Dept. of Chemicals & Petrochemicals
Govt. of India

SUMMIT ON
GLOBAL CHEMICALS & PETROCHEMICALS
MANUFACTURING HUBS IN INDIA
11-12 November, 2019 | The Grand Hyatt, Mumbai

Federation of Indian Chambers of
Commerce & Industry

SUMMIT ON GLOBAL CHEMICALS & PETROCHEMICALS MANUFACTURING HUBS IN INDIA

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Report

Contents

1. **Inaugural session** 2
2. **Presenting the Vision of PCPIRs by State Governments** 7
3. **Strategies to Attract Investments: *Making India a global manufacturing hub for chemicals and petrochemicals.*** 14
4. **PCPIR Infrastructure: *Building Assets for the country*** 18
5. **Alternative, Cutting-edge and Sustainable Solutions: *Sustainable solutions for a New India*** 21
6. **Feedstock: *Ensuring optimum availability*** 25
7. **Downstream Industry: *Unleashing the true potential*** 29
8. **R&D and Skill Development: *Building an innovative and skilled India*** 31
9. **FICCI Chemicals and Petrochemicals Awards distribution function** 35

1. Inaugural session

Date: Monday, 11 November 2019
Time: 1000 - 1100 Hrs.

- Hon'ble Minister of Chemicals & Fertilizers, Shri D.V. Sadananda Gowda, inaugurated the 'Summit on Global Chemicals & Petrochemicals Manufacturing Hubs in India 2019'.
- **Dignitaries on the dais**: **Shri P. Raghavendra Rao**, Secretary, Chemicals and Petrochemicals, Ministry of Chemicals and Fertilizers, Govt. of India, **Capt. Dibya Sankar Mishra**, Hon'ble Minister Industries, MSME, Energy & Home, Government of Odisha, **Shri Mekapati Goutham Reddy**, Hon'ble Minister for Industries, Commerce, Information Technology, Government of Andhra Pradesh, **Shri Nikhil Meswani**, Executive Director, Reliance Industries Ltd., **Shri Deepak C. Mehta**, Chairman of FICCI Chemical Industry Committee, CMD, Deepak Group and **Shri Prabh Das**, Chairman-FICCI Plastic and Petrochemical Industry Committee and MD & CEO, HPCL- Mittal Energy Limited.
- After the inauguration, the Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIR) Rejuvenation Study was released.
- **Welcome address by Deepak C. Mehta- Chairman of FICCI Chemical Industry Committee**

  "Delivering the welcome address Mr. Deepak C. Mehta, commented on the significance of the PCPIR Report and said, with changes happening across the market, vital changes are happening in the country's approach as it looks at how it will do business in the future"

- India has the highest potential market that will not only ensure the country's wellbeing but perhaps pull a large part of the world out of recession. Evolution of technology is a major trigger that is making a big impact on the industrial ecosystem.
- When the PCPIRs were conceptualized, stakeholders said we need an anchor unit which can be either a refinery or a petrochemical cracker. But now, new technologies are recommending that if you need building blocks, you don't necessarily need a naphtha cracker, you can create the facilities using technologies like methanol to olefins which will give propylene and ethylene at 1/4th of the investments.
- The industrial landscape in the country is changing and so is the approach of the Government. As industry, we all need to talk about these vital changes as a whole, because they are effecting major changes in the way India looks at doing business. In this context, Union Petroleum Minister's recent comments that the government has to get out of the oil business and leave it to the market and regulator to deal with, are of immense significance. This is a major point being communicated to the industry

that sooner or later, the government will not act as industry manager but leave it to the industry to do.

- The Government and each of the Ministries is serious about doing something towards ensuring cost competitiveness of India and this is the time that we all should get together especially when more and more companies are looking towards India.

- **Keynote Address by Shri Nikhil Meswani, Executive Director, Reliance Industries Ltd**

"Delivering the Keynote Address, Mr. Nikhil Meswani, Executive Director, Reliance Industries Ltd., said the Indian Chemicals and Petrochemicals industry was the backbone of economic growth and observed that the fast-consuming population will ensure India realizing the vision of becoming a $5 trillion economy by 2025"

- Today, India's biggest strength is the fast-consuming class, our billion people who are going to ensure that $5trillion economy is a reality. This provides the foundation for a sustained economic growth. It took India 60 years to reach trillion dollars, the next trillion came in just 7 years and going forward, we will handsomely beat this record.
- Petrochemicals are the solution providers to the biggest challenges faced by the nation and mankind. Products made from Petrochemicals are essential to modern life because of their versatility, multiple advantages, easy availability and cost effectiveness. Petrochemicals have become indispensable and their consumption has strong correlation with economic growth. This industry provides critical inputs which enables other sectors to grow. It is an omnipresent industry but at same time it is an invisible industry playing a vital role in functioning the all key sectors of the economy like agriculture, infrastructure, healthcare, automotive, paints, construction, textile, packaging and all types of consumer goods. Therefore, this industry is the backbone of India's economic growth. Be it feeding the population of India or powering the fourth industrial revolution, they cannot happen without petrochemicals.
- As our per capita income rises, the demand for petrochemicals will shift from base chemicals to value added and specialties. It is, therefore, an opportune time for us to encourage investments across petrochemical value chains, beyond downstream processing, so that we can compete with the best in the world.
- Given the complexity of the capital-intensive petrochemical industry, a cluster of co-located network units is the most efficient approach. Shared utilities and shared port infrastructure can enhance the competitiveness even further and free the management resources to focus on value addition areas.
- This Summit is focused on this very aspect and I am encouraged that this will make way for our policy regime to make cluster in cluster approach, a reality.
- A 10 billion investment in an integrated petrochemical complex meets the raw material need of nearly 35 thousand small and medium scale units and therefore directly or indirectly, employees over 7 and a half lakh people, so imagine with creating 5 such complexes the country will employ 3 and half million people which will solve the job issue for over 2 years.

- Without domestic raw materials, this industry will continue to be under heavy pressure. Petrochemicals continue to inflate India's import bill, and unless we approach the cluster in cluster formula of development, we will not be able to convert this adversity into opportunity. With this cluster in cluster approach, India, instead of importer of raw materials and basic chemicals, will not only become a growth engine for its domestic players but also an export hub of value-added special chemicals and processed goods.
- Environment and sustainability are high priorities today. Circular economy is estimated to create over 200 billion US Dollars of economic value in a decade in India.
- While the chemical industry is capable of pushing economic growth to the next level, the government vision for the economy would also pave way for a facilitative policy regime that would include several areas of basic infrastructure and ensure the permitting process is timebound and a single window clearance. The adoption of ease of ease of doing business has already improved India's ranking from 142 to 63 in last 5 years. A facilitative policy regime will have to ensure a level playing field for the domestic industry which will make sure that high factor costs of India are addressed in a WTO compatible regime.
- Removal of anomalies in this sector will be a key to a new facilitative policy regime. Several taxes such as cess, levies on green power, electricity duty and tax paid on fuel, do not get a rebate in GST. We need to rebate them to provide a level playing field to the domestic industry. An integrated logistics policy will further pave way for growth of petrochemicals in India.
- As Indian economy enters the next phase of capital growth, our industry is expected to grow roughly two times the GDP growth. It is imperative that this growth results in higher investments, value additions and meeting the aspirations of a young India."

- **Presentation by Shri P Raghavendra Rao, Secretary, Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Government of India**

  In his address Chemicals and Petrochemicals Secretary Shri P Raghavendra Rao said that the country still imports chemicals worth billions of dollars, underlining the huge untapped opportunity for growth.

- Robust economic growth augurs well for the chemical and petrochemical industry. Indian economy is doing well and is expected to reach USD 5 trillion by 2025 and India will be the 5th fastest growing economy in the world from the current seventh.
- Buoyed by strategic growth drivers like demographic dividend, rising disposable income, increasing demand for specialty chemicals as well as shift towards the east in terms of production and consumption, the Indian Chemicals and Petrochemicals industry is poised to grow at a CAGR of over 9 % for the next few years.
- Several sectors of the economy contribute significantly like agriculture, construction, mining, defense and many other sectors and the role of chemical and petrochemical sector in boosting these sectors is very important.

- The growth of the chemical and petrochemical sector will boost several key sectors of the economy, be it agriculture, construction, mining and defense. The sector makes significant contribution to the economy, to exports as well as towards employment generation.
- Along with policy support, the flagship government schemes like Make in India, Swachh Bharat Mission, Smart Cities Mission, agricultural reforms, all these are greatly contributing towards increase in the demand for chemicals in a significant way. However, one major worry is that domestic production is not able to keep pace with the growing demand, the result is the gap is being filled through imports and because of this net imports have touched 18 billion US Dollars last year and if nothing is done, we expect it may touch 30 or even 40 billion US Dollars if this keeps on going in next 4 or 5 years. As we are expecting the industry to grow to USD 304 billion by 2025, imports are also likely to increase to USD 126 billion in the next five years. Similarly, our exports are growing but not in pace with imports. We need to see this as an opportunity to increase our domestic production.
- We want to make India a leading global manufacturing hub for chemicals and petrochemicals. Our main focus is how to reduce our import dependency, how do we attract investments, how do we get cutting edge technologies in the country, how do we promote clusters and how do we ensure sustainability.
- In realizing the vision of a $5 trillion economy, $1 trillion should come from the manufacturing sector and of this $1 trillion, the chemicals and petrochemicals sector's contribution should be between 20% - 25%.

- **Address by Shri Mekapati Goutham Reddy, Hon'ble Minister for Industries, Commerce, Information Technology, Government of Andhra Pradesh**

  Minister for Industries, Commerce, Information Technology, Government of Andhra Pradesh, Shri Mekapati Goutham Reddy said the state will majorly contribute towards realization of $5 trillion economy and showcased Andhra Pradesh's resources and industrial capabilities.

- In realizing the vision of $5 trillion economy, the chemicals and petrochemicals sector will be among the biggest contributors. Andhra Pradesh is keen to play a more participatory role in the development of the national economy.
- The presence of natural deposits and resources, Andhra Pradesh has a huge potential for growth and with industry friendly policies and incentives, the state offers attractive opportunities for investors.
- Our focus is on four-pillars for the implementation of industrial policy- transparency in governance, enabling industrial policy, creating world-class infrastructure and an international standard workforce of the future.
- We have a very customized policy for MSMEs which will facilitate investments in the Petroleum, Chemicals, and Petrochemicals Investment Region (PCPIR). Andhra

Pradesh has the second largest coastline in the country after Gujarat and has abundant petroleum and gas resources.

- In the past 15 years, private and public companies have hugely benefited from the reserves in Andhra Pradesh. We have a very clear vision about how to leverage the resources. From facilitating land allotment to expeditiously clearing procedures for setting up industry, we assure all the assistance and cooperation from the government to the investors.

- **Address by Capt. Dibya Sankar Mishra, Hon'ble Minister Industries, MSME, Energy & Home, Government of Odisha**

  Odisha Energy, Industries, Micro, Small & Medium Enterprises Minister Capt. Dibya Shankar Mishra said investment in petrochemicals will help in furthering common good and improve the quality of life of the poor and downtrodden.

- In Odisha, it advantages investors. We have rich deposits of bauxite, iron-ore, coal, water and other natural resources coupled with a huge skilled and trained workforce. While there is a slide in the Indian economy, Odisha continues to grow.
- Odisha is an ideal destination for investment as there is stable political environment, zero tolerance to corruption, low operation cost and a seamless single window scheme for faster clearance of projects. We are also a revenue surplus state.
- The motive behind reaching a $5 trillion economy is improving the quality of life of all the poor people of the country. In this endeavor we all should contribute, and Odisha is ready to play a major part in this. Investment in petrochemicals will help boost Odisha's economy and bring a qualitative change in the lives of the poor.
- We can definitely reach the $5 trillion provided all the states focus on their strength. And our focus sectors are chemicals and petrochemicals, aluminum, iron & steel, food processing and information and technology.
- Our competition is not with other PCPIRs in the country but with China, Vietnam and Singapore. With low manpower cost, conducive power tariffs and industry friendly policies, Odisha offers competitive advantage to the investors.

- **Address by Shri D.V. Sadananda Gowda, Hon'ble Minister of Chemicals and Fertilizers, Ministry of Chemicals & Fertilizers, Government of India**

  Shri D. V. Sadananda Gowda, Union Minister of Chemicals & Fertilizers Government of India, said the Indian Chemicals and Petrochemicals sector has a significant potential to help India reach its goal of $5 trillion by 2025.

- The Indian Chemicals and Petrochemicals industry is expected to grow at a CAGR of 9.3 percent and reach $304 billion market by 2025 from the current $163 billion. This not only emphasizes the important role it is set to play in the growth of Indian economy but also help India emerge as the world's leading manufacturing hub.

- Our Hon'ble Prime Minister Shri Narendra Modi has envisioned making India a $ 5 trillion economy by 2025. The Indian Chemical and Petrochemical industry undoubtedly have a very significant role to play in achieving this goal.
- Government initiatives such as Make in India, Skill India, Digital India, Swachh Bharat Abhiyan etc. are accelerating growth of the chemicals and petrochemicals sector.
- With a stable government at the helm, hosts of structural reforms have been initiated in the last few years including vast improvement in ease of doing business, 100% FDI in the sector and implementation of Petroleum, Chemicals & Petrochemical Investment Regions (PCPIRs), as clusters that provide investors with a transparent and investment friendly policy and facility regime
- India has been making rapid strides in terms of world class infrastructure. There is massive scale up investments in next generation infrastructure including roads, ports, railways, airports, telecom and digital networks.
- India received over $280 billion FDI in the last five years and is among the top 10 FDI destinations. India has a globally cost competitive manufacturing environment with a vast pool of skilled professionals possessing ample knowledge and energy. India offers a world class engineering education base and strong Research and Development facilities.

2. Presenting the Vision of PCPIRs by State Governments

Date: Monday, 11 November 2019
Time: 1000 - 1100 Hrs.

- **Dignitaries on the dais: Shri Samir Kumar Biswas,** Joint Secretary (Chemicals), Ministry of Chemicals and Fertilizers, Government of India, **Shri Rajat Bhargava,** Principal Secretary, Industries, Infrastructure & Investment, Government of Andhra Pradesh, **Shri M. Thennarasan**, Vice Chairman & Managing Director, Gujarat Industrial Development Corporation, Government of Gujarat, **Shri Hemant Sharma,** Commissioner-cum-Secretary, Industries/MSME Department, Government of Odisha, **Shri Aneesh Sekhar. S**, Executive Director, Tamil Nadu Industrial Development Corporation Limited, Government of Tamil Nadu and **Shri A.K. Mathur,** Addl. GM, Rajasthan State Industrial Development & Investment Corporation Limited (RIICO), Government of Rajasthan
- **Presentation on Visakhapatnam PCPIR**

- In his presentation, Shri Rajat Bhargava said that the Visakhapatnam PCPIR is the largest petrochemical hub of India, covering 640 sq.km with total population of 3.23 lakhs (2011 census).

- It is well connected with all possible modes of transport (Air, Rail, Road and Sea) and also lies on the “Golden Quadrilateral”. Currently under the management of Special Development Authority (SDA), which is chaired by the Managing Director APIIC (Nodal Agency).
- Describing the vision of the PCPIR, he said it should project Andhra Pradesh as largest Petrochemical hub of India by: Conserving and Protecting Eco sensitive areas; Guided Development for Industries; Promoting green technologies and energy efficient mechanisms; Ensure better transport connectivity; Planned urban development for Non-processing area.
- The Visakhapatnam PCPIR is divided into three zones- Visakhapatnam, Nakkapalli and Kakinada.
- Kakinada- Potential for development of petrochemical hub: About 6,750 Ha of land remains available for allotment for industrial operations in the KSEZ with total of 9,120 Ha of allottable land available in the Kakinada region for establishment of petrochemical downstream industries. Some key industries which have come up: Haldia Petro Chemicals and HPCL in JV with GAIL with proposed investment in Kakinada would serve as the anchor unit with supply of required feedstock.
- Dedicated Infrastructure: Development of PCPIR expressway would connect the Kakinada to markets in and outside the PCPIR region. Development of VCIC would further improve the connectivity of the region and thereby boost the industrial development in Kakinada.
- The proposed GMR Port in the region, dedicated liquid cargo handling facility would provide the proposed petrochemical units/ industries with required access to global markets.
- 40 MGD of assured water supply from the Godavari perennial river.
- The proposed GMR power plants would be providing uninterrupted 40 MGD supply for supporting industrial operations in the region
- Feed Availability: Discovery of K.G. Basin in the region can serve as a dedicated source of feed for petrochemical industries in the region, eliminating the import dependency.
- Utility/ Infrastructure Power: NTPC, NHPCL and SPGL are the major power projects.
- Social Infra: At present, about 3,472 Ha of land is under development of residential estate, which is further proposed to extend as per the master plan with proposed land already identified for residential township in all three zones. Infrastructure for public utilities and facilities is being implemented in the region. Development of knowledge hubs across all zones is proposed for skill development
- Feedstock: Anchor tenant -HPCL/GAIL. HPCL refinery in Visakhapatnam has installed capacity of 8.33 MMTPA. Expansion as proposed by the tenant include: Refinery capacity expansion from 8.33 to 15 MMTPA.
- Hydrocracker unit (FCHCU) with a capacity of 3.053 MMTPA-as a part of the Visakha Refinery Modernization Project (VRMP).
- Olefins and Aromatics Complex proposed at APSEZ Visakhapatnam.

- HPCL/ GAIL HPCL in JV with GAIL has plans for a greenfield refinery project (1.5 MMTPA petrochemical complex) in Kakinada at an investment of US$ 4.29 bn
- Haldia Petro-Chemicals Proposes to setup a refinery in Kakinada SEZ at an investment of US$ 11.43 bn.

- **Presentation on Dahej PCPIR**

  In his presentation, Shri M. Thennarasan, Vice Chairman & Managing Director, Gujarat Industrial Development Corporation, Government of Gujarat provided the facts and said that Gujarat is the national leader in Chemicals & Petrochemicals.

- Gujarat contributes 18% of India's chemical exports, 32% of total chemicals production and 62% of India's petrochemical production. As Dahej PCPIR Region is located at a very advantageous place along the DMIC Corridor (Delhi Mumbai Industrial Corridor).
- Gujarat is the largest supplier of bio-fertilizers, seeds, urea & other fertilizers. There are 500 large & medium units and 16,000 small scale units in the state that manufacture over 6,500 products.
- First State to have an operational Petroleum, Chemical and Petrochemicals Investment Region (PCPIR), developed over an area of 453 sq. km
- Leader in promoting environment friendly practices through Common Effluent Treatment Plants; currently 33 such plants are operational & further 8 are proposed.
- Key factors that led to the development of Dahej region as a Petrochemical hub:
    - Port & Waterfront;
    - Chemical Port and Storage Facility at Dahej;
    - Adequate water available from Narmada River;
    - Rich natural resources and feedstock;
    - LNG regasification terminal at Dahej;
    - Near NH-8 and Delhi Mumbai Trunk Rail Line. SH linking the region with NH-8;
    - Robust supporting infrastructure;
    - Road, rail, port, power, gas, water;
    - Concentration of Petroleum, Chemical and Petrochemical estates around PCPIR;
    - Efficient waste management - effluent disposal pipelines, solid waste disposal sites.
- Anchor Tenant – ONGC Petro Additions Limited (OPaL), a JV of ONGC, GAIL and GSPC has developed a world scale multi-feed cracker in the PCPIR. OPaL's unit at PCPIR, is the largest petrochemical plant in India, developed at an investment of USD 3.9 billion.
- GIDC has delineated specific zones for the chemical, textile, dyeing and other similar industries in its industrial estates. These areas have been provided with special facilities for environment management and protection.
- Dahej PCPIR Infrastructure

- Ports:
  Adani Petronet Dahej Port P. Ltd; GCPTCL Liquid Chemical Terminal; LNG Petronet (Gas Terminal); Reliance Liquid Fuel Jetty; Birla Copper Bulk Cargo Jetty; Dahej-Ghogha Ro-Ro Ferry Service Terminal; Development of Jetty for handling ODC (Over Dimensional Cargo); JV of GMB & Dahej SEZ Ltd. Development of Marine Shipbuilding Park (MSP).
- Power:
  Four sub-stations located at Dahej, Dahej SEZ, Rahiyad-Suva & Vilayat; Eight substations located at Dahej, Luna, Bhensali, Vadadala, Galenda, Jolwa Sambheti and Vilayat; Gujarat Energy Transmission Corporation Limited (GETCO) has completed construction of 220 KV substation at Suva Dahej, which is in operation. 1200 MW gas-based power plant by Torrent Power Ltd. in Dahej SEZ has been completed. Construction of 2640 MW coal-based power plant of Adani Power is in progress. Two 220 KV One 400 KV & Ten (10) 66 KV substations are planned in Dahej & Saykha & Atali Housing.
- Water:
  Raw Water Reservoir Intake Well 25 MGD at Narmada River Nand. GIDC has developed Dahej Raw Water Reservoir with a capacity of 366 MG. Water supply network comprising of branch canal and pipelines with cumulative installed capacity of 108 MGD (408 MLD). Present utilization average -180 MLD
- Effluent Disposal:
  GIDC has developed 90 MLD disposal pipeline of 40 km from Vilayat pumping station to Dahej to dispose the effluent into deep sea. Additional 190 MLD Effluent Disposal Line under planning and GIDC has established two CETPs in the region: 40 MLD at Dahej and 40 MLD at Sayakha
- Waste Disposal:
  Treatment Storage and Disposal Facility (TSDF) for hazardous waste management has been developed by Bharuch Enviro Infrastructure Limited in Dahej PCPIR having a capacity of 1.4 MMT. Incinerators with capacity of 20 Million Kcal/hour are installed by Saurashtra Enviro Projects Pvt Ltd.

- **Presentation on Odisha PCPIR**

  In his presentation, Shri Hemant Sharma, Commissioner-cum-Secretary, Industries/MSME Department, Government of Odisha gave Presentation on Petrochemicals & Chemicals Ecosystem in Odisha. He started with presenting the Odisha's vision which is to attract Rs. 2.5 lakh crore of new investments in 6 identified focus sectors and create 30 lakh job opportunities by 2025.

- The identified focus sectors are: Agriculture and Food Processing, Chemicals & Petrochemicals, Textiles, Downstream & Ancillary, Electronics System Design and Manufacturing, IT & ITeS and Auto and Auto-components
- Chemicals & Petrochemicals is classified as a focus sector of the state and is eligible for special incentives as per the Odisha Industrial Policy Resolution, 2015.
- Paradip PCPIR:
    - The Paradip PCPIR has total area of 284 sq.km while the processing area is 113 sq.km.
    - Anchor Tenant: Indian Oil Corporation Ltd (IOCL)
    - IOCL- Existing infrastructure
    - 15 MMTPA Refinery plant commissioned in Feb 2016; Will provide feedstock to the downstream units including Paradip Plastic Park.
- Paradip Plastic Park:
    - The park is spread over 120 Acres offering plug-and- play model. Feedstock to be made available from the IOCL Refinery.
    - Key Players in the sector are: IOCL Petroleum refinery; IFFCO fertilizer Plant and Paradeep Phosphates Ltd.
- Feed stocks
    - Polypropylene: 680 KTA Polypropylene plant with an investment of Rs 3150 crores, commissioned in 2019.
    - Mono Ethylene Glycol: 350 KTA MEG Plant with an investment of Rs 4000 Crores. To be commissioned by 2021-22. Intermediate for Polyester chips, fibers, PET bottle, PET chips, polyester yarn etc.
    - Petcoke Gasification: 770 KTA Pet-coke based synthetic ethanol project being considered by IOCL. To be commissioned by 2024-25.
    - Paraxylene-PTA Complex: 1200 KTA Paraxylene-PTA complex, in principle approval received, to be commissioned by 2023-24. Feedstock for PET Chips, packaging film, yarn and textile industries.
    - Besides offering competitive cost of doing business, Odisha has “GO SWIFT” (Single Window for Investor Facilitation & Tracking) a one-stop solution for all required services by an investor during the investment life cycle of a project. The state also provides attractive incentive package along with a large pool of skilled workforce.

- **Presentation on Tamil Nadu PCPIR**

  In his presentation, Shri Aneesh Sekhar. S, Executive Director, Tamil Nadu Industrial Development Corporation Limited, Government of Tamil Nadu gave Presentation on Chemicals and Petrochemicals scenario in Tamil Nadu.

- He cited the factors that make the state an attractive destination for investments in the Chemicals and Petrochemicals sector. The factors are:
    - Strong Macroeconomic Fundamentals; Land Availability; Strong industrial base; Modern Infrastructure; Human Resources; Ease of Living; Good Governance.
    - On the infrastructure front, Tamil Nadu is a power surplus state, has 5 big ports, 6 airports including 4 international airports, over 2 lakh km of roads and 21 industrial parks.
    - On the economic front, the state grew at a rate of 8% as against the national rate of 6.50% in 2017 -18.
- The state was 4th in FDI inflows - US$ 29.3 billion (2001 – 2018). It is also among top three exporting states - US $ 30.52 billion (2018-19). Leading chemical and petrochemical manufacturers including SPIC and CPCL have a base in Tamil Nadu.
- The Tamil Nadu PCPIR is spread over an area of 257 sq. km. of brownfield area in the coastal districts of Cuddalore and Nagapattinam. It expected to generate employment for 737,000+ people.
- Planned investments in the region include a deep seaport with FSRU for import of LNG; a gas-based power plant; a petrochemicals complex through partnership with private co-promoters and petrochemical downstream plants and fertilizer complex.
- The state also setting up a Polymer Industries Park with an area of 265 acres in Voyalur and Kattupalli villages, Ponneri Taluk, Thiruvallur District at an estimated cost of Rs 216 crores. A Special Purpose Vehicle named Tamil Nadu Polymer Industries Park Limited (TPIPL) has been formed through a JV between TIDCO & SIPCOT for its implementation.
- Tamil Nadu consumes over 9 lakh tonnes of plastics while approximately $ 2.77 billion of revenue is generated by plastics related business. Over 10 lakh direct and indirect employment is provided by more than 8000 small and medium enterprises in the state.
- Incentive package and facilitation by the state government includes GST refunds/Special Capital Subsidy; Employment / Training Subsidies; Environmental Protection Infrastructure Subsidy; Electricity Tax Exemption; Concession on Stamp Duty and Land Prices; Online Time-bound Single Window Clearances.
- Adequate land is available in eight industrial parks in the state equipped with infrastructure facilities like electricity & water supply, road connectivity, drainage & waste disposal, etc.

- **Presentation by Shri A.K. Mathur,** Addl. GM, Rajasthan State Industrial Development & Investment Corporation Limited (RIICO), Government of **Rajasthan**

  Presenting Rajasthan as an emerging petrochemical investment destination

- Starting off, Shri A.K. Mathur informed about a proposed 9 MMTPA refinery in Barmer which is under implementation by HPCL and the State Government. Along with

refinery a petrochemical complex is also proposed at a cost of Rs. 43,129 crores. The complex will provide inputs for industries such as: plastic, rubber, detergent, fibre, lubricant, dyes, drugs, pesticides, paints, cosmetics, etc.

- He also highlighted that Rajasthan is the 2nd largest producer of crude oil and 3rd largest onshore producer of natural gas in the country and accounts for 23% of total domestic crude oil production.
- There is high potential for development of entire value chain. The state has adequate raw material in form of crude oil for refinery. Output of petrochemicals may fulfil input demand of leading sector of state e.g. fibers for textiles, parts for auto, intermediate chemicals for chemical and pharma sector etc.
- In terms of connectivity and infrastructure, the state has the second largest rail route in India, third largest network of national highways, 7 airports with direct connectivity to Dubai, Muscat, Singapore & major Indian cities.
- Rajasthan also has three multi-modal logistic parks in Neemrana, Pali and Bhilwara and eight inland container depots, two container freight stations and one air cargo complex.
- The state also offers customized incentive packages for the manufacturing and service enterprises along with allowing entrepreneurs to start their businesses by filling a self-declaration form. There is also exemption from inspections from various departments for 3 years with 6 months corrective period.
- The government has also enabling policy framework with policies dedicated to various sectors.

- **Address by Shri Samir Kumar Biswas, Joint Secretary (Chemicals), Ministry of Chemicals and Fertilizers, Government of India**

- To cater the growing domestic demand, India need to attract huge investments in near future. Additionally, India has good potential to become a global manufacturing hub for exporting value-added products across the markets. And if we can ensure this, our national vision of becoming 5 trillion economy by 2025 becomes effective.
- As we know that there are 4 PCPIRs which are meant to primarily use this opportunity of achieving over 300 billion by 2025. Lots of announcements have taken place and lot of active workings are being done by various players.
- PCPIRs being in a cluster approach are vast areas which are notified for the development of the industries including the production units and also the social infrastructure.
- If we see the role of Government in developing infrastructure and utilities, we can state that Infrastructure is also commercial activity and therefore looking at examples all over the world, infrastructure utilities are also developed by private players and not only Government. So, we have investment opportunities which will go 50 to 100 billion dollars to support this kind of production units in chemicals and petrochemicals.

- If we really want to meet the entire domestic demand by producing domestically, we need all the PCPIRs to fully populate it with industrial and manufacturing units.
- We are aware that by 2025, we need 5 Cracker Complexes to meet our domestic demand and these cracker complex need to be of global scale as well. By 2040, we will require 14 more and if we divide them among 4 PCPIRs, each has to house 5 cracker complexes. This is the enormous opportunity that is existing for global investors. So, we need to study the competitive advantage of each PCPIR State.
- Basic competition here is to understand each PCPIR state in respect to the availability of natural resources, infrastructure availability and other strategic points and from those point of view, we have to understand the best suitable industry. Although we are talking here about big mega investment which are basically refinery and cracker complexes which provide feedstock to various other downstream sectors.
- Pesticides is a very big area as we can see Andhra Pradesh is a very big consumer of pesticide and there is lot of potential to produce pesticides. Likewise, every PCPIR has their own strength and opportunities.
- Whenever any investor has interest in particular project one need to really approach the State Government as they have full-fledged development boards wherein each and every issue which are coming in a way of investment decision, will be really discussed as there are people to resolve bottlenecks and take the project forward.

3. Strategies to Attract Investments: *Making India a global manufacturing hub for chemicals and petrochemicals.*

Date: Monday, 11 November 2019
Time: 1345 - 1515 Hrs.

Panelists:

- **Ms. Manisha Gupta,** Commodities Editor, CNBC-TV18
- **Mr. Sanjeev Gandhi,** Member of the Board of Executive Directors, BASF SE
- **Mr. Vipul Shah,** COO, Petrochemicals, Reliance Industries Ltd.
- **Mr. Walmir Soller,** Chief Executive Officer, Braskem, Europe
- **Mr. Zarir N Langrana,** Executive Director (Global Chemical Business) Tata Chemicals
- **Mr. Prabh Das,** MD& CEO HPCL-Mittal Energy Ltd.
- **Mr. Jesper Wendt,** Senior Manager, Global Processes and Projects, Haldor Topsoe

The discussions were mostly on the need to improve infrastructure and enabling policy framework by the government. The panelists highlighted the immense potential of the Indian chemicals and petrochemicals industry and how the PCPIRs coupled with world class infrastructure and enabling policy framework can enable India to reach $5 trillion

economy by 2025 and become a global manufacturing hub of chemicals and petrochemicals.

- **Address by Mr. Sanjeev Gandhi**

- In his presentation "Growing in India with India", Mr. Sanjeev Gandhi talked about BASF's presence in Asia Pacific where it has 19 markets, 135 manufacturing sites, 140 sales offices, and employs over 20,000 people. Its sales for 2018 stood at €14.6 billion while earnings before interest and taxes (EBIT) was €1.8 billion.
- In Chemical Industry, size is not necessarily important, but scale is important, so when we design PCPIRs it is very important to have integration of resources, utilities as in the end, we need scale to be competitive. Since, India is the open market and there is pressure of imports coming from the middle east, from China and other emerging markets, local industry has to be competitive and PCPIRs will go very long way in ensuring this. It is important to support not only FDIs but also domestic industry.
- In India, BASF has 12 production sites, 2 R&D facilities part of Global Technology Platform while its sales in 2018 clocked €1.4 billion. It is active for more than 125 years. Its sites include, a chemical complex in Dahej, construction plant in Nellore, global agriculture research station in Pune, Mobile emission catalysts site in Chennai and an Innovation Campus in Mumbai.
- Talking about key enablers for making India a global manufacturing hub for chemicals and petrochemicals, Gandhi stressed on leveraging synergies and cost competitiveness of common infrastructure. He said PCPIRs were the appropriate forum to exploit cost competitiveness of common infrastructure.
- He also highlighted the significance of adequate availability of utilities like water, steam, electricity, effluent treatment and discharge, and port, road, rail infrastructure.
- Pointing to delays of several years in getting environment clearances, Mr. Gandhi called for fast tracking clearance procedures and put in place enabling policy framework including land & labour reforms, incentives and facilitating resource efficiency framework.

- **Address by Mr. Vipul Shah**

- Advocating for creating world class infrastructure and enabling policy framework, Mr. Shah put the onus on the chemical and petrochemical industry for fulfilling the vision of a $5 trillion Indian economy.
- Indian economy will not reach $5 trillion by 2025 unless the chemical and petrochemical industry enables that to happen. Make in India is not an empty promise as if our industry will only rely on imported material, then it will not work out and therefore we talk about chemical clusters, PCPIR formation and rejuvenation. In the last 5 years, Reliance has invested close to 75 billion US Dollars and out of that 17 to 18 billion Dollar is in petrochemical refining industry. We need to make the industry able to contribute significantly so that we may reach the target easily and not just rely

on government. For that to happen, we need to do a lot, address many key issues, adopt new technologies and make innovations, said Mr. Shah.

- He said the chemical and petrochemical industry should not entirely rely on the government but make its own moves to remain competitive and sustainable.
- We cannot just sit and wait for the government to do it for us. It's the industry which must make it happen. We need bring in new technology and adopt them fast, we need to enhance our R&D capabilities and continue making innovations and research and translate them into products. In India, there is so much of raw material that goes through roadways, while in Rest of the World and in US it all goes through railways and in waterways and India having a great coastline, but we do nothing much.
- We must look for improving innovation in India. As people talk about automation, artificial intelligence etc. as today in Silvassa site, where we make polyester is the only site in the world in the polyester industry where the polyester like purified terephthalic acid (PTA) and mono-ethylene glycol (MEG) come in trucks, everything is automated which means our industry is capable of doing it but doing that artificial intelligence data is critical to use.
- On the government side, they know what right infrastructure or policy framework so that industry will see that as a value proposition to implement that in our country. While the industry must do what it has to, what the government needs to do is provide adequate and world class infrastructure and enabling policy framework, stressed Mr. Shah.

- **Address by Mr. Zarir Langrana**

- Talking about India's march towards becoming USD 5 trillion Economy by 2025, Mr. Langrana said the chemical and petrochemical sector is envisioned to contribute 20-25% towards the manufacturing sector which is around USD 265 billion.
- About industry outlook and growth drivers, he pointed out the following:
    - Strong economic growth & rise in per-capita income resulting in increase in demand for chemical products; Low per capita consumption compared to global averages; Widening supply demand gap; Innovation - world class engineering & strong R&D capabilities; Cost competitiveness due to optimized workforce costs and manufacturing excellence; Aggressive focus and lead on sustainability; Strong Government Policy Support to R&D, permitting 100% FDI in Chemicals sector; and Increasing investments by foreign companies - total FDI inflows in the Indian chemicals industry (excluding fertilisers) were USD 12.68 billion.
- He said the industry faced several growth challenges, major of which are the industry being highly fragmented, dumping and unfair trade practices, exports hindered by non-tariff barriers and high factor costs.
- Besides, he also pointed to the industry being capital extensive coupled with the need for patent protection; R&D costs and feedstock availability.

- Stringent regulations and environment protection issues were also major roadblocks, he said adding that the SMEs in the sector are prone to low focus on R&D and in-adequate facilities at ports and railway depots.
- He cited anchor units' inadequacy in providing building blocks to downstream industries and logistics & infrastructure bottlenecks for the slow progress in PCPIRs.
- Mr. Langrana suggested heavy investments in upfront infrastructure – for both existing and greenfield PCPIR's that include a Cracker Complex in each PCPIR; pipelines for cryogenic feedstock; high speed corridors, high capacity ports and airports; 24 x 7 electricity supply - energy sharing agreements; water treatment plant for factory and regular operations; common ETPs, WTPs and common infrastructure. He also suggested consolidation of multiple legislations governing the sector.
- Without the policy, it become difficult for the investors to gauge the framework that are been put in place.

- **Address by Mr. Prabh Das**

- Giving the historical brief that in 1998, we were importing petroleum products in our country and currently we have become a petrochemical hub and therefore exporting 64 million tons of product. Highlighting the significance of chemical and petrochemical sector in India's economic growth, Mr. Das pointed out to cumbersome clearance procedures and suggested the government to assume the role of an enabler than of a regulator.
- We need 1 Naphtha cracker nearly 3 billion dollar which is the size of investment we require every year. The positive side is that there is enough demand, no regulations and enough feedstock is there, and we are exporting and since country is having enough raw material for Naphtha and Naphtha cracker today and so we can crack anything. The best part in India is that our cost of construction is very less, operating cost is very less.
- "Our urge to the government is that don't put too much conditions on the industry and don't take too much time in clearance. The government should and must trust the industry and the industry will repay that trust by ensuring growth and prosperity of the country and its people, he said.
- Mr. Das said that there was a need for setting up one cracker unit every year to meet the demands of the chemicals and petrochemicals industry which largely depends on imports for raw materials. The positives for the industry are the steady growing demand, 100% FDI among others, the negative aspect is the high cost of logistics.

- **Address by Mr. Walmir Soller**

- Mr. Soller said that India has a high potential to grow in resin consumption. Talking about making investments, he said availability of feedstock at competitive prices, infrastructure and skilled workforce were the most essential requisites.

- Plastic has important advantage in terms of energy consumption, efficiency or productivity and in most of the applications when we do the lifecycle analysis and at the same time we need to deal with the waste management. So, on one side, plastics are very important for the climate change, but it also brings together addition of challenges that bring all the stakeholders to come together and change and manage the waste.
- Factors to consider when making an investment are competitive feedstock, growing market demand, infrastructure –land, logistics, utilities, etc., skilled workforce and clear regulatory framework. These factors combined facilitate the process for investment prioritization and decisions, he said.

- **Address by Mr. Jesper Wendt**

- Mr. Wendt said there is immense potential for the Indian chemical and petrochemical industry to become a global leader. But extensive procedural bottlenecks and long time required to get requisite clearances/permissions and approvals were a big hindrance in realizing that potential. He advocated for a more enabling policy framework and further improvements in ease of doing business in India.
- One of the factor when an investor country looks in India is skilled labor for construction and operations, transparency, political stability whereas the negative things that come in mind is incentive tax rate has been lower but at the same time to know about chemical policy as it is difficult to see in India what will be the status in the next 4 years and with this, incentive tax rate has been lower.

4. PCPIR Infrastructure: *Building Assets for the country*

Date: Monday, 11 November 2019
Time: 1530 – 1700 Hrs.

Panelists:

- **Mr. Amit Mukherjee,** Director, Mott MacDonald, India
- **Mr. Deepak C Mehta,** Chairman and Managing Director of Deepak Nitrite Ltd.
- **Mr. Deepak Dalvi,** CEO & MD, Royal Vopak, India
- **Dr. S. Xavier Britto,** Chairman & Managing Director, Kerry Indev Logistics Pvt. Ltd.
- **Mr. Raghu Babu Nukala,** Project Director, GIZ [Deutsche Gesellschaftfür Internationale Zusammenarbeit (GIZ) GmbH]
- **Mr. Vijay Sankar,** Deputy Chairman, The Sanmar Group
- **Mr. K P Roy,** Senior Consultant, Gaztransport & Technigaz SA, France (GTT)

The discussions surrounded around the key factors needed for the success of PCPIRs which include, building social and logistical infrastructure, government intervention in ensuring feedstock availability and adopting best practices from successful chemical hubs and PCPIRs across the globe.

- **Address by Mr. Deepak C Mehta- Chairman and Managing Director of Deepak Nitrite Ltd.**

- Mr. Mehta said that in order to turn PCPIRs into cost competitive ecosystem, there was need for proper infrastructure, availability of utilities and feedstock along with an industry-friendly regulatory framework.
- For the sustainable competitive advantage, we really need to have the upstream and downstream industry next to each other where we can say that the most cost competitive logistic solutions are available where we are near the sea so that the water transportation is cheapest where we are ensuring the interconnected pipeline that is a dream of mega manufacturing complex or recreation of PCPIR but PCPIR whole concept has been diluted so far as PCPIR in the real true essence PCPIR as Pipeline Connect and Petrochemical Industry Region as if there is no pipeline connection then there is no competitive advantage of having the logistics there. Someone who will make a product PCPIR will end up in having more competitive product than somewhere else. Even plastic parks are not an ideal option today.
- The key requirements for a successful PCPIR are; Ports- capable of handling solid, liquid & gas and Ro-Ro Facility; Common utilities – steam, power, fire water storage, etc.; Logistics – feed & product tank-farm and pipeline corridor; Social Infrastructure – smart city development & public transport; Anchor Unit for building blocks; Time bound regulatory approvals etc.
- He said the chemical cluster should offer all the above, including land on annual contract / rental basis which will bring down capital employed significantly.
- Mr. Mehta also suggested investing in alternative technologies like on-purpose olefin production plant (MTO / PDH) where the conventional option of a refinery and naphtha cracker entails massive capital expenditure.
- Among other suggestions to make PCPIRs successful include a master plan by a professional organisation, incorporating the best global practices, an autonomous empowered organisation structure for the PCPIR and streamlining of regulatory approvals in time bound user-friendly manner.

- **Address by Mr. Deepak Dalvi, CEO & MD, Royal Vopak, India**

- Mr. Dalvi on his part said the success of petrochemical cluster hinges on providing 'plug & play' infrastructure. The supporting industry is a large contributor to the industry and value creation and requires seamless integration of producers and large number of service providers.
- He cited the success story of Jurong Island Singapore, for Indian PCPIRs to replicate. He attributed several reasons behind Jurong Island having emerged as a world-class petrochemical's hub.
- One of the chief reasons he said was one centralized agency the Economic Development Board (EDB) that is credited with transforming concepts into reality through meticulous planning and execution.

- Other reasons cited by Mr. Dalvi are:
    - Assessment of end markets for proposed petrochemical industry – not just domestic consumption, but also exports;
    - Identification of potential investors and marketing campaign;
    - Common facilities and infrastructures established in the initial days, with EDB strongly promoting sharing and complementation of facilities;
    - Attracting best in class services providers for common facilities and infrastructures viz steam, cooling water, demineralized water, effluent treatment plant, industrial gases, storage and terminals;
    - Structured land allotment basis type of industry, safety, pipeline connectivity.
- He also expressed concern over the Indian chemicals and petrochemicals industry's dependence on imports for feedstock and called upon Indian players to join hands in order to boost domestic production of feedstock.

- **Address by Mr. Raghu Babu Nukala, Project Director, GIZ [Deutsche Gesellschaftfür Internationale Zusammenarbeit (GIZ) GmbH]**

- While suggesting systematic and holistic planning for all new manufacturing hubs, Mr. Nukala said unless there was aggressive marketing, the PCPIRs will not take off.
- He compared Indian PCPIRs with similar global complexes like Bayer Chemical Park, Leverkusen, Germany, Tianjin Economic-Technological Development Area, China and Shanghai Chemical Industry Park (SCIP), China, and pointed to extensive transportation and infrastructural network and social infrastructure particularly modern residential and support infrastructure, to be major reasons for their success.
- To replicate the success of chemical hubs in the world, it is imperative to undertake systematic planning for all new manufacturing hubs. There is also the need to update existing plans or undertake retrofit planning of existing industrial hubs and integrate onsite and off-site infrastructure adequately, he said.
- He highlighted the services and infrastructure that foreign successful manufacturing hubs offer including centralized co-generation plant, centralized industrial gases, pipe racks, common waste and waste water treatment plant, centralized incineration facility for hazardous waste along with safety, security and site management.
- Stressing on the importance of onsite and offsite infrastructure, Mr. Nukala said social and residential development was also important. He also called for ensuring competitive pricing of industrial land, multi-functional built up space, infrastructure, utilities/ services and external residential and social infrastructure.

- **Address by Mr. Vijay Sankar, Deputy Chairman, The Sanmar Group**

- He too compared PCPIRs with global chemical hubs and cited Singapore's Jurong Island and Dow's Value Park in Germany as examples to follow. Mr. Shankar attributed high commitment levels of the respective governments for the success of the two hubs.

- Explained about the role of the government in infrastructure building. The government has provided a thrust to the development of the chemical industry. All these very successful global chemical hubs are the multinational company multiproduct and all of them had government control to kickstart the initiative.
- Support and high commitment levels of Singapore Government was critical for the success of Jurong Island, similarly, Dow's Value Park is one of the most successful chemical parks because of Government support.
- Talking about Jurong Island, Sankar said that it was promoted on a 'plug and play' model with ready infrastructure while specific set of companies that fit value chain were attracted as a cluster, rather than individually.
- He also cited financial support offered by the Singapore Government that included low tax, signing FTAs with potential customer countries such as Japan, US etc. to promote export-oriented investments and seed funding with clear exit mechanism.
- Mr. Sankar pointed out feedstock unavailability and logistical and infrastructure issues to be the major concerns plaguing the Indian PCPIRs and suggested government facilitation & coordination for addressing the key issues of feedstock, land, clearances, capital and a holistic road map for attracting key investors.

- **Address by Mr. K P Roy, Senior Consultant, Gaztransport & Technigaz SA, France (GTT)**

- Advocating ethane as substitute for conventional oil-based naphtha feedstocks, Mr. Roy said that US to India & China ethane shipping could be the next big move.
- Global demand for ethylene is rising due to increasing population growth and rising GDP. Ethane generates substantially higher yields than other feedstock sources when producing ethylene. Moreover, lower and more stable natural gas price versus recovering oil price has reinitiated ethane shipping interest.
- He said the US shale gas revolution was transforming petrochemicals markets and the export of US ethane provides opportunities for petrochemical companies to supplement their domestic ethane feedstock.
- US to India & China ethane shipping could be the next big move in this industry, he said and pointed out factors that support the case for ethane shipping.
- The factors include ethane's high yield, robust demand for ethylene, low prices of US ethane, and new generation of large ethane ships to optimize shipping cost.

5. Alternative, Cutting-edge and Sustainable Solutions: *Sustainable solutions for a New India*

Date: Monday, 11 November 2019
Time: 1700 – 1830 Hrs.

Panelists:

- **Mr. Roger Lee,** Managing Director, Tecnon Orbichem
- **Mr. Krishnamohan Narayan,** Managing Director, BASF India Ltd.

- **Mr. K C Ravi,** Chief Sustainability Officer, Syngenta India Limited
- **Mr. R G Agarwal,** Group Chairman, Dhanuka Agritech Limited
- **Mr. Liu Xinbo,** Senior Engineer in Chemical Engineering and Technology,Polytex Engineering Group, China
- **Mr. Alok Verma,** Managing Director, Haldor Topsoe India Pvt. Ltd.

The panelists discussed about sustainability and bringing in and using cutting-edge technology to India including technology for getting methanol from coal. The discussion was also around the need for innovations and developing R&D facilities. The panelists also lamented the lack of patents filing by Indians and called for data protection laws by the government. The panelists also discussed about clean energy, chem-cycling and circular economy.

- **Address by Mr. Roger Lee**

- Talking about cutting-edge technologies, Mr. Lee concentrated on converting crude oil-to-chemicals (COTC) and opined that oxidative coupling of methane (OCM) can be beneficial for Indian ethylene units.
- Attempts have been made over many years to convert crude oil directly to chemical feedstocks, such as olefins or aromatics, but with limited success. A new approach is for oil or chemical companies to build crude oil to chemicals refineries, including extensive hydrocracking operations, making predominantly olefins and/or BTX, he said.
- About COTC, Mr. Lee said Hengli Petrochemical in China is maximizing production of paraxylene for PTA and has built a refinery and chemicals complex that will convert 42-50% of the crude oil input to chemical feedstocks.
- Talking about OCM, Lee cited San Francisco-based Siluria Technologies which has developed the first commercial process to directly convert natural gas into ethylene establishing the commercial viability of OCM.
- For an Indian ethylene unit based in part or wholly on imported feedstocks, OCM will be fully competitive at all crude oil scenarios with shale gas cracking and very competitive with naphtha cracking -except at very low crude oil prices. There are so many ways for alternative cutting-edge solutions.

- **Address by Mr. Krishnamohan Narayan**

- Mr. Narayan talked about sustainable solutions and explained BASF's Verbund principle which the physical integration of production is, market platforms and technologies which tie the businesses together.
- Over 95 percent of portfolios is in the field of accelerators which talks about product portfolio steering
- Stressing on innovating for sustainability, he talked about circular economy and how Verbund is core to circular economy.
- A circular economy is a system of closed loops in which raw materials, components and products lose their value as little as possible, renewable energy sources are used

and systems thinking is at the core. It is much more than waste management and brings opportunities for new business models and new customers.

- Mr. Narayan also highlighted breaks groundbreaking efforts in plastic waste recycling and informed about "ChemCycling" an innovative and cutting-edge technology for turning plastic waste into new products.
- He said India as market was full of opportunities as well as challenges and observed that the time for India to take off has come. It is time for the chemical and petrochemical industry the propel India's growth flight.

- **Address by Mr. K C Ravi**

- Underlining the imperativeness of innovations and cutting-edge technology, Mr. Ravi said the lack of data protection regime was impeding the growth of Indian agrochemical industry.
- The core of agrochemical industry revolves around developing new solutions. R&D is the core of the industry and on an average leading plant-science companies spend around 7.5 % of sales on research and development of new, safer and cost-effective solutions for the farming community.
- While crop sciences industry in India has come off age, the fact that India doesn't provide data protection is a concern. Any new product introduced in India deserves reasonable data protection to recoup investments made for developing the product. The presence of a data protection regime will encourage timely introduction of new solutions and products in India and help not just the industry or the farming community but the nation as a whole.
- He said that a minimum of 5 years of data protection was essential for a new product introduced in India not just to recoup the investments behind it but also to propel further improvements the products as well as researching and developing new solutions.
- He also expressed concerns over the time-consuming registration process that a product has to undergo in India. It takes 7-8 years for getting the approvals and registration and by that time the utility of the product may diminish or the problem which it aims to solve may manifest into something else. The need is, therefore, to drastically reduce the time taken for registration and approval.

- **Address by Mr. R G Agarwal**

- Pointing out the low productivity of Indian agriculture sector, Mr. Agarwal harped on the need for enhanced R&D efforts in the agrochemical sector and called for ensuring data protection.
- Globally, India has the 2nd largest agriculture area but productivity is well below the world average. Also 30-40% crop is wasted due to pests. If India can improve its productivity, then we can contribute 30-50% of world food requirement which will double by 2050.

- There is a huge scope to improve crop productivity with the use of crop protection chemicals. Cutting edge and sustainable technology in crop protection chemicals, can largely enhance India's food security.
- Per-capita pesticide consumption in India is much below than other countries. In 2016, industry estimates indicate that India's per capita consumption of crop protection products stood at 0.6 kg per hectare, much less than China which utilizes 13 kg per hectare. There is much scope for India to increase consumption of crop protection products while remaining well within responsible consumption levels.
- High efficiency, safe, eco-friendly, low toxicity, multifunctional, products are not available to Indian farming community. Lack of data protection acts as a deterrent for India to be primary market for new products. Also new product registration process is long and arduous. The need is to urgently strengthen our R&D capabilities so that we can come up efficient and cost-effective solutions.
- For the chemical and agrochemical sector to grow, there is urgent need of dedicated zones with powerful infrastructure. Ease of Doing business has to be visible loudly and sustainability driven world class facilities are indispensable.

- **Address by Mr. Liu Xinbo**

- In his presentation, Mr. Xinbo talked about high ash content and low calorific value and informed about new technologies for the development of coal chemical industry.
- India is the 3rd largest coal producer in the world. With proven reserves of 60.6 billion tons, India is rich in coal resources accounting for 6.8 percent of the world's total coal resources. Compared to China, Indonesia, Australia, South Africa and other traditional coal countries, India's coal quality generally has the defects of high ash content and low calorific value.
- Similar to China, India is also a country rich in coal but poor in oil, so the development of coal chemical industry is an inevitable trend.
- With high content of coal ash, there is less effective gas composition after gasification. When coal of the same quality is sent to the gasifier, the coal with high ash content has less gas production, large amount of ash and high energy consumption. It is suggested use high ash coal by means of coal cleaning technology and coal blending. If from coal gasification technology, its economy should be considered.
- Mr. Xinbo also discussed about new technologies for converting coal to methanol, extracting ethylene glycol for the production of butanediol (BDO).

- **Address by Mr. Alok Verma**

- Mr. Verma emphasized on the need for policies to encourage and incentivize R&D in the chemicals and petrochemicals sector for the development of new technologies and solutions.
- While India is steadily moving towards self-sufficiency in fertilizers, the industry needs policies to encourage new ideas and develop cutting edge technologies. Technologies

should not only be developed for cost effective production and better utility products but also to attain sustainability and protect the environment.

- As an industry, we need to focus and invest more on R&D, but the government also needs to play its part. The government needs to ensure data protection and also simplify regulatory procedures and cut down time taken for approvals and registration. There is also a need to focus on technology for co processing used cooking oil, this is an area which needs to be looked at by the industry.

November 12, Day 2

Day 2 of the Summit on Global Chemicals & Petrochemicals Manufacturing Hubs in India 2019 began with a panel discussion on the ways and means to enhance feedstock supply to the industry.

6. Feedstock: *Ensuring optimum availability*

Date: Tuesday, 12 November 2019
Time: 1000 - 1130 Hrs.

Panelists:

- **Mr. Stefano Zehnder- Vice President, Consulting ICIS**
- **Mr. Avinash Verma-Managing Director, ONGC Petro Additions Limited (OPaL)**
- **Mr. Kamal Tandon-ED Petrochemicals, GAIL India Ltd.**
- **Mr. B Ashok-CEO, Ratnagiri Refinery & Petrochemicals Ltd.**
- **Mr. Janardhanan Ramanujalu- Vice President, Regional Head, South Asia & Australia, SABIC**
- **Mr. Goutam Biswas-Technology Director, Technology Marketing Chevron Downstream Technology & Services**
- **Mr. Manas Kumar Banerjee-CGM (Technical) Indian Oil Corporation**

The discussions mainly surrounded about lack of adequate availability of feedstock and India's dependability on imports for it. The panelists talked about the strategic options to meet the demand-supply gap for feedstocks and highlighted avenues to overcome feedstock challenges in the domestic chemicals sector. They also stressed on the importance of regional manufacturing hub and the factors that are critical to create a vibrant ecosystem of petrochemicals and downstream chemical companies in the country.

- **Address by Mr. B Ashok**

- Mr. Ashok discussed about the avenues overcome feedstock challenges in the domestic chemicals sector and talked about the role Ratnagiri Refinery and Petrochemicals Limited (RRPCL) will play in meeting domestic demand.
- With crude capacity of 60 MMTPA and petrochemical capacity of 18 MMTPA, the RRPCL has been conceptualized as world's largest integrated refinery and

petrochemical project to meet domestic demand. The project is critical to drive India towards energy security and self-sufficiency in chemicals besides bringing in large scale socio-economic benefits for the region.

- About the impact of the project, Mr. Ashok said it improve national GDP by 2% and state GDP by 10% and will also be the key contributor in making Maharashtra a USD 1 trillion economy.
- Along with generating 1-1.5 lakh jobs, it will significantly contribute towards flagship schemes like Make in India, Skill India, Digital India, Smart City etc.
- On domestic feedstock availability, he said it was a big challenge impeding domestic chemical industry growth and suggested several measures to tackle the issue that include close integration between anchor tenants and dedicated zones with plug and play infrastructure.
- One of the most needed measure is policy support to ensure availability of land at affordable rates, single window clearance and provision of attractive incentive packages.
- There is also the need for 'focused park governance providing dedicated park developer entity with participation from government and other stakeholders for development of park, investor attraction and facilitation. There has to be presence of multi-modal logistics, infrastructure and other facilities to allow 'plug-n-play' by downstream companies.
- He also suggested partnerships with feedstock advantaged regions to secure feedstock and cost-effective utilities and services through centralization and sharing among multiple players.
- PCPIRs have seen limited progress due to issues related to land acquisition, feedstock sharing, planning and implementation focus
- Critical to shore up implementation with a focused task force

- **Address by Mr. Janardhanan Ramanujalu**

- Mr. Ramanujalu suggested adopting coal to olefins and intermediates imports as viable options to meet the challenge of feedstock unviability.
- Looking at Indian demand and Indian business scenario and if we see brown field and green field, significant opportunities are available in India because of refinery capacity expansion where refinery capacity is already about 20 million tonnes and poised to go about 330 to 340 million tonnes by 5 to 6 years and with all the refinery expansion there is will be significant propylene and significant opportunity for India for Naphtha capacity within the country
- While naphtha constitutes for over 60% of feedstock for chemicals in India, it has challenges of quality, pooling and fuel-value. Integrated refinery with High Propylene FCC could be an option but naphtha availability will again be challenge. A possibility in this regard is small crackers by specialty chemicals industry.

- With low cost feedstock, US Ethane glut offer attractive opportunity however, it is capital extensive requiring large investments in gasification terminals, shipping, pipelines etc. Besides, transportation is also a challenge as compared to naphtha.
- Coal to Olefins is attractive option to monetize low cost coal and China is a leader in harnessing the potential to monetize low quality coal. But the flip side is it is also capital extensive with carbon footprints and low-quality coal eating into profits.
- Intermediates imports is a viable option for specialty chemicals due to its high value addition in the end stage. This is a practical and viable option and is recommended for India.
- Despite strategic location and 100% FDI in chemicals sector, PCPIRs still need to reach full potential. To make them successful, it is imperative to a Master Plan with diligently planned land mapping, infrastructure and utilities farms mapping and planning for independent operators.
- Single Environment Clearance for whole PCPIR is also important to eliminate long processing time.

- **Address by Mr. Goutam Biswas**

- With global demand for chemicals continue to rise at a healthy rate, Mr. Biswas said ensuring optimum availability of feedstock was indispensable for which it was essential to explore new avenues and go beyond conventional sources.
- Global economic growth will further propel the demand for chemicals and drive the growth of the chemical and petrochemicals industry which is estimated to grow faster than fuel and lubricants & additives.
- With the steady shift of the global industry towards the east, the chemicals and petrochemicals industry will witness the highest growth in Asia. The sector is critical for the Indian economy and it is imperative to ensure the availability of feedstock.

- **Address by Mr. Kamal Tandon**

- Rapid economic, geographic and demographic growth are strong drivers for the chemical and petrochemicals industry in India, but it also has to consider the factors like the north American shale gas revolution, China's advances in coal to chemicals technology and Middle East producers' bid to push more products to markets like India.
- In order to maintain pace with the growing demand, massive investments need to be made for meeting the feedstock challenge. The ethylene capacity is required to grow from 8.85 MMT to 15.6 MMT by 2025 to meet requirements of ethylene and we will require more incremental crackers.
- India expected to remain a net importer for major derivatives. Increasing polymers demand and limited capacity additions are leading to rise of imports. Maintaining a reasonable trade balance will require massive investment.
- Scale, integration and innovation are the key if we are to create feedstock advantage. The Indian petrochemicals industry needs to be globally competitive which can

withstand periods of low margins and competition. For that to happen, we need to build globally competitive industry clusters guided by competitive business model and robust governance model.

- Policy support for efficient regulatory framework, incentives, public investment, technology access, infrastructure, financial incentives, ease of doing business and skill development are crucial factors which the policymakers need look at.

- **Address by Mr. Stefano Zehnder**

- Mr. Zehnder said it was imperative for the Indian chemical and petrochemical industry to bet big on innovations and R&D as newer and unconventional technologies can play a significant role in addressing the feedstock challenge.
- The steady growth of the Indian chemical and petrochemical industry will lead only to more demands for feedstock which will only increase India's import dependency unless the domestic industry is ready to meet the challenge.
- The way ahead is massive investments, having more refineries and crackers which will not just address the feedstock challenge but will also make the industry self-reliant. In addition to refineries and crackers, the industry also should look into investing in technologies like coal to methanol and coal to ethanol.

- **Address by Mr. Avinash Verma**

- Mr. Verma said Indian refineries have significant scope for capacity expansion expanding the capacity can go a large way in meeting the feedstock challenge.
- Indian refineries have still lot of capacity to expand, some of the refineries can even double their capacity. There is significant opportunity to set up naphtha crackers in India. Domestic naphtha cracking is a viable option for the Indian chemical and petrochemical industry, and they need to look into this aspect. Also, integration of naphtha crackers with refineries is important.
- Standalone naphtha crackers merit a serious look. Naphtha cracker is a viable option given the increasing growth in demand, government incentives and structural reforms.
- Stakeholders need to look into avenues to ensure stable arrangement of feedstock availability.

- **Address by Mr. Manas Kumar Banerjee**

- Mr. Banerjee said it was imperative to have domestic production of feedstock for the Indian chemical and petrochemical industry to sustain the growth trajectory.
- There are many growth drivers to propel the Indian chemical and petrochemicals industry, but it is important to find means and way to sustain the momentum. Our import dependence will only touch new heights if we are not able to meet the feedstock challenge. We need to focus on harnessing new technologies to enhance our feedstock availability and policy support for expanding the domestic capacities.

7. Downstream Industry: *Unleashing the true potential*

Date: Tuesday, 12 November 2019
Time: 1145 - 1315 Hrs.
Panelists:

- **Panel Moderator:** Shri Kashi Nath Jha, Joint Secretary (Petrochemicals), Ministry of Chemicals and Fertilizers, Government of India
- **Mr. Devinder Chawla,** Partner at Ernst & Young
- **Mr. Rajendra Gogri,** Chairman and Managing Director, Aarti Industries
- **Mr. C S Liew,** Managing Director, Pacific Agriscience Singapore
- **Mr. Mukesh Bhuta,** CMD, Expanded Polymer Systems Pvt. Ltd.

This session delved on the challenges faced by the chemical and petrochemical industry and the means to address these challenges. The recommendations made the speakers included modifying policies and regulations to promote export, availability of infrastructure and feedstock. The panelists also suggested making the anchor units in all PCPIRs to allocate certain percentage of available feedstock for downstream chemical units at internationally competitive rates. The discussion was also the time taken for statutory compliances and called for drastically expediating them.

- **Address by Mr. Devinder Chawla**

- Mr. Chawla said several challenges need to be addressed for the Indian downstream sector to grow, which include feedstock availability and quality, logistics network across modes and cost, investment for setting up world class and world scale plants along with enabling policy and regulatory framework.
- The downstream chemicals industry in India is largely dependent on imports for key building blocks and intermediate chemicals. India's net imports of plastics, inorganic and organic chemicals stood at USD -17 bn in 2018. The demand supply gap for key intermediates is in excess of 8-12 MMTPA.
- While India has managed to bridge the gap in demand supply of key chemicals such as ethylene, propylene, butadiene with investment in new capacities, the need is to develop world scale plants with leading technology and quality for them to be globally competitive.
- In addition to the macros and infrastructure intervention, the industry needs to focus on improving its performance and better integration with global industry.
- The industry needs to move to develop a holistically greener value chain with focus on inputs, processes, products and waste, focus to improve supply chain planning and performance, integration of supply chain with customers and global industry.
- The industry also needs to leverage data and analytics driven decision making increase the level of automation across the entire value chain and enhance collaboration with research institutes for developing R&D capability.

- **Address by Mr. Rajendra Gogri**

- Mr. Gogri said structural changes in the Chinese chemical sector have created opportunities for the Indian chemical and petrochemical industry and structural reforms are critical to leverage the situation.
- Given the disruption in China on account of the government crackdown on polluting industries as well as the ongoing US-China trade war, several multinationals are looking at alternate sourcing destinations to de-risk their supply chains. This opens up opportunities for India where the sector will continue to grow thanks to large domestic market with expected growth in disposal incomes and consumption. India can be a neutral manufacturing location for US, China and rest of the world, provided the industry and the government make the right moves.
- India as a manufacturing location offers, fairly low wage rates, skilled talent pool added with a globally competitive tax regime.
- India needs to leverage the growth of the chemical and petrochemical industry to the fullest for which we need a holistic policy framework.
- PCPIRs and anchor units should prioritize feedstock availability for downstream chemicals by allocating a certain percentage of feedstock. Custom duty rates should be attractive to drive in investments in basic chemicals.
- Procedural reforms are critical to exploit the China situation, environmental clearance should be expediated, while the government and the industry should come together to create a chemical innovation fund for encouraging R&D.

- **Address by Mr. C S Liew**

- Mr. Liew said the crackdown on the chemical sector by the Chinese government leading to shutting down of many units opened avenues of opportunities for India to cash in on the growing global demand for crop protection chemicals.
- China is the largest producer of crop protection chemicals, but that situation may change because of the crackdown on the Chinese chemical sector. Many of the plants have shut down and many more will follow. This presents a massive opportunity for India to become world leader in crop protection chemicals especially when the world is looking at India as an alternative and supplementary source to China.
- Almost 3/4th of the 2000 chemical plants in China will shut down in the next 4-5 years. Most of these plants are located within city limits and will shut down sooner than later.
- However, India needs to fill several gaps and address issues before it can make use of the China situation.
- The major concern is lack of raw materials and intermediates which needs long term solution. Also, the ack of collaboration amongst Indian players to achieve economies of scale is hurting the industry. These needs to be addressed urgently.
- Mr. Liew also said Indian industry needs to tap into the new mechanism which India and China have agreed to set up for issues relating to trade and investment, following the meeting of Prime Minister Narendra Modi and Chinese President Xi Jinping.

- **Address by Mr. Mukesh Bhuta**

- Mr. Bhuta said statutory compliance was one the biggest hurdle for the Indian industry and streamlining and simplification of the procedural formalities was imperative.
- Statutory compliance have been hindering the growth of the industry. One of the biggest hurdles in India is environment clearance for any new or expanding chemical industry. It usually takes anything between one to two years. These needs to be made simple and streamlined.
- Among other challenges faced by the industry is investment decisions. Midstream and downstream are interdependent but which segment should put up investment first is always a question.
- Without demand from downstream industry investment recovery of midstream is at risk where investments are normally much larger. Wrong timing can get such enterprises into financial difficulty which could take longer to recover.
- Besides right timing correct scale of production is extremely important. For midstream product lines, which are mostly bulk chemicals, investment in certain minimum capacity is inevitable below which it would be unviable. But Too large an investment, particularly in downstream industry in expectation of quick demand growth, is often suicidal.

8. R&D and Skill Development: *Building an innovative and skilled India*

Date: Tuesday, 12 November 2019
Time: 1400 - 1530 Hrs.
Panelists;

- **Dr. Sanjay K. Nayak,** Director General, Central Institute of Plastics Engineering & Technology
- **Mr. Ajai Sirohi,** Head Strategic Planning & Corporate Development, Toray Industries India Private Ltd.
- **Mr. Abul Basher Miah,** Adviser, DISA Institute of Science & Technology, Bangladesh
- **Dr. Gurmeet Singh,** Chief Research Manager, R&D Centre Indian Oil Corporation Limited
- **Dr. S. Bharatan,** Head-R&D, HP Green R&D Centre
- **Dr. Smita Mohanty,** Director (Principal Scientist), CIPET
- **Dr. PSG Krishnan,** Principal Director & Head, CIPET
- **Mr. Manish Khandelwal,** General Manager, Petrochemicals Marketing GAIL (India) Ltd.

The last session of the summit witnessed panelists lay emphasis on the need for innovations and the developing R&D capabilities for the sustainability of the chemicals and petrochemicals industry.

The panelists recommended conducting new research and developing new technologies and translating research into products. They also suggested small enterprises to tie up with academia and the government for accessing institutional resources and investment capital for R&D. Experts from Central Institute of Plastics Engineering & Technology (CIPET) talked about the capabilities and role played by the institute in promoting education and research in polymer science and technology.

- **Address by Mr. Ajai Sirohi**

- Mr. Sirohi said as much as focus on R&D, it is also imperative for the industry to ensure that research translate into products.
- In today's industrial world product technology is rapidly evolving and manufacturing-process innovation has is becoming increasingly critical capability, therefore companies need to devote more resources and attention to R&D.
- For large companies' collaboration with academia is important as it can ensure cheaper, faster and high-quality flow of talent and ideas. The industry can also collaborate with research labs which would provide the industry with resources to conduct research while the labs can use this as revenue augmentation opportunity.
- Industry-academia-national laboratories collaborations are a win-win situation for all through better utilization of experts, specialized equipment and capital resources.
- Small and medium sized companies can access institutional resources via government or academia help. Also, the government or State Investment Boards can provide investment capital.
- The Indian chemicals and petrochemicals industry also need to create co-innovation hubs that allow utilizing shared resources.

- **Address by Mr. Abul Basher Miah**

- The market for specialty chemicals is expected to register a compound annual growth rate of around 5.17% between 2019-2024.
- Major factors driving the growth of the market are robust growth of construction activities, especially in the Asia-Pacific and the Middle East & African regions and growth of oil exploration and production activities.
- Paints and coatings dominated the specialty chemicals market, in 2018, and is expected to grow across the world.
- For Bangladesh and India major revenue generating industries are – textiles, leather, agriculture, pharmaceuticals, lubricants, natural gas and a lot of promising sectors like automobiles, paint need a great deal of specialty chemicals. Growing R&D for developing new products is likely to provide opportunity for the market studied, over the forecast period.
- To promote creative intellectual activity and for facilitating the transfer of technology related to industrial property to developing countries in order to accelerate economic, social and cultural development, R & D is the key to success of both partner country.

- **Address by Dr. S. Bharatan**

- Dr. Bharatan laid emphasis on Centre of Excellence (COE) in each of the PCPIRs to focus on a specific area and create a competency Centre for developmental activity in the identified areas.
- The success of PCPIRs is critical for the Indian chemical and petrochemical industry and R&D is among the major factors that can ensure these hubs takeoff.
- The COEs will be the platform for not just carryout R&D, but also product & process development, process equipment selection, testing facility and training for industry.
- Also, it is imperative to disseminate the results of the R&D and other activities through filling of patents, transforming the research proposal into a business proposal to invest and commercialize. Industry-academia collaboration is also essential in this regard.
- The industry also looks at establishing and extending plant-level benchmarking schemes and pursue effective regulatory actions to reduce CO2 emissions.
- He also advocated refinery-petrochemical integration to valorize intermediate refinery streams and improve petrochemical feedstock availability.
- R&D should focus on developing novel technologies for petrochemical processes to reduce dependency & achieve cost leadership.

- **Address by Mr. Manish Khandelwal**

- Mr. Khandelawal said Indian chemicals and petrochemicals industry is facing acute shortage of skilled manpower and is major challenge warranting immediate redressal.
- Current direct technical manpower in the plastic processing industry is estimated at 1. 6 million. Additional manpower required for the plastic Industries in next 10 years (2018-19 to 2027-28) is estimated to be 1.335 million.
- Capacity utilization currently is 50% which is expected to improve to 60% by 2027-28. Technical Manpower currently is 3.49 per 100 ton of installed capacity. It would be 3.36 per 100 ton by 2027-28 due to improvement in capacity utilization. Therefore, there is an immediate need for measures to skill the workforce for the industry which is facing an acute shortage of skilled manpower.
- Skills and knowledge are the driving forces of economic growth and social development. In India, skilled worker comprises only 5% of the total industrial workforce as compared to 85% in other South East Asian countries.
- There is a growing need to increase employability through skill development programmes. There is urgent need to mobilize/motivate unemployed/ underprivileged segment of the society to pursue skill development training programs for enhancing their quality of life.
- There is tremendous scope for the growth of plastic industries and opportunities of employment for skilled manpower will be certain and huge potential for career progression in time to come.

- There are approximately 35000 plastics processing units in India. The industry is facing acute shortage of skilled manpower which is one of the challenges which can be fulfilled by providing skilled manpower through specially designed and customized courses.

- **Address by Dr. Gurmeet Singh**

- The industrial landscape is now all about rapidly evolving technologies and R&D is indispensable. We are at a juncture where either you innovate or perish. Innovations now hold the key.
- There is steady shift towards specialty chemicals form basic chemicals which makes R&D indispensable.
- India's world class engineering education base and Research and Development facilities should be utilized to the fullest to keep pace with the growing demands and needs of the industry. Collaboration of various stakeholders- industry-academia associations and industry-laboratories tie up are essential to boost R&D for the industry.
- There is need for policy support and enabling framework to encourage research and translating the research into viable products.

- **Address by Dr. Sanjay K. Nayak**

- Indian chemicals and petrochemicals industry will play a major role towards realizing the vision of $5 trillion Indian economy. The industry is poised to grow at a very healthy rate. But sustain the momentum, skilled manpower is of extreme importance. Availability of skilled manpower is a big concern which needs immediate attention. However, just skilled manpower is not adequate, the manpower must be skilled and trained to adapt to the dynamics of the chemical and petrochemicals industry. Time has come for a skill university for dedicated for the chemicals and petrochemicals industry.
- This university should be equipped with training the workforce for specific verticals of the industry. Special skill and training for rubber industry or the specialty chemicals industry and the likes.

- **Address by Dr. PSG Krishnan & Dr. Smita Mohanty**

- Both Dr. Krishnan and Dr. Mohanty talked about Central Institute of Plastics Engineering & Technology (CIPET) premier role in enhancing skill sets and reinforcing research for the plastics industry
- CIPET has been contributing towards the growth of the plastics industry through a combined program of education and research. As a premier institute for education and research in the field of polymer science and technology, CIPET has evolved through the years, creating closer ties with industries with the intent to create innovative plastic-based solutions which are resource efficient and marketable. This

has led to an exponential growth with activities and programs focusing on skill training, technology support, academics and research.

- CIPET provides technical consultancy services in design, tooling, plastics processing & testing for the benefit of plastics & allied industry. We have been in the forefront of strengthening technological capabilities and have been constantly building capacities and leveraging our expertise, caliber and skill sets to meet the emerging and evolving needs of the industry.
- They talked about CIPET's initiatives including the "Innovex Labs" which are aimed at augmenting indigenization to reduce foreign dependency. They also provide technical assistance and mentorship at every stage of engineering, prototyping, business monitoring, networking, IP registration and offer collaborative platform for resolving industrial issues through research.

9. FICCI Chemicals and Petrochemicals Awards distribution function

FICCI initiated the "FICCI Chemicals and Petrochemicals Awards Scheme" in 2012. The basic purpose of this Award Scheme is to encourage innovation, process excellence, sustainability and facilitate best practices in the Chemical and Petrochemical industry. FICCI Chemicals and Petrochemicals awards 2019 were distributed on Nov 12, 2019 at Hotel Grand Hyatt, Mumbai in the presence of eminent dignitaries from Industry and Ministry of Chemicals and Fertilizers.

Table 1 List of Awardees 2019

Awardees

FICCI Chemicals and Petrochemicals Awards 2019

S.no.	Award Category	Industry Sectors	Awardees
1.	Award for Product Innovator of the Year	Chemicals	None
		Petrochemicals	HPCL- R & D "[HP]2 CATALYST FOR MAXIMIZING PETROCHEMICAL FEEDSTOCKS FROM FCC PROCESS"
2.	Award for Manufacturing Process Innovator of the Year	Chemicals	Tata Chemicals Limited
			None

		Petrochemicals	
3.	Sustainability Award for Best Green Product	Chemicals	Mitsui Chemicals India Pvt Ltd
		Petrochemicals	Jointly to: • Log 9 spill containment Pvt Ltd • BPCL- "Development and commercialization of indigenously developed gasoline sulfur reduction catalyst for refineries"
4.	Sustainability Award for Best Green Process	Chemicals	None
		Petrochemicals	None
5.	Sustainability Award for Excellence in Safety	Chemicals	Chemplast Sanmar Limited
		Petrochemicals	Alok Masterbatches Pvt. Ltd.
6.	Award for Efficiency in Energy Usage	Chemicals	Jointly to: • Godrej Consumer Products Ltd • JUBILANT LIFE SCIENCES LIMITED • India Glycols Limited
		Petrochemicals	Reliance Industries Limited, Polyester Division
7.	Award for Efficiency in Water Usage	Chemicals	Jointly to: • Bharat Rasayan Limited • Chemplast Sanmar Limited
		Petrochemicals	None

8.	Award for Best Contribution to Academia	Combined for Chemicals and Petrochemicals	Jointly to: • IPFT • Dr. D Kanungo
9.	Award for Commendable Work for Changing Public Perception	Combined for Chemicals and Petrochemicals	Jointly to: • DCM Shriram Ltd • Organization of Plastics Processors of India
10.	Award for the Most Environment-Friendly Company	Chemicals	Heavy Water Plant (Manuguru)
		Petrochemicals	Reliance Industries Limited-Hoshiarpur Manufacturing Division (Environment Friendly Recycling Facility)
11.	Award for Distinguished Contribution	Chemicals Industry	Mr. Ande Prathap Reddy Executive Chairman, Balaji Amines Ltd.
		Petrochemicals Industry	Mr. N Sankar, Chairman, Sanmar Group
		Agrochemicals Industry	None
		Plastics Industry	None
12.	Award for Excellence in Skill Development	Chemicals	Tata Chemicals Ltd
		Petrochemicals	None
13.	Award for Excellence in Sub -Sector	Agrochemicals	

		Plastics, Polymers & Polymer compounding chemicals	–
		Construction Chemicals	–
		Chlor Alkali	–
		Dyes & Dyestuffs	–
		MSME (Cos <250 cr turnover)	–
		Start-up	–
14.	Company of the year	Chemicals	VINATI ORGANICS LIMITED
		Petrochemicals	INDIAN OIL CORPORATION LIMITED

Figure 1: Mr. Ande Prathap Reddy receiving award for his distinguish contribution in Chemicals Industry

Figure 2: Mr. Vijay Sankar receiving award on behalf of Shri N. Sankar for distinguish contribution in Chemicals Industry

Figure 3: Team of Vinati Organics Limited receiving award for Company of the Year in chemical Industry

Glimpses of FICCI Chemicals & Petrochemicals Awards 2019