

Gist of Deliberations in the Anniversary Conference

held on 4th December, 2020 on virtual platform.

Theme : Coal to dominate India's Energy Mix : Preparing it for responsible usage is an imperative

To celebrate completion of 20 years of very fruitful existence Coal Preparation Society of India (CPSI) organised a one-day Anniversary Conference on 4th December 2020 on a very topical theme 'Coal to dominate India's Energy Mix: Preparing it for responsible usage is an imperative'. Mr. Justice Swatanter Kumar (Retd), Former Chairperson, National Green Tribunal (NGT) was the Chief Guest and he also delivered the inaugural address. Dr. V K Saraswat Member NITI Aayog was the Guest of Honour at the conference.

An expert panel comprising of S/Shri Alok Perti, Ex Coal Secretary, Anil Razdan, Ex Power Secretary, Shri Sanjay Srivastava, Ex Coal Secretary, Shri Partha S Bhattacharya, Ex CMD, Coal India Ltd, and Shri Peeyush Kumar, Director (Technical) in the Ministry of Coal discussed various issues pertaining to the energy sector in general and coal industry in particular, keeping in mind the theme of the conference. Shri R K Sachdev, President, CPSI moderated the panel discussions.

Panel discussions were followed by industry leader's session in which S/Shri Ramesh Babu Director (Operations) NTPC, V R Sharma, MD, JSPL, Sandeep Jajodia, CMD, Monnet Group, Ms. Michelle Manook, CEO, World Coal Institute and Shri Vinay Prakash, CEO, Adani Enterprises, V B Sahay, Sr. VP, ACB (India) participated.

Various subject experts who participated in the technical session included Shri Shekhar Saran, CMD, CMPDIL, Mr. David Woodruff, FLSmidth, UK, Dr. Andrew Minchener, IEA Clean Coal Centre, UK, Prof. Quentin Campbell, North West University, South Africa, Dr. G V Ramana, Managing Director, Ardee-Hitech and Dr. T Gouricharan, CIMFR, Dhanbad.

Gist of Deliberations

In his opening remarks, Shri Alok Perti Ex Coal Secretary and Chairman, CPSI welcomed the Chief Guest Justice Swatantra Kumar, (Retd), the Guest Honour, Dr. V K Saraswat, Member NITI Aayog, all panellists, experts and the participants. Shri Alok Perti mentioned that the Coal Preparation Society of India (CPSI) has completed 20 years of unblemished and dedicated service to coal, power, steel, cement and their allied industries. He further said that despite its decline in various western countries, coal will continue to be a major contributor to India's energy demand well through the 2040s and beyond.

Shri R K Sachdev, President CPSI also extended a very warm welcome, both to the Chief Guest and the Guest of Honour. He mentioned albeit very briefly how and why the Coal Preparation Society of India (CPSI) was set up with the objective to promote washing of domestic coal containing high ash content and improve its heat value so that it burns efficiently with significantly reduced emissions. He further mentioned that CPSI represents India in the International Organising Committee (IOC) of the International Coal Preparation Congress (ICPC) which is held once in three years in different parts of the world. During November, 2020 the 19th International Coal Preparation Congress & Expo (ICPC) was held in New Delhi under the aegis of CPSI. This prestigious global event on coal was held in India after 37 years and CPSI hosted it. The last one was the 9th ICPC held in New Delhi in 1982. He expressed satisfaction that as a result of a persistent and dedicated campaign carried out by CPSI a large number of coal washeries have been set up in the coalfield areas.

In his inaugural address, Justice Swatantra Kumar, (Retd), Former Chairperson, National Green Tribunal, an eminent person involved in environment justice, highlighted the need for energy planning for sustainable development and not merely jumping into something which appears promising clean energy but whose long-term adverse impact on environment is yet unknown. In this context he was referring to solar and hydroelectricity. He observed that hydropower has a huge environmental impact in terms of deforestation, siltation and human displacement. Solar too can have devastating impact when life of a project ends and the facilities have to be dismantled and the solar panels that contain toxic elements have to be disposed of in an environmentally acceptable manner. According to the Chief Guest, in each development project, all environmental and sustainability aspects must be studied before launching the project.

Justice Swatanter Kumar spoke at length about various energy sources and stressed upon the policy makers and the project developers to be sensitive about the environmental sustainability aspects of production, storage, transportation and utilisation of dry fuels like coal and hydrocarbon fuels namely oil and natural gas.

While referring to India's natural endowment of coal in abundance vis a vis the limited known oil and gas resources, the Chief Guest stressed upon the need of adoption and adaptation of clean technologies for ensuring country's economic development with least adverse impact on human lives and fauna, flora and aquatic life.

While concluding his address the Hon'ble Chief Guest, stressed upon the need of setting up coal washeries for improving the quality of domestic coal so that its heat value and combustion efficiency and emissions are consequently reduced. He further stressed upon the fact that adequate care must be taken while designing and establishment of coal washeries so as to ensure that these facilities do not pollute air and water bodies in their vicinity.

Justice Swatanter Kumar released the special Anniversary Issue of CPSI Journal and congratulated the Society for its dedicated service to the Nation in promoting cleaning of coal and adoption of clean coal technologies in India.

While congratulating CPSI for its persistent efforts and campaign for promoting coal washing, Dr. V.K. Saraswat, Member NITI Aayog, Guest of Honour, made a very exhaustive and well researched presentation covering all aspects of coal production-supply-utilisation chain and laid out a clear road map for sustainable development of coal industry till 2040. He raised important issues pertaining to coal's adverse impact on the environment. He stressed on the need for adoption / adaptation of high efficiency clean technologies for coal usage and also stressed upon the need for research for carbon sequestration and utilisation as a focus area for coal to enable it to continue its primary role in the energy sector in India.

While highlighting the challenges before Indian coal sector, Dr. V K Saraswat in his detailed presentation, covered the entire gamut operational and economic challenges facing the sector including, inter alia, coal mining, preparation, transportation, utilisation, new advanced emerging technologies and products, R & D and allied developments.

He also dwelt upon new policy imperatives that must be addressed at home and the need for reducing coal import dependency due to inadequate domestic production, both in terms of quality and quantity. In this context he observed that the establishment of a coal regulator with a clear mandate to enable a competitive market structure in the coal sector in India is needed immediately.

He cautioned that India's commitment under Paris agreement does not allow us to expand our coal consumption in the long-run. Therefore, for sustainability of coal demand and consumption, there is a need to develop coal in a new carbon age powering a wave of innovation in advanced products like - Coal to liquid fuels and chemicals; carbon fiber, activated carbon, graphite, electrodes, graphene, building and

construction products, carbon foam and carbon black and other emerging industrial applications including biotech, medical and agriculture uses.

Dr. Saraswat highlighted that Coal Beneficiation for quality enhancements of coal for special product applications will have to be adopted on a very large scale. As over 90% coal is produced by open cast methods, deterioration of quality of coal often takes place, which makes a proper beneficiation of coal an integral part of coal production and supply chain.

Highlighting the government's strategic vision 2030 for Coal Sector, Dr. Saraswat mentioned various imperatives that inter alia, covered steps to cut down delays in mine development, improving operating performance, optimisation of the environmental performance of energy systems, reducing impacts on water and other resources and so on.

The entire focus now has to be towards transforming fossil energy systems for the future through development of technologies to enable highly flexible and reliable power systems with carbon-neutral or net-negative emissions. In this context he extensively explained the role of Hydrogen economy as well.

In the panel discussions and in subsequent discussions amongst subject experts, various policy related as well as technical aspects were deliberated in great details.

In the panel discussions and in subsequent discussions amongst subject experts various policy related as well as technical aspects were deliberated in great details and the following conclusions were reached:

- In development coal and allied projects, all environment and sustainability aspects of production, storage, transportation and utilisation must be studied before launching the project.
- There is an urgent need for adoption and adaptation of clean technologies for ensuring the country's economic development with least adverse impact on human lives and fauna, flora and aquatic life.
- Wherever coal washing is required for quality enhancement of domestic coal, adequate care must be taken while designing and establishment of coal washeries so as to ensure that these facilities do not pollute air and water bodies in their vicinity.
- For coal to continue its primary role in the energy sector, there is an urgent need for the introduction of high efficiency clean technologies for coal usage and this calls for research for carbon sequestration and utilisation (CCUS).
- There is an immediate need to address new advanced emerging technologies and products through R & D and allied developments.
- New policy imperatives for reducing coal import dependency due to inadequate domestic production, both in quality and quantity.
- Establishment of a Coal Regulator with a clear mandate to enable competitive market structure in the coal sector in India is needed immediately.
- In line with India's commitment under Paris agreement, for sustainability of coal demand, there is a need to develop coal in a new carbon age powering a wave of innovation in advanced products like – Coal to liquid fuels and chemicals; carbon fiber, activated carbon, graphite, electrodes, graphene, building and construction products, carbon foam and carbon black and other emerging applications in biotech and medical and agriculture uses.
- Coal Beneficiation for quality enhancements for special product applications will have to be adopted on a very large scale.
- In order to realise the government's strategic Vision 2030 for Atam Nirbharta in the coal sector, steps are required to cut down delays in mine development, improving operating performance,

optimisation of the environmental performance of energy systems, reducing impacts on water and other resources and so on.

- The entire focus now has to be towards transforming fossil energy systems for the future through development of technologies to enable highly flexible and reliable power systems with carbon-neutral or net-negative emissions. In this he extensively explained the role of Hydrogen economy as well.

Recommendations

Based on the Conclusions of the deliberations held in the conference, the following Recommendation emerged:

1. Invest in cost-effective and clean technologies for primary treatment of coal, either dry or wet, before it is utilised for end use. Objective is to minimise overloading users or conversion equipment with contaminants.
2. Greater focus on cost competitiveness of domestic coal must be ensured in order to retain their competitiveness as compared to imported one.
3. As India's coal is high in ash content, coal beneficiation should be done to reduce the ash content and improve its grade.
4. Introduce IT focused at mechanization and automation and digital technologies in mining in collaboration with a leading global organization.
5. Establish a Coal Regulator with a clear mandate to enable competitive market structure in the coal sector in India.
6. There is a need for improvement in safety performance in Indian coal sector. A dedicated effort has to be made to ensure achievement of the goal of zero fatalities and injuries.
7. Increase ash utilization in coal mine filling; collaborate and develop necessary frameworks, infrastructure and cost sharing mechanisms.
8. Increase adoption of remote sensing, core open drilling and geophysical and geochemical logging, 2D and 3D seismic survey.
9. Create a National Mission to promote coal consumption from alternate usage (coal gasification, coal to methanol, fertilisers, coal to chemicals, hydrogen, coal-bed methane etc.).
10. Invest in R&D in potentially highly promising technologies like bio-methanation for transforming low quality coal into methane, a less polluting fuel than coal.
11. Find methods to extract useful chemicals and minerals from the residue of the bio-methanation process.
12. Invest in technologies for conversion of methane into hydrogen.
13. Optimise and convert combined cycle power plants to generate power from hydrogen.
14. Improve on carbon capture and sequestration (CCUS) process including how to make it more effective in terms of cost and space required.
15. Investigate potential uses of carbon emissions and whether carbon nano-particles can be produced which have tremendous uses in a wide range of applications.