



TATHASTU ICS



6 SEPTEMBER, 2023

AP/KK/AJ

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INDIA TO SHOWCASE DIGITAL INFRA AT G20 SUMMIT

SOURCE: [THE INDIAN EXPRESS](#)

WHY IN NEWS?

- At the **forthcoming G20 summit**, India is preparing to highlight its **expanding importance in digital infrastructure**.
- A "**Digital India Experience Zone**" is being established to highlight the tremendous expansion of the country's **digital economy** and to give G20 participants firsthand exposure to **digital public infrastructure**.

IMPORTANCE OF DIGITAL INDIA EXPERIENCE ZONE:

- The G20 presidency of India has highlighted the nation's efforts to **build digital public infrastructure**.
- This investigated other countries' interest in adopting the underlying technology that **fuels India's DPI drive**, which it refers to as the **India Stack**.
- India is pushing for the adoption of the **UPI architecture in other nations**.
- International markets including France, the United Arab Emirates, Singapore, and Sri Lanka are accepting the service, and nations like Japan have expressed interest.
- Industry observers believe that this is **India's attempt to position itself as a leader in digital governance**, particularly given its ambitions to lead the Global South.
- This is also seen as a differentiator from rival China, which is supporting the construction of physical infrastructure in other emerging nations, in government circles.



SIGNIFICANCE OF THE DIGITAL ECONOMY:

- **Growth of e-commerce:** The e-commerce platforms have made it possible for small and medium-sized enterprises to reach a bigger customer base as online shopping has grown in popularity and more consumers are making purchases there.
- **Financial inclusion:** Financial inclusion in India has greatly increased because of the use of digital technology, especially **mobile banking and UPI (Unified Payments Interface)** digital payment systems.
- **Growth entrepreneurial opportunities:** The digital economy has given innovators a platform to create and introduce fresh digital goods and services.
 - After the United States and China, India now has the third-largest start-up ecosystem globally.
- **Global competitiveness:** By exporting software and IT services to other nations, the nation has emerged as a prominent player in the global IT and software services market.

INITIATIVES FOR DIGITAL PUBLIC INFRASTRUCTURE:

INITIATIVE	OBJECTIVE
1. AADHAR(UIDAI)	It serves as the basis for a number of digital services, such as e-KYC (Know Your Customer), direct benefit transfers, and digital authentication for government services.
2. DIGITAL INDIA	The Digital India program was established in 2015 with the goal of transforming India into a knowledge-based society and economy.
3. BHARAT NET	Bharat Net is a high-speed broadband network project with the goal of laying optical fibre throughout all of India's rural districts.
4. GeM	GeM is an online marketplace for purchasing goods and services from the government. It encourages openness, efficacy, and economy in government procurement procedures.
5. DIGI LOCKER	Citizens can keep and access their vital documents and certifications online with the help of the Digi Locker platform for digital document sharing and storage.
6. E-NAM	A national network of agricultural marketplaces called e-NAM connects them through online trade for agricultural products. It makes it possible for farmers to sell their produce online, eliminating middlemen and guaranteeing higher pricing.

GOVERNMENT SCHEMES TO SUPPORT DIGITAL INFRASTRUCTURE:

Scheme	Objective
Pradhan Mantri Jan Dhan Yojana (PMJDY)	Provide access to banking services and promote financial inclusion.
BHIM (Bharat Interface for Money)	Promote cashless transactions through a secure digital payment app.
Stand-Up India	Encourage entrepreneurship among women, SCs, and STs through financial assistance.

Digital Saksharta Abhiyan (DISHA)	Make one person in every household digitally literate.
Electronics Manufacturing Schemes	Boost domestic electronics manufacturing and production.
Startup India	Foster entrepreneurship and innovation by providing incentives and support.
Atal Innovation Mission (AIM)	Promote a culture of innovation through initiatives like Atal Tinkering Labs and Incubation Centres.
National Digital Literacy Mission (NDLM)	Impart digital literacy in rural and underprivileged communities.

CHALLENGES ASSOCIATED WITH DIGITAL EMPOWERMENT:

- **Lack of internet facilities:** Despite substantial advancements, a sizable section of the populace still lacks internet connection. Concerns arise like lack of awareness, insufficient internet infrastructure, and affordability.
- **Digital illiteracy:** A sizeable section of the population lacks digital literacy and the ability to avail of digital services.
- **Cyber security challenges:** People may refrain from using digital services due to worries about data security and privacy.
- **Vernacular languages:** For inclusion, access to digital services and content in regional languages is crucial, especially for non-English speakers.

WAY FORWARD:

- **Digital literacy initiatives:** Create specialized programs for various groups, such as women, elderly people, and individuals with impairments.
- **Digital infrastructure:** Encourage private sector involvement in the creation and upkeep of digital infrastructure.
 - Encourage the usage of internet services delivered by satellite in places with inadequate terrestrial access.
- **Legislations for data privacy:** Implementing the recommendations of Justice BN Krishna's committee on privacy laws.
- **Affordable services:** Provide low-income people and families with subsidies for the price of digital gadgets and data plans. Encourage the use of public Wi-Fi networks in rural areas.
 - PM WANI scheme launched by our government to provide public WIFI facilities.
- **Emerging technologies:** Implementing technologies like 5G can have a great impact on further digital inclusion in India.

MARITIME INFRASTRUCTURE PERSPECTIVE PLAN

SOURCE: [THE HINDU](#)

WHY IN NEWS?

- At the **Naval Commanders Conference** on Monday, Minister of State for Defence Ajay Bhatt presented the **Maritime Infrastructure Perspective Plan 2023–37**, which aims to **develop sustainable architecture** in accordance with the more general policy directive of the PM Gati Shakti project.
- In a statement issued on the first day of the three-day Conference, the maritime force stated that it seeks to synchronize and enmesh the infrastructure requirements of the Navy over the next 15 years through a complete perspective plan model.



MARITIME INFRASTRUCTURE PERSPECTIVE PLAN :

INFRASTRUCTURE DEVELOPMENT

- Through a thorough perspective plan model, the MIPP seeks to synchronise and integrate the infrastructure needs of the Navy over the course of the next 15 years.

REGULATIONS

- Also released were the **Indian Register for Shipping (IRS) rules and regulations handbook**, family logbook, and electronic service document project

TECHNOLOGICAL ADVANCEMENTS

- The Plan Document includes salients for compliance with broader policy directives on the PM Gati Shakti project, disaster resilience, and the transition to net zero, among other things.
- It is in line with the government's aim for the development of sustainable infrastructure. technological advancement as well.

SIGNIFICANCE OF THE MARITIME SECTOR FOR INDIA:

- **Strategic importance:** India has strategic interests and security concerns in the Indian Ocean region, which is also where its maritime interests extend.
- **Blue economy:** The term "blue economy" refers to the ethical and responsible use of ocean and marine resources for economic development and marine ecosystem preservation.
- **Tourism and coastal development:** With its beaches, coastal cities, and historical landmarks, India's coastline is a well-liked vacation spot. The maritime industry makes a contribution to tourism by creating income and job possibilities.

- **Connectivity:** Bulk freight and containers can be transported effectively and economically across the sea. It links inland and coastal areas, enhancing accessibility for businesses and residents.

CHALLENGES FACED BY THE MARITIME SECTOR IN INDIA:

- **Maritime security:** The key concerns in the marine realm have evolved to include terrorism (26/11 attack), arms smuggling, piracy, drug trafficking, illegal immigration, and natural disasters.
- **Coastal pollution:** Significant obstacles include environmental issues in regard to shipbreaking practices, coastal pollution, and the disposal of dangerous chemicals from ships.
- **Funding for infrastructure:** For public-sector projects in particular, securing funding for the development of port and maritime infrastructure is a persistent struggle.
 - The expansion of infrastructure depends on attracting corporate investment and public-private partnerships.
- **Logistic problems:** Increased shipping costs are a result of ineffective transportation and logistics networks, which has an effect on how competitively priced Indian exports are.
- **Need for modernization of the infrastructure:** The outdated infrastructure at many Indian ports can cause congestion, delays, and higher logistics costs.
 - Modernising and expanding ports to accommodate larger vessels is still a major concern.

INITIATIVES FOR THE DEVELOPMENT OF MARITIME SECTOR IN INDIA:

Initiative	Objective
Sagarmala Programme	Promote port-led development, reduce logistics costs, and enhance port and coastal infrastructure.
National Maritime Development Programme (NMDP)	Improve the overall competitiveness of the maritime sector and foster sustainable development of ports.
Green Port Initiatives	Implement eco-friendly practices in port operations to reduce the environmental impact of maritime activities.
Maritime India Vision 2030	Provide a long-term roadmap for the maritime sector's growth, modernization, and development.
Maritime Connectivity Promotion Scheme (MCPS)	Enhance coastal shipping and inland waterway transportation to reduce logistics costs and fuel consumption.
International Shipbreaking Code (ISC)	Regulate shipbreaking activities to ensure worker safety, environmental protection, and responsible recycling.
Maritime Cluster Development Program (MCDP)	Promote the establishment of maritime clusters to enhance competitiveness and innovation in the sector.

INTERNATIONAL TREATIES AND CONVENTIONS

TREATY	OBJECTIVE
United Nations Convention on the Law of the Sea (UNCLOS)	Governs the use and management of the world's oceans and marine resources.
International Convention for the Safety of Life at Sea (SOLAS)	Sets safety standards for the construction, equipment, and operation of ships.
International Maritime Organization (IMO) Conventions	Covers various conventions related to shipping, maritime security, and seafarer training standards.
International Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention)	Regulates the dumping of wastes at sea.
Hongkong convention	The convention intends to address the safety and environmental issues with ship recycling, especially the risky and damaging practices in shipbreaking yards.

WAY FORWARD:

- **Sustainable practices:** Promote environmentally friendly port operations, emission reductions, and the use of clean energy sources in shipping.
- **Encourage PPPs:** Encourage collaborations between the public and commercial sectors for port development and management.
- **International collaboration:** To harmonize maritime regulations and advance trade, work with neighbouring nations and international organizations.

FLEX-FUEL HYBRID VEHICLE

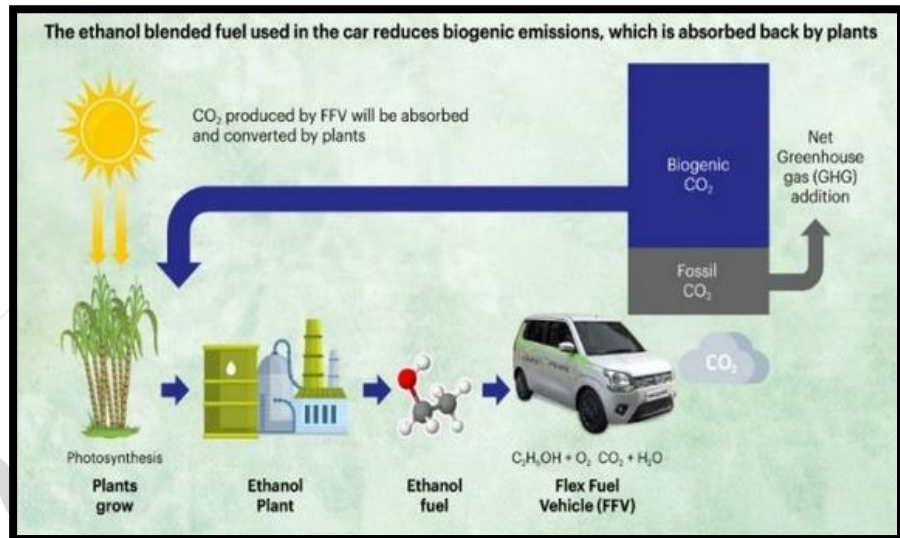
SOURCE: [THE INDIAN EXPRESS](#)

WHY IN NEWS?

- Toyota showcased a prototype of the Innova Hycross with a flex-fuel hybrid powertrain. This is the company's first vehicle with this option in India, and according to the Japanese automaker, it is also the world's first flex-fuel vehicle that complies with BS6 Stage II.

ABOUT FLEX FUEL TECHNOLOGY:

- Like a standard petrol car, a flex-fuel vehicle typically contains an internal combustion engine (ICE).
- But unlike a typical petrol vehicle, it may run on more than one type of fuel or a combination of these fuels.
- The most often used types combine petrol with ethanol or methanol.
- The flex-fuel vehicles can run on ethanol blends much higher than the current standard 20% mix (E20).
- FFVs are flexible to many fuel sources since they can run on a variety of alternative fuels, including E85 (a mixture of 85% ethanol and 15% petrol).



BENEFITS OF FLEX-FUEL VEHICLE TECHNOLOGY:

- **Reduction in emissions:** When ethanol is used in blending, dangerous emissions like carbon monoxide, sulphur, and carbon and nitrogen oxides are significantly reduced.
- **Enhanced vehicle performance:** Many flex-fuel vehicles operate better while driving on higher ethanol mixes.
- **Reductions in import bills:** Additionally, blending will lessen the need to import oil for automobile fuel.
 - In India, the percentage of ethanol in petrol increased from 1.53% in 2013–14 to 11.5% in March 2023, reducing the cost of imported oil by an estimated Rs 41,500 crore during the preceding eight years.
 - According to official estimates, ethanol blending enabled a reduction of 26 million barrels of petrol in 2020–21, saving Rs 10,000 crore.

CHALLENGES ASSOCIATED WITH FLEX FUEL VEHICLE TECHNOLOGY:

- **Compatibility with existing vehicles:** It can be difficult and expensive to manufacture FFVs with the requisite technologies or to retrofit current vehicles to become FFVs.

- **Limited availability of ethanol:** The fact that source crops like sugarcane are typically particularly water-intensive is an issue with ethanol blending.
 - In 2019–20, more than 90% of the ethanol generated in the nation came from sugarcane, according to an NITI Aayog report. Greater ethanol mixes produce improved acceleration performance.
- **Consumer awareness:** The advantages of ethanol-based fuels and FFVs are not well known to many Indian consumers. Public awareness of these cars and fuels must be raised in order for them to be accepted.
- **Government policies:** The National Biofuel Policy 2018 envisages a 2025 target of 20% blending, which limits its production.
 - Countries such as Brazil can be flexible on the degree of the mix depending on crude prices, the precondition being that the vehicular fleet has been equipped to adjust to this varying fuel mix.
- **Low market demand:** Customers who are unsure of or reluctant to use alternative fuels can create low demand for FFVs.

WAY FORWARD:

- **Ethanol supply chain management:** To address the demands of FFVs, invest in increasing ethanol production capacity.
 - Create a strong ethanol supply chain that includes distribution, transportation, and storage infrastructure.
- **Research and development:** Increase spending on R&D to enhance FFV technology, especially engine performance and ethanol blend compatibility.
- **Government support:** Provide financial incentives and subsidies to FFV buyers as well as to manufacturers and fuel producers who participate in the manufacturing and distribution of ethanol through government schemes.

PRELIMS SPECIFIC

TYPES OF VEHICLE TECHNOLOGIES:

- ❖ **HYBRID ELECTRIC VEHICLES:** HEVs have a battery, an electric motor, and an internal combustion engine. For propulsion, they are capable of using both petrol and electricity.
- ❖ **BATTERY ELECTRIC VEHICLES:** Rechargeable batteries are the only source of power for BEVs. They have no internal combustion engines and emit no pollution from their tailpipes.
- ❖ **PLUG-IN HYBRID ELECTRIC VEHICLES:** PHEVs have an electric motor driven by a rechargeable battery in addition to an internal combustion engine.
- ❖ **FUEL CELL ELECTRIC VEHICLES:** FCEVs use fuel cells to produce energy for the electric motor and hydrogen as a fuel source. Only water vapour is produced as a byproduct.
- ❖ **FLEX FUEL VEHICLES:** FFVs are flexible to many fuel sources since they can run on a variety of alternative fuels, including E85 (a mixture of 85% ethanol and 15% petrol).