

India's First Port-Based E-Methanol Facility

Prelims: Current events of national and international importance | Government Policies and Interventions

Why in News?

Recently, the **foundation stone of India's first port-based e-methanol production facility** was laid at **Deendayal Port Authority (DPA), Kandla, Gujarat**.

India's First Port-based e-Methanol Production Facility





SHANKAR
IAS PARLIAMENT

	Parameter	Prelims Fact
	Project	India's first port-based e-methanol production facility
	Location	Kandla, Gujarat
	Port	Deendayal Port Authority (DPA)
	Total investment	₹2,300 crore
	Total capacity	150 tonnes/day
	Technology/ feedstock	Renewable power + water + biogenic CO ₂
	Purpose	Green maritime fuel
	Target market	International shipping
	Main corridor	Asia-Europe International Trade Corridor
	Partners	DPA + Assam Petro-Chemicals Ltd (APCL)
	Expected production cost	~US\$750/tonne
	Global benchmark mentioned	~US\$1,300/tonne
	Employment	3,500+ direct & indirect jobs

- **Aim** - To produce **green maritime fuel** for international shipping and strengthen India's role in the global green-fuel supply chain.
- **Joint initiative of** -
 - Deendayal Port Authority (DPA), Kandla, Gujarat.
 - Assam Petro-Chemicals Ltd (APCL), Namrup, Assam.
- **Implementation – Two Phases**
 - Phase I
 - Capacity addition: 50 tonnes/day
 - Investment: Rs.1,200 crore
 - Target completion: January 2027

- Phase II
 - Additional capacity: 100 tonnes/day
 - Investment: Rs.1,100 crore
 - **Target completion: March 2027**

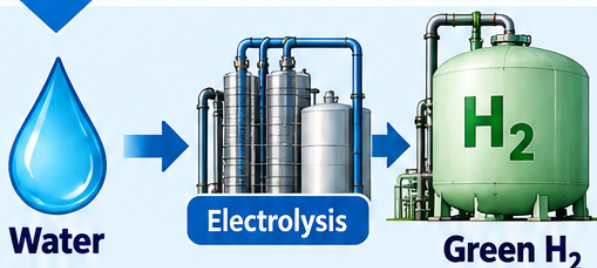
E-methanol, also known as electro-methanol, refers to methanol produced using renewable electricity and carbon sources such as captured or biogenic CO₂.

Simplified Production Pathway

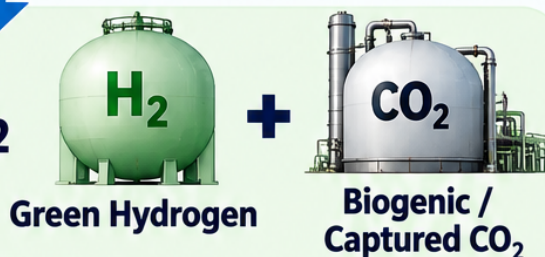
1 Renewable electricity



2 Water → Hydrogen , (Green H₂)



3 Green H₂ + CO₂



4 Methanol (CH₃OH)



5 **E-Methanol**



Conventional Methanol vs E-Methanol		
		
Feature	Conventional Methanol	E-Methanol
 Main chemical	CH₃OH	CH₃OH
 Production	Generally fossil-based	Renewable-energy-based pathway
 Hydrogen source	Usually fossil-derived	Green hydrogen
 Carbon source	Often fossil-derived	Biogenic/captured CO₂
 Climate impact	Higher	Potentially much lower
 Use	Chemical/feedstock/fuel	Marine fuel + other applications

- **Importance of E-Methanol in the Maritime Sector** - The maritime sector depends heavily on fossil fuels and is difficult to decarbonise because ships require:
 - High energy density in fuel sources
 - Capability for long-distance operations
 - Requirement for large quantities of fuel
 - Need for rapid refuelling processes
- **Advantages**
 - A viable alternative to conventional marine fuels
 - Potential to reduce lifecycle greenhouse gas emissions
 - Simplified handling compared to certain alternative fuels
 - Compatibility with existing methanol-capable marine engines
 - Potential integration into current port fuel infrastructure with necessary modifications
- **Strategically important of Kandala**
 - **Port infrastructure** - Supports the production, storage, and supply of maritime fuels, including bunkering services.
 - **Gujarat's renewable-energy potential** - Offers significant potential for solar and wind energy development.
 - **Strategic coastline** - Offers direct access to major international shipping routes.
 - **International trade connectivity** - Has the potential to supply green marine fuel to vessels on key international routes.
 - **Emerging green-fuel hub** - The project can support an integrated ecosystem encompassing production, storage, transportation, bunkering, and international shipping.

*E-methanol is designated for use by vessels operating along the **Asia-Europe International Trade Corridor**.*

*Asia-Europe is one of the **world's major maritime trade corridors**.*

- **Broader Maritime Sector Targets** - The government has announced the following initiatives:
 - Expand India's merchant fleet by 100 vessels within the next five years.
 - Position India among the top five ship-owning nations globally by 2047.
- **Other projects mentioned**
 - **DPA-Cochin Shipyard Project**
 - Location - Vadinar
 - Investment - Rs.1,520 crore
 - **Greenfield Shipbuilding and Repair Cluster**
 - Location - Kuchhadi, Porbandar
 - Status - In-principle approval

Reference

[DD India | India's First Port-Based E-Methanol Facility](#)

