



20 June, 2023

India-Vietnam Relations

Context: Raksha Mantri & Minister of National Defence of Vietnam hold talks in New Delhi to carry forward bilateral defence cooperation.

- Raksha Mantri Shri Rajnath Singh and Minister of National Defence of Vietnam General Phan Van Gang held talks in New Delhi on June 19, 2023.
- Both sides reviewed the progress on various bilateral defence cooperation initiatives and expressed satisfaction with the ongoing engagements.
- India's Raksha Mantri announced the gifting of the indigenously-built in-service Missile Corvette INS Kirpan to the Vietnam People's Navy, which will enhance their naval capabilities.
- The Defence Minister of Vietnam visited DRDO headquarters to discuss enhancing defence industrial capabilities through cooperation in defence research and joint production.
- General Phan Van Gang paid homage to fallen heroes at the National War Memorial during his visit.
- Vietnam is an important partner in India's Act East Policy and the Indo-Pacific region.
- India has also gifted in-service missile corvette INS Kirpan to Vietnam.

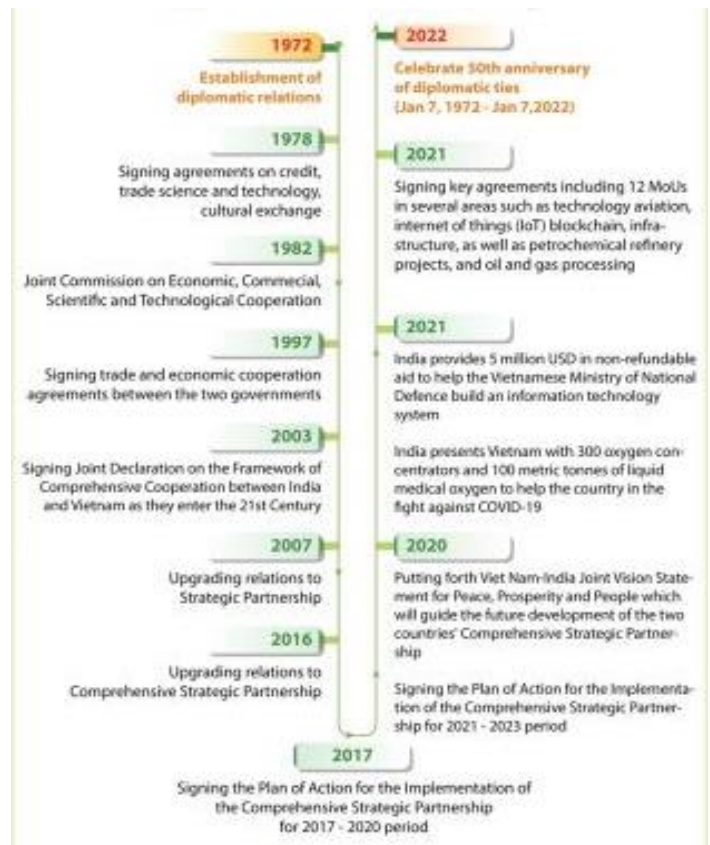
India-Vietnam Relations

➤ Historical Background

- President Ho Chi Minh, President Rajendra Prasad, and Prime Minister Nehru played crucial roles in establishing friendly relations between the two countries.
- India supported Vietnam's independence from France and opposed American involvement in the Vietnam War.
- India chaired the International Commission for Supervision and Control to implement the 1954 Geneva Accords and facilitate peace in Vietnam.
- Diplomatic relations between India and North Vietnam were established in 1972, prior to the US withdrawal and the fall of Saigon in 1975.
- India supported the reunification of Vietnam and the two countries have maintained friendly relations.
- Vietnam is an important regional partner in South East Asia, and India and Vietnam cooperate closely in regional forums such as ASEAN, East Asia Summit, Mekong Ganga Cooperation, ASEM, UN, and WTO.

➤ Trade Relations

- India granted Vietnam "Most Favoured Nation" status in 1975.
- Bilateral trade agreement signed in 1978 and Bilateral Investment Promotion and Protection Agreement (BIPPA) signed in 1997.
- ASEAN-India Free Trade Agreement came into effect in 2010.
- Vietnam is India's 10th largest trading partner, and India is Vietnam's 15th largest trading partner and 4th largest in ASEAN.
- Bilateral trade has increased rapidly since the liberalization of both economies.
- COVID-19 pandemic caused a decline of 22.47% in bilateral trade between India and Vietnam.



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- Major Indian exports to Vietnam include machinery, seafood, pharmaceuticals, cotton, automobiles, textiles, and more.
 - Main imports from Vietnam to India include mobile phones, computers, machinery, chemicals, rubber, coffee, and more.
 - Bilateral foreign investments between India and Vietnam have been increasing.
 - Vietnam has investments in pharmaceuticals, IT, chemicals, and building materials in India.
- **Strategic Partnership**
- India and Vietnam aim to strengthen their strategic partnership in alignment with India's Indo-Pacific Oceans Initiative (IPOI) and ASEAN's Outlook on Indo-Pacific.
 - Both countries are members of the Mekong-Ganga Cooperation, promoting closer ties between India and Southeast Asian nations.
 - Vietnam has supported India's aspirations to become a permanent member of the UN Security Council and join the Asia-Pacific Economic Cooperation (APEC).
 - Strategic partnerships between India and Vietnam include collaboration in nuclear power development, regional security enhancement, and joint efforts against terrorism, transnational crime, and drug trafficking.
- **Defence Relations**
- Defence cooperation is a crucial aspect of the strategic partnership between India and Vietnam.
 - Vietnam has shown interest in acquiring India's Akash surface-to-air systems, Dhruv advanced light helicopters, and BrahMos missiles.
 - Defence relations involve capacity building, addressing shared security concerns, personnel training, and collaboration in defence research and development.
 - Indian Naval Ship INS Kiltan visited Ho Chi Minh City in 2020 to provide flood relief materials as part of Mission Sagar III.
 - INS Kiltan also participated in the PASSEX Exercise with the Vietnam People's Navy, promoting naval cooperation between the two countries.
- **Recent Developments**
- The Defence Ministers of India and Vietnam signed the 'Joint Vision Statement on India-Vietnam Defence Partnership towards 2030' to enhance bilateral defence cooperation.
 - India has extended a Defence Line of Credit worth USD 500 million to Vietnam, with the implementation of projects under it significantly enhancing Vietnam's defence capabilities.
 - The Defence Line of Credit aligns with India's vision of 'Make in India, Make for the World,' promoting indigenous manufacturing and technology transfer.
 - A Memorandum of Understanding (MoU) on Mutual Logistics Support has been signed, facilitating cooperation and support in logistics between the defence forces of both countries.

Are sound particles also quantum?

Context: IBM published a paper showcasing a quantum computer's ability to solve a problem that conventional computers cannot, addressing concerns about the reliability of complex computations.

- Physicists are exploring the possibility of using phonons, which are packets of vibrational energy, as qubits for quantum computing.
- Researchers from the University of Chicago have developed an acoustic beam-splitter, a tool to manipulate phonons similar to how mirrors and lenses manipulate photons.
- Beam-splitters, which are widely used in optics research, can split a stream of photons into two, reflecting 50% and letting the other 50% pass straight through.
- When shining a million photons at a beam-splitter, it creates two beams, each containing 500,000 photons, which can be recombined to create an interference pattern.
- Remarkably, even when shining photons individually at the beam-splitter, an interference pattern still appears due to the wave-particle duality and superposition of quantum systems.

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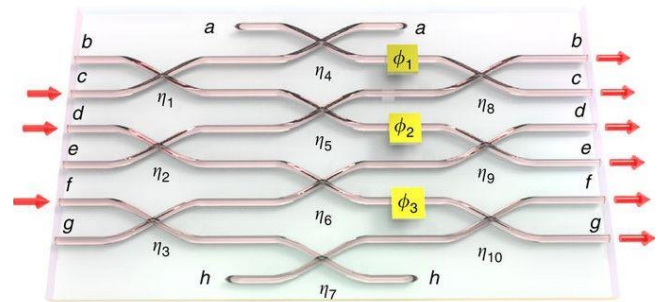
- The researchers' study suggests that it should be possible to build a quantum computer using phonons as information units, aided by tools like the acoustic beam-splitter.

What are Qbits?

- Qubits are the fundamental units of information in quantum computers.
- They can be particles (e.g., electrons) or quantum systems engineered to behave like particles.
- Qubits possess the unique property of existing in a superposition of states, allowing for simultaneous 'on' and 'off' values.
- Quantum computing encodes information in the properties of qubits, such as electron spin.
- Quantum computers leverage the peculiar abilities of qubits to perform complex calculations that surpass the capabilities of classical computers.
- Different types of quantum computing, like linear optical quantum computing (LOQC), use alternative units of information such as photons.
- Any particle controllable through quantum phenomena has the potential to serve as an information unit in a quantum computer.

What is Linear Optical Quantum Computing?

Linear optical quantum computing (LOQC) is a quantum computation paradigm that enables universal quantum computation, subject to specific conditions. In LOQC, photons serve as carriers of information, and the processing of quantum information primarily relies on linear optical elements such as mirrors, waveplates, and other optical instruments. Photon detectors and quantum memories are utilized for the detection and storage of quantum information in LOQC.



What are Phonons?

- Phonons are packets of vibrational energy that carry sound waves and vibrations through materials.
- They are analogous to photons, which are particles of light energy.
- Phonons play a vital role in understanding the behaviour of energy and information transfer in solid materials.
- By studying phonons, scientists can gain insights into how sound propagates and interacts with different substances.
- Phonons are fundamental to fields such as acoustics, solid-state physics, and materials science.

Wave-Particle duality

- Wave-particle duality is a fundamental concept in quantum mechanics.
- It describes the dual nature of particles and waves.
- Particles, such as electrons and photons, can exhibit both wave-like and particle-like properties.
- Classical physics views particles as discrete entities with definite positions and velocities.
- Waves, in contrast, have continuous spread in space and time with properties like interference and diffraction.
- Experimental observations challenged the classical view and showed that particles can behave like waves.
- Quantum mechanics introduced the concept of wave-particle duality to explain these phenomena.
- Particles can be described by a wave function, representing a probability distribution of their positions and momenta.
- When a measurement is made, the wave function collapses to a single value, and the particle is observed as a localized entity.
- Wave-particle duality implies inherent probabilistic behaviour of particles.
- It is impossible to simultaneously predict the precise position and momentum of a particle.
- Heisenberg's uncertainty principle quantifies this uncertainty.
- Wave-particle duality applies to all elementary particles in the quantum realm.
- It is a foundational principle in quantum mechanics with profound implications for our understanding of matter and energy.

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NEWS IN BETWEEN THE LINES

INS 'Vagir'



Context: INS 'Vagir', an advanced submarine of the Indian Navy, is scheduled to undertake an operational visit to Colombo from June 19 to June 22.

What is INS Vagir?

INS Vagir is a submarine of the Indian Navy. It is a part of the Kalvuri-class diesel-electric attack submarines built under the Indian Navy's Project-75 program. The submarine was named after its predecessor, a Soviet-origin submarine that served in the Indian Navy from 1973 to 2001.

INS Vagir (S25) was commissioned into the Indian Navy on November 28, 2020. It is the fifth submarine of its class and was constructed by Mazagon Dock Shipbuilders Limited in Mumbai, India. The Kalvuri-class submarines are based on the Scorpène-class submarines developed by French shipbuilding company Naval Group (formerly DCNS).

Purpose:

INS 'Vagir' will provide a rare opportunity for visitors and school children to explore the submarine firsthand. This initiative aims to increase public awareness and understanding of naval operations and technology.

Vasudhaiva Kutumbakam:

The theme of 'Global Ocean Ring' for the International Day of Yoga 2023 reflects India's ongoing G20 presidency and the principle of Vasudhaiva Kutumbakam.

"Water Supply and Treatment"



Context: Recently, the Central Public Health and Environmental Engineering Organization (CPHEEO) organized a two-day National Workshop on Water Supply and Treatment in collaboration with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) at Vigyan Bhawan in New Delhi.

Objective:

Its main objective to improve water supply services, transition to a 24x7 water supply with a "Drink from Tap" facility and provide guidelines for planning, designing, operating and managing water supply systems.

Importance of Revision:

The Ministry decided to revise and update the existing manual to address the challenges in the urban water supply sector and incorporate advancements in technology. An Expert Committee was constituted to oversee the revision process, with support from GIZ and WAPCOS.

Manual Structure:

The revised manual is divided into three parts: Engineering, Operation and Maintenance, and Management. It provides guidelines for planning, design, operation, maintenance, and management of water supply systems.

Government Initiative:

The Ministry of Housing and Urban Affairs recognized the need to revise and update the existing Water Supply & Treatment Manual and constituted an Expert Committee for this purpose. The manual aligns with government initiatives such as the Atal Mission for Rejuvenation and Urban Transformation (AMRUT).

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Miyawaki



Context: The Miyawaki method is a technique of afforestation developed by Japanese botanist Akira Miyawaki.

Miyawaki Method:

The Miyawaki method, named after its creator Akira Miyawaki. It is a technique for afforestation that helps forests grow quickly and become dense and natural.

Benefits of Miyawaki Forests:

Miyawaki forests are multi-layered and maintenance-free, creating self-sustainable ecosystems. They contribute to increasing green cover in urban areas, blending with the local ecosystem and lasting longer than conventional forests. It involves improving soil quality, using mulch to prevent dryness, erosion and weed growth and planting native trees in close proximity.

Adoption in India:

The Miyawaki method is gaining momentum in India, particularly in cities like Delhi and Bengaluru. It is being adopted by activists, corporate firms as part of their corporate social responsibility (CSR) activities and even individuals.

Prime Minister's Mention:

Prime Minister Narendra Modi mentioned the Miyawaki method in his Mann Ki Baat address. He highlighted the success of a teacher from Kerala, Raafi Ramnath, who created a Miyawaki forest called "Vidyavanam" with over 450 trees of 115 varieties.

Examples in India:

The Miyawaki method has been implemented in various locations across India. It includes a Miyawaki forest in Kevadia, Gujarat, inaugurated by the Prime Minister, a Smriti-Van in Kutch dedicated to the victims of the 2001 earthquake and Miyawaki gardens in Ambaji, Pavagadh, and Aliganj, Lucknow.

International Adoption:

The Miyawaki method has gained recognition worldwide and is being extensively used in countries like Singapore, Paris, Australia, and Malaysia. Its effectiveness in tough natural environments, as seen in Kutch, demonstrates its adaptability and success.

Places in News

The Gulf of California

Context: Recently, a moderate earthquake with a magnitude of 6.4 struck in the Gulf of California.

The Gulf of California:

The Gulf of California, also known as the Sea of Cortez, is a remarkable body of water located between the Baja California Peninsula and mainland Mexico. It is a unique and diverse marine ecosystem that holds great geographical and ecological significance.

Geographical Location:

The Gulf of California stretches approximately 1,126 kilometers (700 miles) from the northern end at the Colorado River Delta to the southernmost point near Cabo San Lucas. It separates the Baja California Peninsula from mainland Mexico.

Significance:

The Gulf of California is considered one of the most biologically rich and diverse seas on the planet. Its waters are home to an abundance of marine life, including numerous endemic species that are found nowhere else in the world. It is a hotspot for biodiversity, supporting a vast array of marine mammals, fish, invertebrates and seabirds.

Importance:

The Gulf of California has a crucial role in global oceanic circulation patterns. The unique geography of the Gulf of California contributes to its significance in oceanic circulation. The interaction between cold and warm ocean currents in the Gulf of California creates nutrient-rich waters. The nutrient-rich waters support a productive marine ecosystem in the Gulf of California.



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Places in News

Mayon Volcano

Context: Mayon Volcano, located in the province of Albay in the Philippines, has recently experienced a gentle eruption, leading to the evacuation of around 18,000 people. This eruption is expected to last for months and has created a protracted crisis.

Mayon Volcano:

Mayon Volcano is an active stratovolcano known for its near-perfect cone shape. It is classified as a stratovolcano, also known as a composite volcano. Stratovolcanoes are large, cone-shaped volcanoes composed of alternating layers of solidified lava, volcanic ash, and other materials. This Volcano has erupted more than 50 times in the past 400 years, with the most recent eruption occurring in January 2018. The volcano stands at an elevation of 2,462 meters (8,077 feet) above sea level.

Geographical Location:

Mayon Volcano is located in the province of Albay, which is in the Bicol Region of Luzon Island in the Philippines. It is situated in the southeastern part of Luzon, approximately 330 kilometers southeast of Manila.

Volcanoes in India:

Barren Island, situated in the Andaman Sea, is the only active volcano in India.

The Western Ghats Mountain range and the Deccan Traps are two areas in India that contain volcanic remnants.

Volcano Regions Worldwide:

There are several major volcanic regions around the world. The Pacific Ring of Fire is the most volcanically active region, encompassing countries such as Japan, Indonesia, the Philippines, Chile and the western coast of the United States. Other significant volcanic areas include the Mid-Atlantic Ridge, Mediterranean and Aegean regions, East African Rift System, Central America, Indonesia, Kamchatka Peninsula and Kuril Islands, and Hawaii.

