may lead to restricted usage of clean energy sources
- India was the 62nd nation to join the Paris climate agreement 62nd



Mr. B Ashok
Chief Executive Officer
Ratnagiri Refinery &
Petrochemicals Ltd

nation to join the deal. India imports a large part of its energy requirement and also have to stick to our Paris climate commitments.

- Fossil fuels are expected to remain an important part of the Indian energy basket till 2050. Coal will remain a dominant fuel followed by Oil & Gas. Renewable are poised to grow but not enough to substitute the fossil fuels
- To reduce emissions, Carbon Capture and Storage (CCS) could be a possible solution. Further to reduce dependence on imported energy, India has to explore opportunities in the basins which are yet to be fully explored. In this direction, ONGC has made significant discoveries in many such previously unexplored basins.
- To manage the energy transition below mentioned will be vital
 - Diversifying into other applications
 - Renewable sources need to be looked at
 - Energy Efficiency to address
 - Power sector reforms an
 - Transportations sector reforms and
 - Digitalization
- Ujjwala and Saubhagya schemes have found wide spread appreciation globally and will help meet the demand of the large population of the country. New Biofuel policy introduced by the Government promotes biofuels by mandating 10% blending

Mr. B Ashok

- Objective of energy transition is a clean environment and climate change, energy availability and affordability , energy security and energy cost
- Drivers of this energy transition are
 - Carbon capture and storage
 - Fuel Switching
 - Renewables
 - Nuclear tech
- The energy consumption pattern of the world is changing due to changes induced by: emergence of EVs, shift towards renewables, decarbonization and digitalization
- The Indian Prime Minister has clearly laid down the four major pillars of India's energy future. To achieve the Government's objective below mentioned will be crucial
 - Right mix of renewable and non-renewable sources to ensure energy access, while ensuring sustainably
 - Technological innovation to minimize greenhouse gases and emissions
 - Shift towards low emission fuels and bio fuels
 - Harnessing the power of digital and other technologies to drive efficiency
- Despite renewables fossil fuels will be dominant in India's energy mix. In refining, even in a most transformative scenario India will require 75 MMT of additional refining capacity



Ms. Sneha Chanchani
Vice President Technical
Functions
BP, India

- To cut down on oil demand we have to increase the natural gas share in the energy mix from a present 6 – 6.5 % to 15%. To achieve such an ambitious target Government policies and natural gas infrastructure will play a significant role
- To enhance domestic production of natural gas, factors such as ease of exploration, pricing freedom for producers of natural gas are among the most prominent issues that will require special attention
- New areas of consumption like use of natural gas in railways, shipping etc will also give a boost to the demand

Ms. Sneha Chanchani

- World is faced with the challenge of ever increasing demand for energy while being conscious of the environmental perspective. Global energy demand is set to rise by a third by 2040. Challenges are more evident in developing countries like India and China
- India needs all fuels to be a part of its future energy mix. Every energy has to step up to meet the demand of the country and for fuelling the growth. To meet the environmental standards in the 2 degree case, we need to start switching from coal to renewables and natural gas
- Oil & Gas will continue to play a dominant role in the future of India's energy mix. India is committed to achieve 15% penetration of natural gas by 2030.
- India is presently importing gas in the form of LNG but the country has the potential of meeting more than half of the imported volume through domestic sources.
- Through the recently introduced National Data Repository (NDR) E&P companies have access to more data than ever before. NDR will make a notable difference in years to come
- India has significant possibilities in the EOR/IOR space and the has a potential of producing an additional 4 billion barrels of oil by just working on the existing aging fields.
- For EOR/IOR, the focus should be on the bigger fields where large amount of oil could be extracted. Learn from what other oil companies and countries are doing in the EOR/IOR space
- India is faced with the challenge of creating a deliberate plan, supported by key investment with a long term vision. The vision should be flexible enough to accommodate any technological disruptions
- There needs to be an intersection point between what the country needs and the needs of the business. This will accelerate technological advancement and influx of new tech
- BP and RIL in India are set to produce natural gas from new fields that will start production by 2020



Mr. P Raghavendran,
President Refineries
Business
Reliance Industries Ltd.

Mr. P Raghavendran

- Most scenarios are considering that the polluting industries are on a growth and even if there is a decline, it is after a considerable period. However, there are possible scenarios where oil, coal and gas co-exist for a little long time, provided technologies like carbon capture etc are brought in the system
- Due to huge investments that the industry has made and due to the huge gestation period of the investments
- As the Governments around the world start focusing on sustainability, it will be important to for them to draw out a clear roadmap for the shift.
- A clear roadmap will also help the industries to synchronize their future strategies as per the vision of the Government

Increasing Safety, Environmental Protection and Energy Efficiency: Impact of Digitalization

Moderator:



Mr. Kjell – Einar Eriksson
Vice President Digital Partnering
DNV GL - Oil & Gas,
Norway

Panelists:



Mr. Jean-Francois Poupeau
EVP Corporate Engagement,
Schlumberger

Mr. Kjell – Einar Eriksson

- Advanced analytics of Big Data and new technologies like 'Internet of Things' can uncover patterns and make predictions. This can reveal potential new business models and give stakeholders a better overview of operations, and more control and independence for managing assets
- In the upstream, digitalization will provide an effective condition monitoring, specific, industry, historical and real-time data lets operators improve maintenance and inspection regimes and finally reduce costs
- In the downstream side of the industry, digitalization is not only automating the operations but also increasing plant safety

Mr. Jean-Francois Poupeau

- To achieve the optimal level of HSE, it is important to quantify it. HSE is also crucial for running the business profitably
- The below mentioned tools are essential to coordinate sustainable development:
 - Reduce water requirements
 - Reduce proppant requirements and the resulting truck traffic
 - Allow the reuse of the produced water
 - Improved well site efficiency
 - Provide green chemistry
- To stay abreast with the industry in innovation and digitalization, Schlumberger has set up a Software Technology Innovation Centre in 2014



Mr. Jakob Korsgaard
Managing Director
Maersk Drilling Norge
and Vice President
Norwegian Shipowner's
Association, Norway



Mr. T K Sengupta
Director (E&P)
Federation of Indian
Petroleum Industry
(FIPI)

Mr. Jakob Korsgaard

- Norway is one of the largest shipping and offshore nations. Oil & Gas is the most important industry in Norway. Driven by the Oil & Gas revenues, Norway is the largest welfare state in the world
- The entire Norwegian Oil & Gas value chain has taken a serious hit due to the fall in oil prices. As a result almost one third of the people employed with the Norwegian offshore industry have lost jobs over the last few years
- Norwegian shipping association adopted a zero harmful emissions policy a few years back. In order to cut emissions all the stakeholders have to come together and work closely with the Government
- To ensure HSE in operations a well-educated workforce will be crucial for any organization
- The world is now moving towards a low carbon future and companies need to decarbonize to succeed in this environment
- Digitalization will play a crucial role in defining the future of the industry. It is our collective responsibility to put in place the necessary security measures to do away with any future vulnerabilities
- As we move towards a low carbon future, it will be vital to build trust and to collaborate among parties

Mr. T K Sengupta

- Digitalization has come up as the new big thing in the Oil & Gas industry. The use of super computer, SCADA, DCS Control and Deepwater engineering has changed the entire face of the industry
- Digitalization is an integrated sum total game of various technologies across the value chain of Oil & Gas
- The below mentioned technologies have revolutionized the upstream industry:
 - 4 D visualization Modelling
 - Remote Communications Technology
 - Integrated Visualization
 - Integrated Production, Reservoirs and Asset Models
 - Real time drilling
 - Workflow and Knowledge Management Systems
 - Intelligent Wells
 - Production volume management System
 - Remote real time facility monitoring and control
 - Intelligent alarming and diagnostics
- In the future, the following will be the driving factors for digital transformations in the upstream sector:
 1. Energy Transition
 2. Price Volatility
 3. Increased complexities

	<ul style="list-style-type: none">• Digitalization in the upstream sector has successfully changed the business and operational models. It has enabled the organizations to take faster and efficient decisions• Digitalization has helped the upstream industry in reducing operational costs, lowering carbon foot prints and making the overall operations safer• In India, the major challenge to digitalization is the high initial investment and a slow acceptance by the aging work force
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Best Practices in Engaging Energy Poverty and Local Communities

Moderator:



Dr. Pierce Riemer
Director General
World Petroleum
Council and Chair,
Energy Access Platform

Panelists:



Dr. Fuad Siala
Strategic Planning &
Economic Services
Department
OPEC Fund for
International
Development (OFID)

Dr. Pierce Riemer

- As the World moves towards a sustainable future, the central focus of energy companies will be to bring affordable clean energy access to all.
- In this regard, the Governments will have to ensure an enabling policy ecosystem and remove all obstacles to energy investments.
- In this direction, the Government of India has been extremely successful in providing clean cooking fuel to over 60 million households under the Ujjwala scheme.

Dr. Fuad Siala

- Today there are over 1.1 billion people around the world who do not have access to electricity. The largest part of this population is located in Sub-Saharan Africa and the Indian sub-continent. It will take huge investments to bring energy access to these people
- The OPEC Fund for International Development (OFID) realizes that the access to affordable and reliable modern energy services is a pre-requisite for sustainable development
- To bring universal energy access, the world has to agree on a pragmatic and technology neutral approach. It will also require funding from all possible sources and the private sector will have to play an integral role
- There are three major pillars for energy poverty alleviation:
 - Advocacy
 - Operations and
 - Partnership
- Any energy strategy has to be linked to the Government policy. The Government needs to remove the structural barriers that will obstruct any investment into the energy access
- In this direction, the Government of India's Ujjwala scheme has been very successful. PMUY has provided over 60 million BPL households access to clean cooking fuel



Mr. Milton Costa Filho
Secretary General
Brazilian Petroleum,
Gas and Biofuels
Institute (IBP), Brazil

Mr. Milton Costa Filho

- IBAMA worked in conjuncture with the petroleum companies in the Santos basin to:
 - Align projects to maximize benefits
 - Educate the local communities focusing on the campos basin's environmental needs
 - Empower the local groups
 - Optimize the environmental licensing process by engaging the local community
- In the Santos basin many major oil companies such as Petrobras, Equinor and Shell are engaging with the local communities to empower them through education, employment and through addressing social issues
- Shell has played a phenomenal role through its programme QUIPEA for the development of Quilombola community in the campos basin and organizing the social life of these communities
- Petrobras's PESCARTE Project has organized the fishing community in the region by providing education and professional skill development and through including them in the overall development in the region
- Brazil is trying to distribute the benefits of oil and gas operations to the entire community. As the oil industry grows many such community development programmes will come forward to benefit the society



Mr. Deepak Kumar Arora
Vice President
Corporate Affairs
Nayara Energy

Mr. Deepak Kumar Arora

- The Oil & Gas industry is water intensive and should look into ways to neutralize the impact its activities have on ground water levels
- Further, for a farmer whose land is affected by the ongoing operations, the Oil & Gas company should look into making other employment opportunities with a better pay available
- The industry also needs to look into ways to support the local agriculture in the region through apprising farmers with ways to increase productivity, climate smart crops and crop diversification
- In hinterlands, where medical services are not very easily available, retail stations could be used to dispense medicines at a lower cost
- The Government has a mandate for 10% blending of ethanol. Oil companies can support these initiative by joining hands with food retail companies like Hindustan Uni Lever (HUL) and ITC to establish a supply chain



Mr. Ali Rahneshtin
Senior Analyst
Borzouyeh
Petrochemical
Company, Iran



Mr. T Satish Kumar
Executive Director
IndianOil

Mr. Ali Rahneshtin

Below mentioned three case studies were discussed:

Case Study 1: Restoring Gases Emission in Aspect of CO2 Capture

Case Study 2: Implementing Flare GAS Reduction System (FGRS), Farashband Gas Refinery, Iran

Case Study 3: Optimization Of Refinery Flaring System

- Below are the major advantages of gas recovery:
 - Reduction of Emission and Environmental Pollution
 - Electricity Generation
 - Production of synthesis gas and production of methanol
 - Reduction of gas
 - Reduction in purge gas
 - Reduction in seam
- Recovered gas could be used in below mentioned functions:
 - Supply of fuel in the form of gas
 - Supply of gas injected into oil field
 - Turning into petrochemical feed
 - Generating electricity
 - Converting to LNG and LPG
 - Conversion to other forms of energy

Mr. T Satish Kumar

- Tasked with the objective of distributing cylinders to BPL families under Pradhan Mantri Ujjwala Yojana (PMUY), IndianOil faced multiple challenges due to difference in culture and languages
- People, who were earlier spending their entire days in collecting biomass and cooking, saved significant amount of time which could spend in other productive activities
- IndianOil appointed a large number of distributors to ensure availability of LPG cylinders even at the remotest parts of the country
- Under its Ujjwala Didi initiative, IndianOil trained 10,000 women in the state of Odisha to spread awareness about the Ujjwala programme and handle minor technical issues

Interactive Closing Keynote Panel: "Taking the next step - What Way Forward for Sustainability in Oil & Gas?"

Moderator:



Mr. Sven Mollekleiv
Senior Vice President
and Head of Corporate
Social Responsibility
DNV GL and Honorary
President, Norwegian
Red Cross, Norway



**Mr. Anindya
Chowdhury** Energy
Transition Manager
Shell India

Mr. Sven Mollekleiv

- Corporate responsibility and sustainability is a way of doing business beyond the basic compliance needs and taking the right initiatives for the people, environment and the business
- IPCC report has made it clear that the climate change has already started and more people are getting affected. As industry we need to accept the responsibility.
- By 2050, renewables will provide over 50% of the world's energy requirements. Still, oil and gas will remain extremely important in ensuring energy availability for all.
- Energy demand will peak by 2035 due to renewable, digitalization and new innovative technologies
- Digitalization has already initiated the process of energy transition. Business will play an integral role in the sustainable future
- A large part of the world population still does not have access to electricity. It is our responsibility to ensure affordable energy access to all
- Today, the younger generation is aware of the impacts of global warming. To attract the youth into the Oil & Gas industry and to succeed in the future, the industry has to grow responsibly

Mr. Anindya Chowdhury

- Over the years Shell has evolved itself as an energy transition company. The company's strategic imperative is to thrive in the energy transition process
- In this regard, shell is committed to reducing its carbon footprint by 50 per cent by 2050. Shell has also invested heavily in EVs and energy access space
- As part of its energy transition strategy, the company has acquired Husk Power and Cleantech Solutions. Its IH² technology has the potential of converting the large amount of waste produced in the country into usable biofuels
- In India, refiners are leap frogging to a new fuel standard while the Government has also been promoting EVs. It is important for the Government to have a clear roadmap. A well-defined road map will also help the industry draw a definite plan for the future



Ms. Lucy Alexander
Engineering Specialist
Institute for
Sustainability, an AIChE
Technological
Community, USA



Mr. Stephane Rousselet
Chair
WPC Young
Professionals and
Consultant, France



Mr. Milton Costa Filho
Secretary General
Brazilian Petroleum,
Gas and Biofuels
Institute (IBP), Brazil

Ms. Lucy Alexander

- In order to bring affordable energy access to all and a smooth transition towards a sustainable future, it is imperative that all stakeholders i.e. Government, industry and society must remove the trust deficit and work together

Mr. Stephane Rousselet

- A well-defined roadmap on the Government's part will provide the necessary direction to the industry
- A possible solution for reducing carbon foot prints by th industry is carbon price. Carbon price will signal the market that the negative impacts are accounted for and will attract more investors to the market
- To further reduce the impact of Oil & Gas on the environment, responsible consumption of the products is also important. In this regard, a government policy might to direct the consumption patter could make a significant difference
- In order to reduce carbon footprints, developing countries can draw significant learning from the mistakes of developed countries

Mr. Milton Costa Filho

- Though Oil & Gas is the biggest generator of taxed in the world, it comes under constant attack due to its high carbon foot prints across the world
- It is time that the entire Oil & Gas industry comes together to address the problem of climate change. Brazil has already started discussing a transition towards a sustainable future making use of the revenues generated through petroleum operations
- Oil & Gas industry provides a lot of benefits to the people in transportation, clean cooking and heating. It is high time that the industry comes together to highlight the benefits it provides to the common man



Mr. Ivan Marten

Senior Partner
Emeritus, BCG and
Member of the Board
Energy Access Platform
(EAP), Spain

Mr. Ivan Marten

- The industry needs to work towards reducing emissions. Most Oil & Gas companies have significantly reduced gas flaring, fugitive methane emission and CO2 emission from refineries over the last few years
- Most energy companies today factor in the carbon price while evaluating new projects
- Some oil companies committed huge sums to energy transition little too early in the process and made losses. However, now the technology is present and the time is tight to invest in energy transition. Several companies across the world realize the opportunity and have started taking steps to be a part of this transition

Other Major Discussion Points

- Each country will have to adopt a region specific strategy to reduce the impact on environment
- India is among the most vulnerable countries to climate change. Climate change can not only cause a serious rise in temperature in central India but it can also lead to submerging of some of its coastal areas
- In order to keep a check on carbon foot prints, it will be useful for the Indian Government to alter the consumption pattern of the poor rather than subsidizing the rich for EVs
- To make people more aware of the impacts of climate change and global warming, Sustainability needs to be made an integral part of all educational routes to make the younger generation more sensitive towards the issue
- Due to previous experiences, Oil & Gas companies often do not share amicable relationship with the local communities. It is important that the Oil & Gas industry builds a favorable narrative to update the people and the Governments aware of the its efforts to reduce the impacts of its operation on the environment

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