

10 September, 2024

The CHIPS Act 2022

Context: Ahead of PM's US visit, The US State Department will partner with India under the CHIPS Act 2022's.

➤ Overview:

- The US State Department will partner with India's Semiconductor Mission under the ITSI Fund to boost the global semiconductor ecosystem.
- The first phase will assess India's semiconductor landscape and regulatory needs.

The **Creating Helpful Incentives to Produce Semiconductors and Science Act of 2022 (CHIPS Act)**, signed into law on August 9, 2022, aims to enhance US competitiveness, innovation, and national security by boosting investments in domestic semiconductor manufacturing.

- **Investment:** Authorizes \$52.7 billion over five years to enhance US semiconductor manufacturing, innovation, and national security.
- **Technological Advancements:** Promotes R&D in quantum computing, AI, clean energy, and nanotechnology.
- **Workforce Development:** Aims to create regional high-tech hubs and expand the STEM workforce.

➤ Important Features:

- **Government Coordination:**
 - **CHIPS for America Fund:** \$50 billion administered by the Department of Commerce for semiconductor manufacturing and research.
 - **Defense Technologies:** \$2 billion allocated to the Department of Defense for defense-specific technologies.
 - **Supply Chain Security:** \$0.5 billion allocated to the Department of State for international semiconductor supply chain coordination.
 - **Workforce Promotion:** \$0.2 billion allocated to the National Science Foundation for growing the semiconductor workforce.
- **Research and Innovation:**
- **Focus:** \$11 billion investment in future research, including the National Advanced Packaging Manufacturing Program (NAPMP) to gain a competitive edge in semiconductor technology.

➤ India Semiconductor Mission (ISM):

- **Launch:** Initiated in 2021 by the Ministry of Electronics and IT (MeitY) with an allocation of Rs. 76,000 crores.
- **Objective:** To develop a sustainable semiconductor and display ecosystem in India.

➤ Key Objectives:

- **Long-Term Strategy:** Develop semiconductor manufacturing and design capabilities.
- **Secure Supply Chain:** Facilitate adoption of secure microelectronics and develop a trusted supply chain.
- **Design Industry Growth:** Support semiconductor design industry growth with tools and services for startups.
- **Intellectual Property:** Promote IP generation and technology transfer.
- **Research and Development:** Encourage cutting-edge research through grants and global collaborations.

➤ Lessons for India from the CHIPS Act

- **Whole-of-Government Approach:**
 - India's semiconductor policy should involve multiple government agencies to ensure longevity and consistency, similar to the CHIPS Act's approach.
- **Skilled Workforce Development:**
 - Focus on developing a competent semiconductor workforce. India's Chips2Startup (C2S) program should collaborate with universities and private training centers, ensuring certification and quality.
- **Transparency and Accountability:**
 - India needs to enhance transparency by issuing regular progress reports on semiconductor programs to manage expectations and build confidence.
- **Research and Innovation:**
 - India's semiconductor strategy should incorporate a focus on future technologies and advanced research, particularly in areas like advanced manufacturing and packaging, to stay competitive globally.

India-UAE Relations

Context: India and the UAE signed four energy agreements as Modi met Abu Dhabi Crown Prince Khaled.

➤ Overview:

- The two leaders discussed the multifaceted India-UAE relations and avenues to broaden the comprehensive strategic partnership to new and emerging areas.
- Among the four pacts are long-term LNG supply agreements between ADNOC and Indian Oil, and ISPRIL.
- ENEC and NPCIL signed an MoU for the operation and maintenance of the Barakah Nuclear Power Plant.

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INDIA-UAE MoUs/Agreements



**Visit of H.H. Sheikh Khaled Bin Mohamed Bin Zayed Al Nahyan,
Crown Prince of Abu Dhabi to India**

MoU in the field of Barakah Nuclear Power Plant Operations and Maintenance between Emirates Nuclear Energy Company (ENEC) and Nuclear Power Cooperation of India Limited (NPCIL)

An Agreement for long-term LNG supply between Abu Dhabi National Oil Company (ADNOC) and Indian Oil Corporation Limited

MoU between ADNOC and India Strategic Petroleum Reserve Limited (ISPRL)

Production Concession Agreement for Abu Dhabi Onshore Block 1 between Urja Bharat and ADNOC

MoU between Government of Gujarat and Abu Dhabi Developmental Holding Company PJSC (ADQ) on food parks development in India



Historical Context

- Diplomatic relations between India and the UAE were established in 1972. The UAE opened its embassy in New Delhi, and India established its embassy in Abu Dhabi in 1973.
- Millennia of cultural, religious, and economic exchange, including barter trade, laid the groundwork for the relationship.



The UAE

- Located in West Asia, bordered by Oman and Saudi Arabia, with access to the Persian Gulf and Strait of Hormuz.
- Comprises seven emirates: Abu Dhabi, Dubai, Sharjah, Ras Al Khaimah, Umm Al-Quwain, Fujairah, and Ajman.
- **Economy:**
 - **Oil and Gas:** Major revenues from oil and natural gas, particularly in Abu Dhabi. Recent economic diversification efforts, notably in Dubai.
 - **Infrastructure:** Significant investments in transportation and infrastructure have improved living standards and satisfaction.

Pillars of Cooperation

- **Economic Cooperation**
- **Trade Relations:**
 - **Status:** with the UAE as India's second-largest trading partner and fourth-largest investor
 - **Trade Figures (2022-23):** India and the UAE's trade has increased from \$180 million per year in the 1970s to \$84.84 billion in 2022-23.
- **Comprehensive Economic Partnership Agreement (CEPA):**
 - **Objective:** Aims to boost bilateral trade in goods to \$100 billion and services to \$15 billion within five years. Focus areas include textiles, handicrafts, finance, food, and medical equipment.
- **Energy Cooperation**
- **Crude Oil Supply:**
 - **Current Status:** UAE is India's fourth-largest crude oil supplier, providing 17.49 million metric tonnes.
 - **Trade Value (2022):** The UAE exported \$14.8 billion worth of crude petroleum to India.
- **Strategic Partnership:** Evolved from a buyer-seller relationship to a strategic partnership.
- **Investments:** UAE is expected to invest over \$300 billion in India's energy sector. Agreements include strategic storage of crude oil in Karnataka.

Defense Relations:

- **MoU and JDCC:** An MoU on Defense Cooperation was signed in 2003, leading to the establishment of the Joint Defence Cooperation Committee (JDCC).
- **Regional Security:**
 - **Coordination:** Potential for trilateral cooperation with Israel on defense and security issues.
- **joint military exercise**
 - Desert Cyclone 2024
 - "Desert Eagle"
- **Diaspora**
- **Indian Community:**
 - **Population:** Approximately 3.3 million Indians in the UAE, making up around 30% of the population.
 - **Remittances:** Indian nationals send over \$17.56 billion in remittances annually.
 - **Labor Issues:** Large numbers of unskilled workers face challenging conditions and lack of protection compared to other workers.

Recent Developments

- **Cultural Milestone:**
 - **BAPS Swaminarayan Mandir:** This is the first Hindu stone temple in the Middle East, symbolizing deep cultural and diplomatic ties.

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- **Economic Agreements:**
 - **Energy Pacts:** Long-term LNG supply agreements and oil production concessions.
 - **Food Parks:** Development of food parks in India through UAE investment.

World Meteorological Organization (WMO) climate report 2024

Context: The UN's World Meteorological Organization (WMO) released its fourth annual Air Quality and Climate Bulletin.

➤ Overview:

- The bulletin highlights the impact of wildfires on global particulate matter pollution and its effects on crop health.
- Released for Clean Air for Blue Skies Day, the WMO bulletin highlights air pollution's severe health and economic impacts.
- Pollutants harm ecosystems by reducing clean water availability, biodiversity, and carbon storage capabilities.

The **WMO Air Quality and Climate Bulletin** aims to highlight the critical relationship between air quality and climate change. It provides insights into current trends, impacts, and advancements in understanding how particulate matter (PM) and bioaerosols affect both environmental and human health.

➤ Global Air Quality Trends

- **PM2.5 Concentrations:**
 - Particulate matter smaller than 2.5 micrometers in diameter, capable of penetrating deep into the lungs and bloodstream, leading to health risks.
 - **Europe and China:** Demonstrate reductions in PM2.5 pollution, indicating potential improvements or effective regulations in air quality management.
 - **North America and India:** See increases in PM2.5 levels due to heightened emissions from

industrial activities and other anthropogenic sources.

- **Global PM Hotspots:**

- High PM2.5 concentrations are observed in regions like Central Africa, Pakistan, India, China, and Southeast Asia, often linked to agricultural practices and industrial emissions.

➤ Impacts of PM2.5

- **On Crops:**

- PM2.5 reduces crop yields by up to 15% by blocking sunlight necessary for photosynthesis, thereby impairing plant growth and agricultural productivity.

➤ Aerobiology

- **Advancements:**

- New technologies have enabled real-time monitoring of bioaerosols, which are airborne biological particles.

- **About Aerobiology:**

- The study of airborne biological particles (bioaerosols) and their impacts on human, animal, and plant health.
- **Bioaerosols:** Include bacteria, fungal spores, pollen grains, and viruses. These particles reflect changes in biodiversity and plant flowering patterns, which are sensitive to climate shifts.

- **Technological Advancements:**

- **High-resolution Image Analysis:** Provides detailed images of bioaerosols for better understanding.
- **Holography:** Captures three-dimensional images of airborne particles.
- **Multi-band Scatterometry:** Measures how particles scatter light to identify their properties.
- **Fluorescence Spectrometry:** Detects bioaerosols based on their fluorescent properties.
- **Nanotechnology for DNA Sequencing:** Allows for detailed genetic analysis of bioaerosols to determine their composition and origin.

NEWS IN BETWEEN THE LINES

BRICS



National Security Adviser Ajit Doval will attend a three-day meeting of BRICS and BRICS Plus high-level security officials beginning from September 10, 2024.

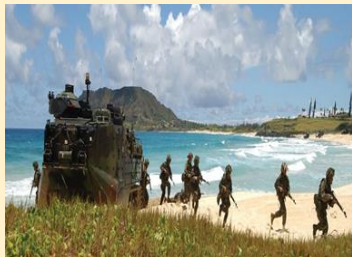
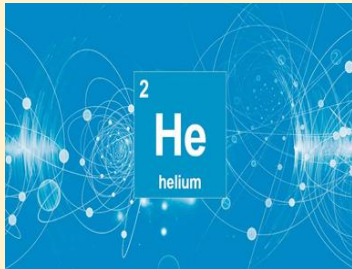
About BRICS:

- BRICS is an intergovernmental organization comprising **Brazil, Russia, India, China, South Africa, Iran, Egypt, Ethiopia** and the **United Arab Emirates**.
- In **2006**, Brazil, Russia, India and China **formed the "Bric" group**, with **South Africa** joining in **2010**, thus renaming it to "**Brics**."
- South Africa attended the **3rd BRICS Summit in Sanya, China on 14 April 2011**.
- **Annual BRICS Summits are held**, where leaders discuss various global and regional issues.
- The first summit was held in **Yekaterinburg, Russia, in 2009**.

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	- The group was designed to bring together the world's most important developing countries, to challenge the political and economic power of the wealthier nations of North America and Western Europe. - During the sixth BRICS Summit in Fortaleza (2014), the leaders signed the Agreement establishing the New Development Bank (NDB). - The NDB became fully operational in 2016 with headquarters established in Shanghai.
Amphibious Operations 	Recently, Chief of Defence Staff General Anil Chauhan released the joint doctrine for amphibious operations during the Chiefs of Staff Committee meeting held on 9th of September 2024. About the Amphibious Operations: - Amphibious operations are military operations that involve a coordinated attack on a hostile shore by a combination of naval, ground and air forces. - They are an important part of multi-domain operations and can be conducted during both peace and war. - These operations require clear command relationships and close cooperation between all participating forces. - The Indian Navy's amphibious capability allows it to conduct a variety of operations in the Indian Ocean Region. - The Joint Doctrine for Amphibious Operations focuses on the integration and jointness of the Armed Forces. - The British/Colonial American amphibious assault on Port Royal during Queen Anne's War is considered a seminal moment in the conquest of Acadia.
Helium 	Two NASA Astronauts aboard Boeing's Starliner will remain on the International Space Station (ISS) due to a faulty propulsion system, including helium leaks. About Helium: - Helium is chemically non-reactive (inert) and does not combust, making it ideal for use in sensitive environments like rocket fuel systems. - After hydrogen, helium is the second lightest element, which is useful in reducing the overall weight of pressurization systems. - It has an extremely low boiling point of -268.9°C, allowing it to remain a gas in super-cold environments, crucial for rockets that use cryogenic fuels. - This gas is used in rocket systems for pressurizing fuel tanks to ensure smooth fuel flow, maintaining pressure by filling empty spaces as fuel burns and cooling systems to prevent overheating. - Due to its low density, helium can escape through small gaps or seals, making leaks a common issue in space systems. - Helium leaks are easily detectable due to the scarcity of helium in the Earth's atmosphere, which is beneficial for spotting faults in rockets. - Though alternatives like argon and nitrogen are sometimes used, helium is preferred for its unique properties.

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Place in News

Germany

External Affairs Minister Dr. S. Jaishankar began a two-day visit to Germany from today (September 10, 2024) to meet with key leaders, including the German Federal Foreign Minister, to strengthen bilateral ties and explore new areas of cooperation.

Germany (Capital: Berlin)

Location: Germany, situated in the western region of Central Europe, ranks as the second-most populous country in Europe, following Russia.

Political Boundaries: Germany shares its borders with **Poland** and **Czech Republic** (East), **France**, **Luxembourg**, **Belgium** and the **Netherlands** (West), **Denmark** (North), **Austria** and **Switzerland** (South).

Physical Features:

- Major rivers include the **Rhine**, **Elbe**, **Danube** and **Weser**.
- The highest point in Germany is the **Zugspitze**, located in the Bavarian Alps.
- Germany experiences a temperate seasonal climate.
- Germany possesses a variety of mineral resources including **lignite**, **potash**, **salt**, **uranium**, and **natural gas**.



Membership: Germany is a member of various international organizations and alliances, including the **European Union (EU)**, **North Atlantic Treaty Organization (NATO)**, **United Nations (UN)**, **G7**, **G20** and **World Trade Organization (WTO)**.

POINTS TO PONDER

- Which city is affected by Cyclone Goni? – **Chennai**
- Who is the new Cabinet Secretary? – **Dr. T.V. Somanathan**
- Which country hosted World Environment Day? – **Pakistan**
- Who is the current Chief of Air Force? – **Rakesh Kumar Bhadauria**
- What is India's longest river bridge? – **Dhola Sadiya Bridge (Bhupen Hazarika Setu)**

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