



*Energising a Brighter Tomorrow*



# Petroleum and Petrochemical Products : Technology Value Chain for Sustainability

HPCL-Mittal Energy Limited

17<sup>th</sup> October 2022

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- Petrochemical Value Chain
- Sustainability Drive in Petrochemical Industry
- Growth Driver for Oil to Chemical Shift
- Petroleum & Petrochemical technologies for Sustainability
- Collaboration for Sustainability

# Company Overview



Hindustan Petroleum Corporation Ltd

MITAL

Mittal Energy Investmentste Ltd, Singapore

~49%

~49%

~2%

Financial Investors

HPCL

MEIL

- A 'Navratna' Public Sector Undertaking and a 'Fortune 500' company
- HPCL is one of the largest oil refining and marketing companies in India
- Revenues of more than Rs. 180,000 Cr. (FY-17) & owns ~24% of fuel retail outlets in India.
- Operating two refineries with combined capacity of 15.8 MMTPA

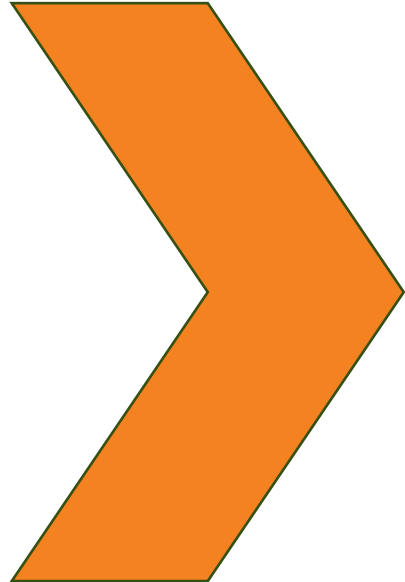
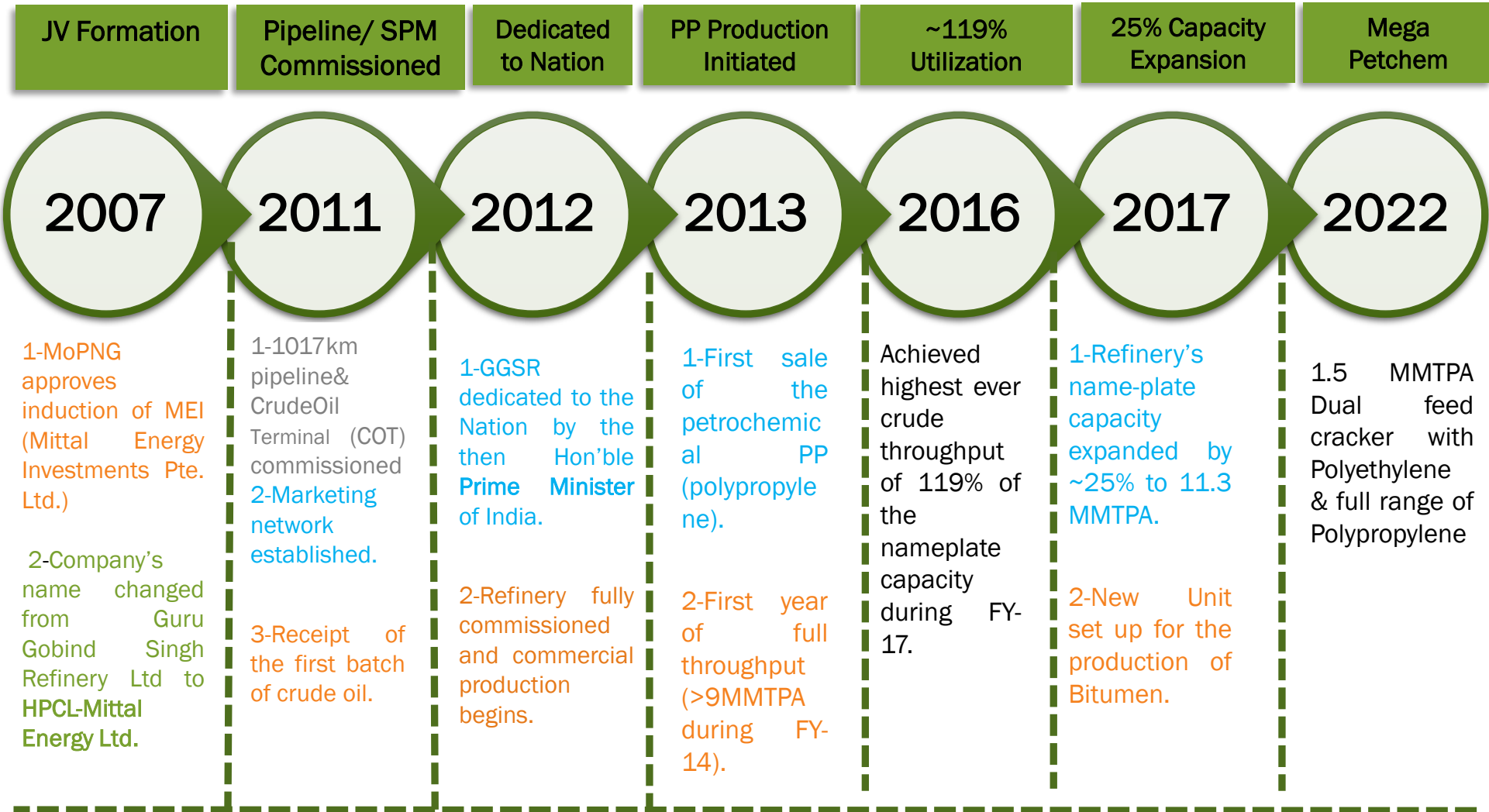
- MEIL is a 100% subsidiary of Mittal Investments Sàrl, beneficially owned by Mr. Lakshmi N. Mittal and family.
- Mittal Investments Sàrl is engaged in building a portfolio of oil-and-gas assets

➤ Investment of over USD 7 billion USD

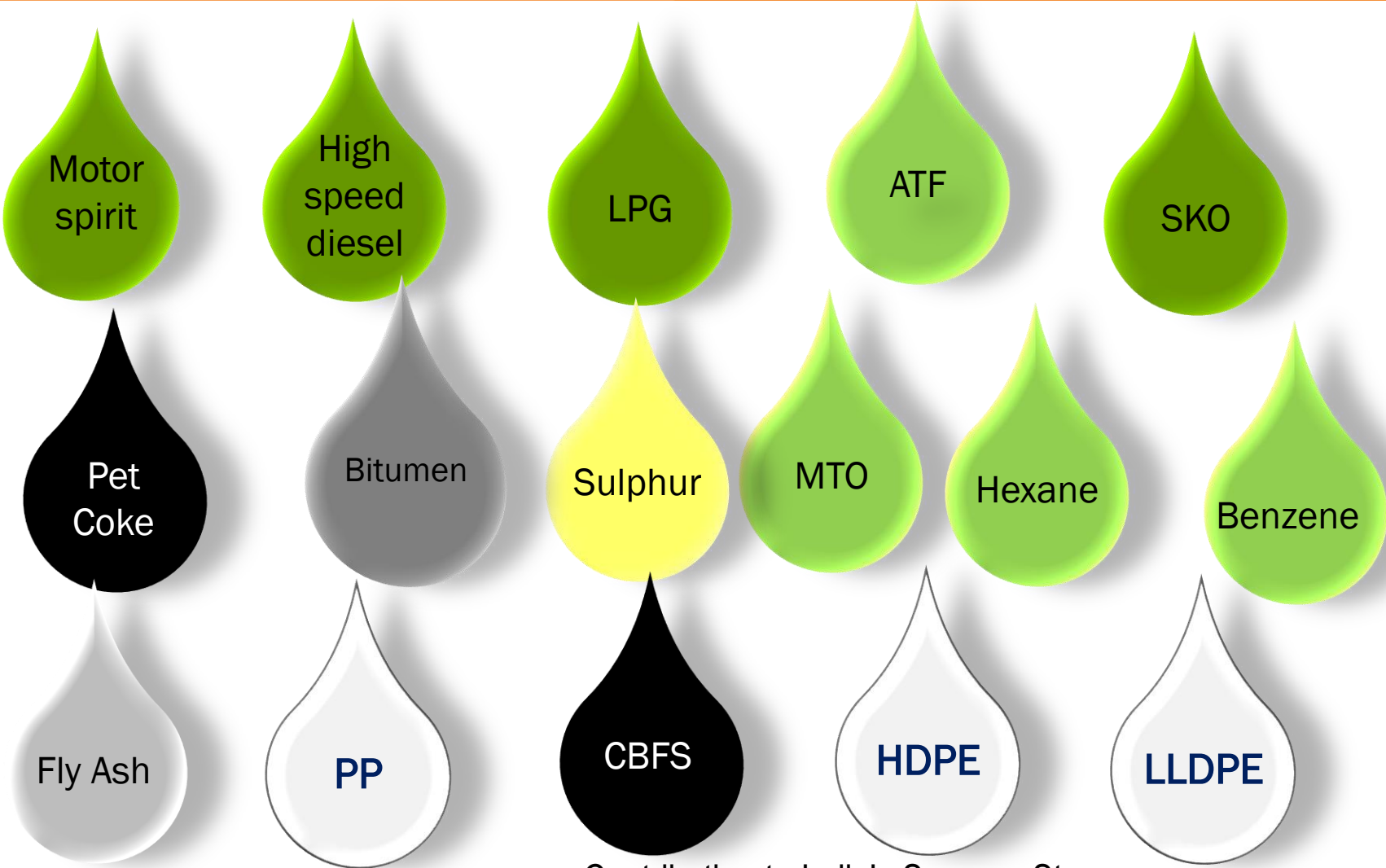
➤ Largest FDI in Refining Sector

➤ Largest company in Punjab in terms of investment

# Milestones



# HMEL's Products Portfolio



Contributing to India's Success Story

Proprietary & Confidential

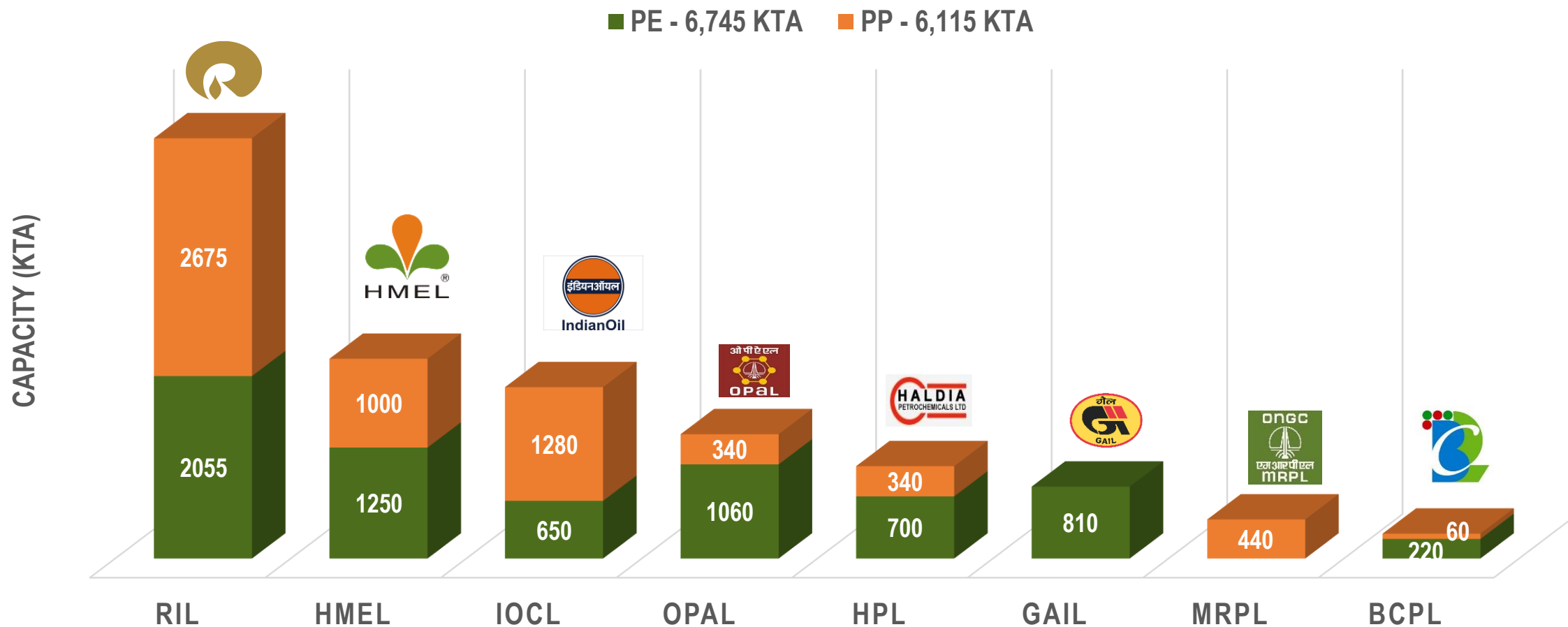
HMEL A GREAT PLACE TO WORK

PASSIONATE INNOVATION

BOLDLY EFFICIENT

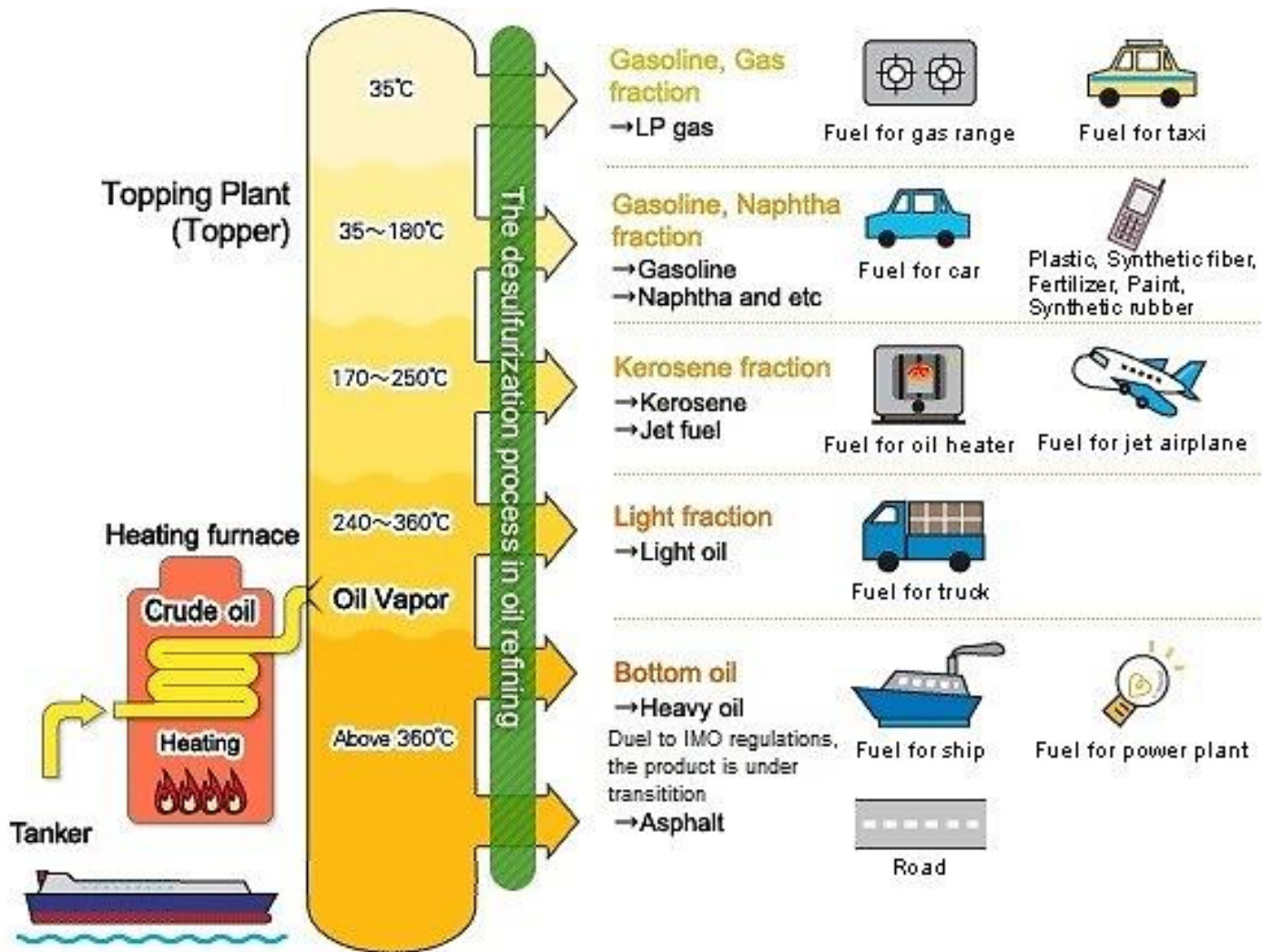
PROACTIVE COLLABORATION

# HMEL's Capacity Expansion



**HMEL will be the 2nd largest producer of PE & PP in India post expansion**

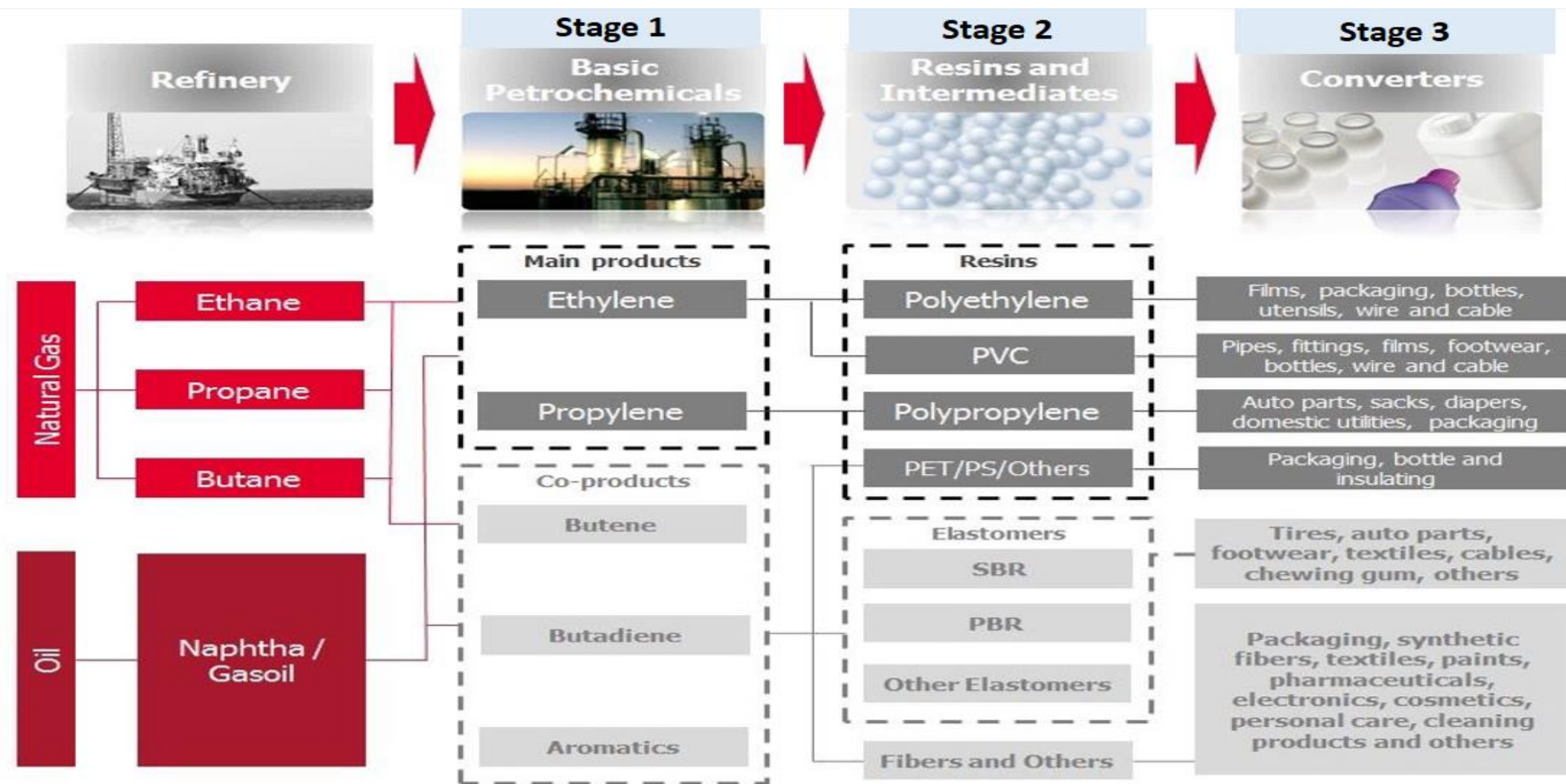
# Petroleum Value Chain



## Meeting the major energy requirements

- Liquefied petroleum gases (LPG)
- Gasoline
- Jet fuel
- Kerosene (for lighting and heating)
- Diesel fuel
- Petrochemical feedstocks
- Lubricating oils and waxes
- Home heating oil
- Fuel oil (for power generation, marine fuel, industrial and district heating)
- Asphalt (for paving and roofing uses)

# Petrochemicals Value Chain





# Sustainability Drive in Petrochemical Industry



World is vocal about recognizing & implementing the sustainability drive across the value chains

India has committed towards the attainment of 'Net Carbon Zero' by 2070

Role of the domestic petrochemical industry to realize this vision is imperative

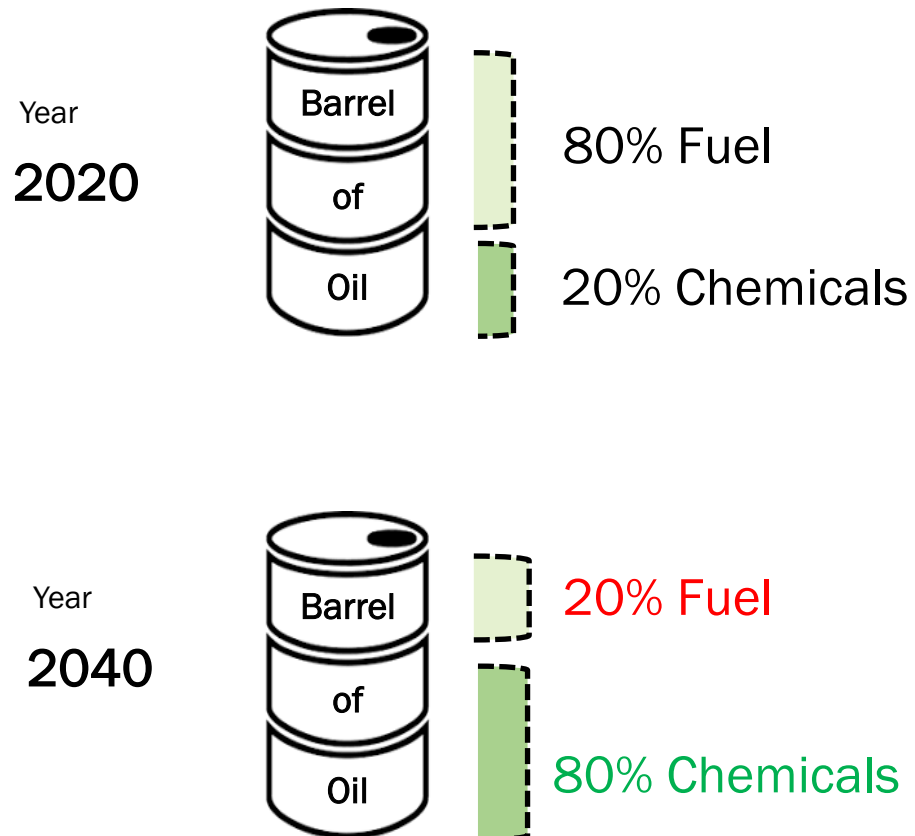
Transitioning from a fossil-based economy to a sustainable model is the need of the hour

Bioplastics are one of the main options for addressing the environmental concerns

Value added recycling of post consumer plastic waste is also a steppingstone towards a Circular Economy

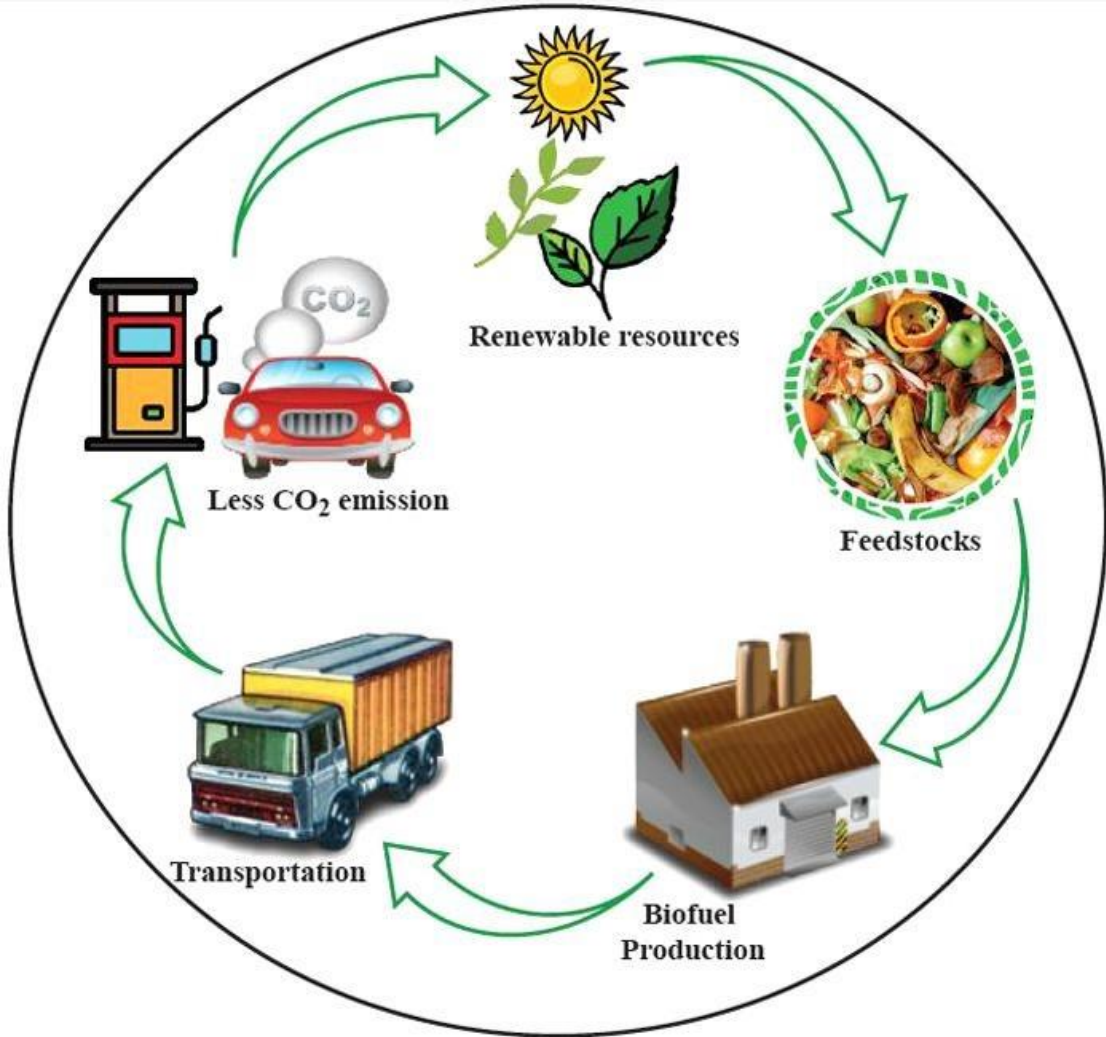


# Changing World: Oil to Chemicals – Sustainability Approach



- Paradigm Shift in Consumer Mobility → Gasoline to Electric
- Rising Purchasing Power → Incremental higher demand for petrochemical products
- Future scenario: 80% for chemicals and petrochemicals production and 20% for fuel
- Companies like Hengli, Rong Sheng, Aramco and Exxon are already pursuing Oil to Chemicals (O2C) agenda with 70% of crude oil being used for chemicals
- Opportunity for petrochemicals to unleash growth and create value

# Petroleum Products for Sustainability – Biofuels



Sustainable Aviation Fuel (SAF)

Bio Diesel

Bio Ethanol



In India, the Council of Scientific and Industrial Research (CSIR) along with the Indian Institute of Petroleum (IIP) is engaged in research and production of SAF

# Common Sustainability Routes



Petrochemical companies can effectively address sustainability needs through their alternate feedstock choices

## Route 1

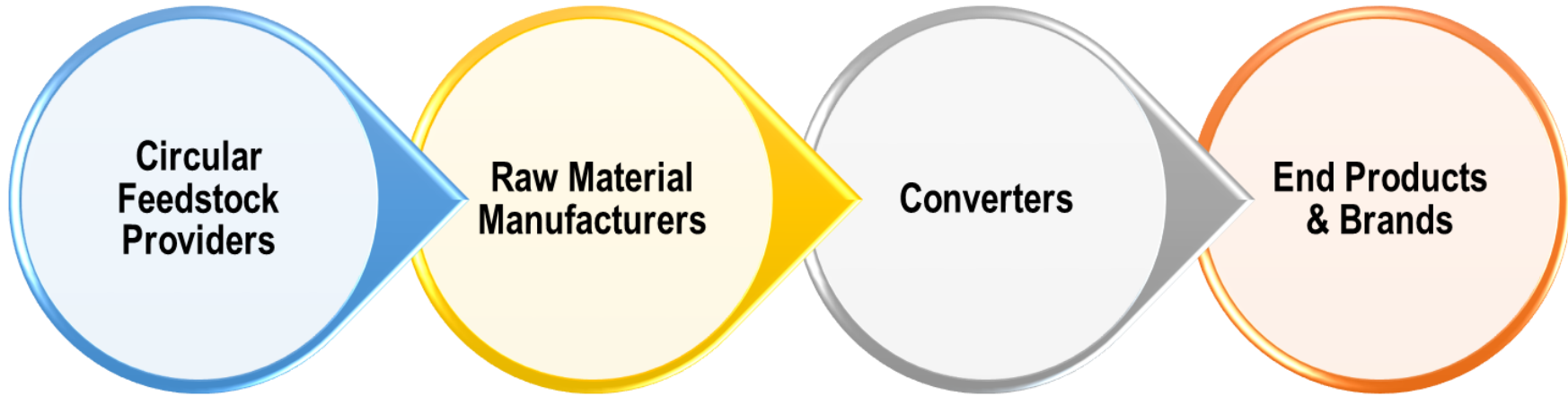
- Feedstock: Bio-naphtha
- Product: Bio-petrochemicals (Bio PE; Bio PP)

## Route 2

- Feedstock: Renewable Pyrolysis Oil
- Product: Circular Polymers (Circular PE, Circular PP)

- Commercial success of Route 1 is limited due to feedstock availability
- Route 2 has been adapted by major Petchem companies aiming Circular Economy

# Petchem Value Chain Integration for Sustainability



Tracking product traceability & compliance through Blockchain Technology

# Circular Economy – Technology Backdrop in Petrochemicals



## Circular Feedstock Technology

Thermal Anaerobic Conversion  
Hydrothermal Liquefaction

## Technology Partners

Plastic Energy  
KBR, Mura Technology  
Axens  
Haldor Topsoe

## Advanced Recycling Technology



Pure Cycle

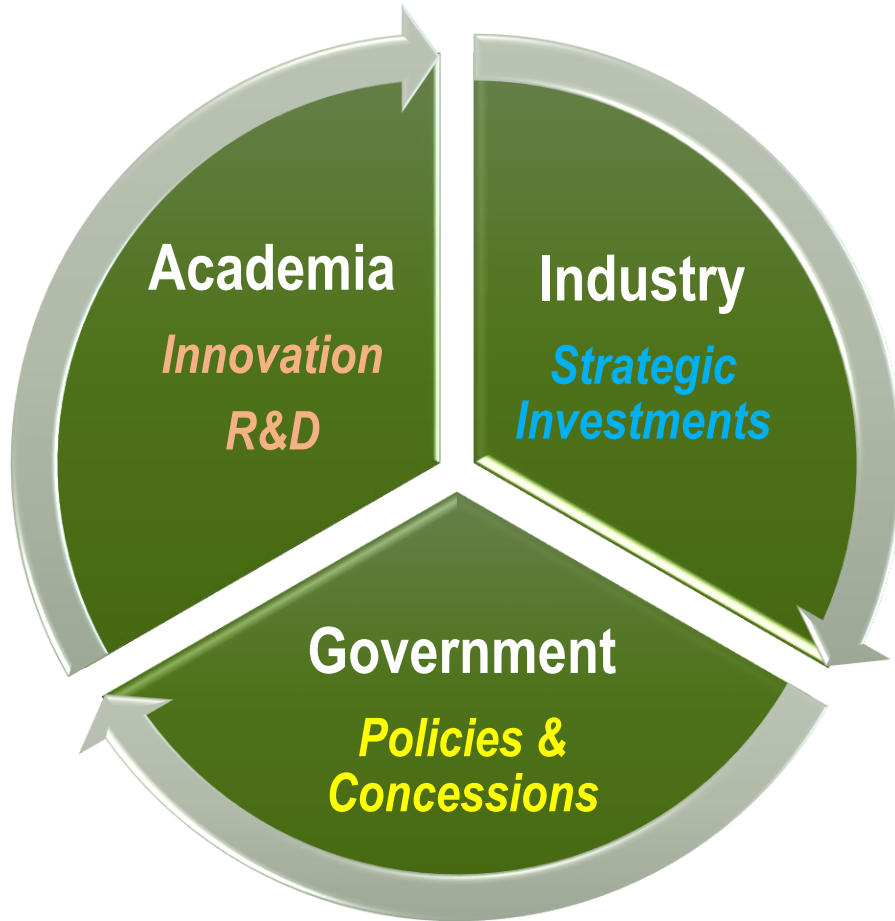
## Certification & Compliance

ISCC Plus  
Digital Product Passports



Circularize  
R-Cycle

# Collaboration for Sustainability



- Technology development is the most important aspect
- Until commercially viable technology is available to the industry it would be difficult to meet the sustainability target
- With high value technology solutions, industry will pass on the burden to the society and consumer need to pay
- Need close collaboration among academia and industry for indigenous low-cost technology development so that industry can adopt it without any cost escalation
- Sustainability tax credit by Govt.
- Streamlining of EPR definitions and Industry self-managed Tradable Recycling Credit scheme

**Communion of the Trinity – A Pressing Priority**



# Thank You