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risks and uncertainties
NEW WAYS OF THINKING**

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SPM-PDPU Energy Conclave 2018



Energy Conclave 2018 organized by the School of Petroleum Management, PDPU saw two power packed Panel discussion that flagged important issues on 'Energy Security' and 'Future Mobility'.

A report by
DEW Journal correspondent



Prof. Dr. C. Gopalkrishnan, Director General, PDPU

Key issues impacting O&G sector and way forward for e-mobility focused

Importance of energy security is growing because of fast shrinking world oil reserves and advancing climate changes, which create increasingly powerful pressure on the reorientation of energy from fossil fuels to other types of energy sources. India's fragile energy security is under severe pressure from its rising dependence on imported oil, policy issues and insufficient energy infrastructure. To meet the growing energy demand over the next few years, India will have to enhance its energy security by procuring supplies at affordable prices.

Additionally to energy security issues, the raising awareness about various aspects of future mobility is another pressing issue in front of nations with India no exception. With the aim to bring various stakeholders in the energy and oil & gas sector and those involved in enhancing and researching on future mobility the School of Petroleum Management, Pandit Deendayal Petroleum University (PDPU) organised an Energy Conclave on December 21 focusing key issues and policy challenges related to enhancing energy security and integration along with pondering on the strategic levers in shaping new mobility future.

Inaugurating the Conclave Dr. C. Gopalkrishnan, Director General, Pandit Deendayal Petroleum University (PDPU) said the oil & gas and energy sector is very dynamic and even unpredictable. Whether oil prices go up or down it has its bearings. While energy

is a vital necessity for our societies it plays a big role in the geopolitical game as well.

The theme of the Conclave he said is therefore very important in today's context. Future mobility issue too is inseparable with the energy sector and a truth that cannot be ignored.

While the industry leaders from the oil & gas and engineering majors including ONGC, IndianOil, Halliburton and Black & Veatch took up key issues and policy challenges related to energy security, representatives from Hinduja Renewables Energy, academia, policy think tanks - EY and PwC, technology solution providers and even start-ups - ZipGo and DARWYN shared views on the look of future mobility.

The Panel on enhancing energy security and integration addressed by industry leaders from ONGC, IndianOil, Halliburton and Black & Veatch. The panelists included Mr. DevDutt Sharma ex-ONGC and ex-Vice President, Reliance Industries Limited, Mr. Rajendra Singh Sisodia, Executive Director, IndianOil, Dr. Sridharan Vallabhaneni, Data Science Manager, Big Data COE, Halliburton Development Center-India and Mr. Koteswara Rao Pothala, Director & Principal, Black & Veatch. The Panel was Chaired and Moderated by Mr. Arun Kr. Singhal, Chief Editor, DEW Journal.

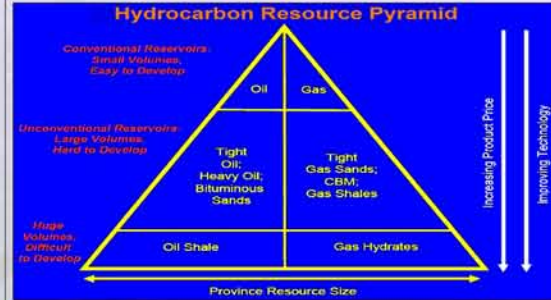
Speaking on the occasion to a houseful audience comprising over 200 management students along with



Dr. Pramod D. Paliwal, Dean, SPM-PDPU

Dr. Sridharan Vallabhaneni

Mr. Koteswara Rao Pothala



Professors and senior Faculty of SPM-PDPU besides invited guests from the industry, Mr. Singhal emphasised on the four pillars of energy future namely energy access, energy efficiency, energy sustainability and energy security. He said energy plays an important role in the national security of any country as fuel to power the economic engine.

Complimenting SPM, PDPU for a very timely Meet on an important aspect as Energy Security Mr. Singhal said the deliberations of the event will help apprise the students of the many critical aspects faced by the industry. He asked the students to make the best use of the occasion.

Advocating natural gas in all its forms including forms of LPG, PNG, CNG & LNG as an environment friendly, clean source of energy source, Mr. Devdutt Sharma emphasised with increasing use of gas for power generation, fertilisers, domestic and industrial



The Panel on enhancing energy security and integration

purposes the trend has now shifted from "Oil & Gas" to "Gas & Oil". New discoveries Mr. Sharma said being more of gas than oil, natural gas is becoming a favoured fuel for 21st Century. Gas he said contributes to about 6.5% of primary energy mix in India, which may rise to 15% by 2022. India he said has vast conventional gas reserves estimated about 5,000 bcm in 26 sedimentary basins covering 3.14 mill.sq.km in onland and offshore (shallow & deep water). Estimated gas production potential is about 685 MMcm over 20 yrs against the projected demand of 548 MMcm as per Hydrocarbon vision-2025. Huge unconventional gas resources of Shale gas, Tight Gas Sand and CBM are available which can give to bridge the demand-supply gap.

Natural gas according to Mr. Sharma can also act as a substitute for oil with new GTL (Gas to Liquid) technology. With the proposed integrated, multi-prong gas exploration & development strategy, India can very well meet self-sufficiency in gas production as envisaged by Hydrocarbon Vision 2025.

On the dynamics of Natural Gas, Mr. Sharma said conventional gas occurs at the top of pyramid because of its small volume and high productivity. Unconventional Tight Gas Sand, Shale Gas and CBM occur in the middle because of their large volume, low permeability and less productivity. Gas hydrates occur at the bottom because of huge volume and difficult to develop. With improved geological knowledge and technological advancement, unconventional gas resources which were uneconomical, have become commercial and moved up in the resource pyramid.

Answering to a question posed by Mr. Singhal on gas demand-supply gap during the panel, Mr. Sharma agreed



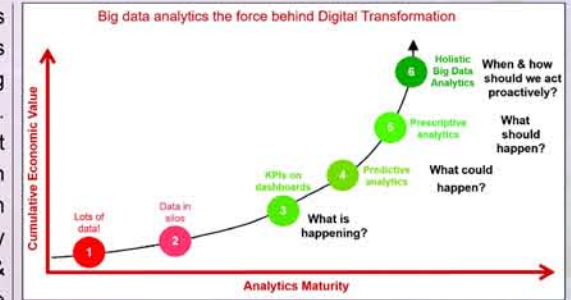
Mr. Devdutt Sharma

Mr. Rajendra Singh Sisodia

Mr. Arun Kr. Singhal

to the fact that our indigenous demand and supply is not very comfortable. He said, India is facing gas crunch as supply is not coping up with the growing demand and whatever gas produced consumed. Present gas production is around 90 MMcmd, against the demand of about 160 MMcmd. With uncertainty in importing gas through cross border pipelines from Turkmenistan & Iran, demand is mainly met by importing LNG from countries Qatar, Nigeria & Australia with an eye on new LNG from Mozambique & USA. India has imported 19.87MMt (71.5 MMcmd) of LNG during 2017-18 he said.

Answering to another query posed, he informed besides huge conventional gas, India has vast unconventional gas resources of Tight Gas Sand, Shale Gas and CBM. There are no precise estimates for Tight Gas Sand, while Shale Gas resources are variable. USGS estimated 6.1tcf of technically recoverable Shale Gas and 62MMb of Shale Oil in 3 of the 6 prospective basins viz. Cambay, KG and Cauvery he said. EIA (2013) has reported 94 tcf of recoverable Shale Gas, revised from earlier estimates of 63 tcf. Shale Gas estimates by other agencies are as high as 200 tcf in Cambay Basin alone and 38 tcf in Damodar Basin. CBM in place is around 10 tcf per DGH, while its present production is small (1.56 MMcmd). Tight Gas Sand produced along with oil, while Shale Gas development is yet to begin. Low rank unmineable coals have also significant gas production potential through Underground Coal Gasification (UCG) technology whose commercial viability is proved. Vast Gas



Hydrates in deep waters along both the coasts of India and permafrost region of Himalaya are the future source of energy in view of ongoing R&D work he informed.

Mr. Sharma was of the view that hydrocarbon prospectively of Indian basins is almost at par with prolific producing world basins.

Mr. Sridharan Vallabhaneni, Data Science Manager, Big Data COE, Halliburton Development Centre-India presented a new age view of the oil & gas industry related to AI and Machine Learning.

Mr. Vallabhaneni talked about how artificial



Professors and Senior Faculty, SPM-PDPU at the Energy Conclave 2018



SPM-PDPU student audience at the Energy Conclave 2018



Mr. Kapil Maheshwari

Mr. Shikhar Gupta

Mr. Shamik Joshi

intelligence is embedded in our day-to-day life and how it's translation be made to oil and gas industry. He articulated how data science and digital transformation can improve operational efficiencies and cut uncertainties. He also talked about how Halliburton is helping E&P operators in their digital journey through co-innovation.

Mr Rajendra Singh Sisodia, Executive Director, Indian Oil Corporation Limited threw light on the company's commitment to enhance nation's indigenous fuel production and cut its import dependency. He focused his presentation on adoption of clean & green technology; promotion of energy efficiency with super/ultra supercritical power plants; improved consumption practices; renewable-subsidisation , accessibility & attractiveness in order to sustain the Energy Security of India.

Mr.Koteswara Rao Pothala, Director & Principal, Black & Veatch informed about his company as an employee-owned engineering, procurement, consulting and construction one with a 100-year legacy of creating a better world for humanity today, and for generations to come.

Mr.Pothala said his company has delivered projects in India for more than 50 years. In recent years we have doubled our number of Indian professionals. And by 2020, we plan to have about 1,500.

Black & Veatch he said is committed to world-class

power, oil & gas, smart cities, telecommunications and water infrastructure. We use Indian talent to deliver concept-to-commissioning solutions for India's complex critical infrastructure challenges, he added.

India has identified major challenges in meeting demands for energy which is addressed through conventional and renewable power generation. Air quality control systems and gas feedstock will boost conventional generation's environmental performance, while smart grids and microgrids will effectively integrate renewable and baseload supplies, he said.

Ennore's LNG terminal, gas processing at Jamnagar, helping telecom infrastructure blend into the cityscape, and providing sanitation and recycled water in Mumbai are among our current flagship projects Mr.Pothala emphasised.

The Panel on strategic leavers in shaping new mobility future saw Mr. Kapil Maheshwari, CEO-Hinduja Renewables Energy, Mr. Shikhar Gupta, Assistant Director - Power & utilities, Ernst & Young (EY), Mr. Shamik Joshi, PwC, Mr. Piyush Sanduja, Zipco and Mr. Rahul Gonsalves, Managing Director, Darwyn Ventures brought up various facets and pioneering research in the field of mobility through new age vehicles, EVs, battery storage and infrastructure. The Panel was ably led by Dr.Kaushal Kishore, faculty, SPM, PDPU and Conclave Chairperson.

Speaking on the occasion Mr. Shikhar Gupta, Assistant Director - Power & utilities, Ernst & Young (EY) stated, with close to 7 crore EVs on India road by 2030*, the current sector dynamics need an integrated and cross-sector approach to push mobility as a mainstream mobility agenda in India. Whether its power and utilities, oil and gas companies, automotive



The Panel on strategic leavers in shaping new mobility future



Mr. Rahul Gonsalves

Mr. Piyush Sanduja

Dr. Kaushal Kishore

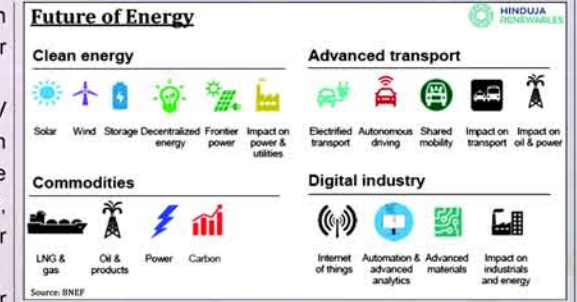
OEMs, or battery and technology players, an ecosystem is essential where these players together invest and drive EV penetration Mr.Gupta added.

Cities he mentioned will be the key to EV momentum, as based on global experience, EV growth happens bottom-up and not a central push. We are already seeing several States and cities, such as Delhi, Nagpur, Karnataka and Telangana coming up with their State-level EV policies, he informed.

There is an urgent need Mr.Gupta emphasised for capacity building in this segment, and this presents a significant business opportunity for all these players starting from Mining/Sourcing raw materials for batteries to providing charging services and recycling of batteries.

Mr. Shamik Joshi, PwC in his talk mentioned of the mobility ecosystem which he defined as is vast—and it's evolving rapidly. We're seeing the connected car, shared mobility and autonomous driving. We're also witnessing mobility's implications on areas such as regulation, infrastructure, mass transit and insurance he added. Industry executives are clear on this point: Change is inevitable. However, question of timing remains i.e to what extent should companies engage now in preparing their operations for what's ahead? What model and level of investment strikes the right balance in addressing both short- and long-term goals? and What are the real opportunities for gaining a distinct competitive advantage? Mr.Joshi asserted.

In a very thought-provoking presentation Mr.Kapil Maheshwari, CEO-Hinduja Renewables Energy informed Hinduja Group has

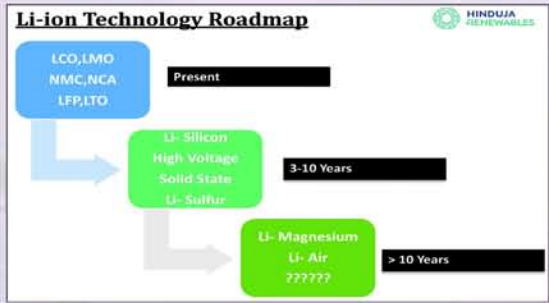


entered into the Renewable Energy sector with a long-term commitment to India's vision to be a leader in Sustainability. Hinduja Renewables Energy Private Limited (HREPL) is an independent power producer with a vision to grow through both organic and inorganic means.

Mr. Maheshwari presented a broad outlook of future of energy and energy storage & electric vehicles that are fast growing. He even discussed the Li-ion technology roadmap and the challenges of energy storage.



SPM-PDPU student audience at the Energy Conclave 2018



He said by 2040, 32% of new four-wheeler sales in India and 13% of fleet will be electric.

According to Mr. Maheshwari, India does not need Tesla, rather India has all the functional EV technologies already working be it e-bikes or e-rickshaw or e-vikram or e-cars or e-bikes. To take EVs to the next level of penetration requires a few government initiatives and judicious subsidies use is required he added.

He was also of the view that EVs have to

commercially stand on their own two feet without any government subsidy so that customer pull drives the change (Like the mobile phone revolution)

Addressing the Panel, Mr. Piyush Sanduja, Head-Corporate Sales, Zipco an App based service Start-up stated earth came into being 4.5 billion years ago but humans (HomoSapiens), as we are today, took shape after 4.25 billion years of earth's existence. Humans have ruined the earth in last 200,000 years all through the scientific revolution and industrialisation. In last 200 years only, global average temperatures have risen by more than 1.5 deg C which is responsible for reduced water availability, loss of crops, mass diseases and natural calamities such as floods.

ZipGo he said has chosen the transportation sector which is responsible for more than 14% of overall greenhouse gases in the environment. We have been operating more than 500 buses PAN-India serving 25,000 rides/day and in doing so, saving ~1000 tons of CO2/year in getting emitted in the atmosphere

which is equal to growing ~700trees/year.

In future we have plans to bring electric vehicles on road to further improve experience of customers and save our planet by doing our bit through #SharedElectricMobility Mr.Sanduja emphasised.

Mr. Rahul Gonsalves, CEO, Darwyn Ventures briefed the Panel and the audience about his Start-up dedicated to produce revolutionary ways to power the future mobility.

Mr.Gonsalves shared his company's vision of changing the way people and goods made mobile in the present to hazel free and more convenient options.

The two Panels during the Energy Conclave flagged some very important issues and a lively discussion on important themes.

DEW Journal was proud to support the SPM-PDPU Energy Conclave 2018 as a Media Partner. dewjournal.com

