

● POLITY

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INTERNAL SECURITY

CDS releases blueprint for warfare in cyberspace

CONTEXT: Acknowledging that cyber-space has emerged as a crucial and challenging domain in modern warfare, the Chief of Defence Staff, General Anil Chauhan, released India's first joint doctrine for cyberspace operations during a meeting of the Chiefs of Staff Committee on Tuesday.

The joint doctrine is a keystone publication that will guide commanders of the armed forces in conducting cyberspace operations in today's complex military operating environment, the Defence Ministry said in a statement.



What is Chief of Defence Staff (CDS)?

Background

- Its creation was recommended in 2001 by a Group of Ministers (GoM) that was tasked with studying the Kargil Review Committee (1999) report.
- After the GoM recommendations, in preparation for the post of CDS, the government created the Integrated Defence Staff in 2002, which was to eventually serve as the CDS's Secretariat.
- In 2012, the Naresh Chandra Committee recommended the appointment of a Permanent Chairman of the Chiefs of Staff Committee as a midway to eliminate apprehensions over the CDS.
- Finally, the post of CDS was created in 2019 on the recommendations of a committee of defence experts headed by Lt General DB Shekatkar.
- General Bipin Rawat was the first CDS in the country and was appointed on December 31, 2019.

Roles and Responsibilities

- His core function will be to foster greater operational synergy between the three service branches of the Indian military and keep inter-service frictions to a minimum.
- He also heads the newly created Department of Military Affairs (DMA) in the Ministry of Defence.
- The CDS will be the single-point military adviser to the Defence

- Minister on matters involving all three services and the service chiefs will be obliged to confine their counsel to issues pertaining to their respective services.
- As the head of DMA, CDS is vested with the authority in prioritising inter-service procurement decisions as Permanent Chairman-Chiefs of Staff Committee.
- The CDS is also vested with the authority to provide directives to the three chiefs. However, he does not enjoy any command authority over any of the forces.
- CDS is first among equals, he enjoys the rank of Secretary within the DoD (Department of Defence) and his powers will be confined to only the revenue budget.
- He will also perform an advisory role in the Nuclear Command Authority (NCA).

Significance:

Synergy between Armed forces and Government: CDS' role is not simply about tri-service (Army, Navy and Indian Air Force) cooperation, it is equally about fostering better cooperation between the Ministry of Defense bureaucracy and the Armed services.

Since 1947, there have been three Service Headquarters (SHQ) designated as "Attached Offices" of the Department of Defense (DoD). Due to this, communication between SHQ and DoD takes place largely through the medium of files.

With the creation of CDS as Principal Military Adviser (PMA) to Defence Minister, the process of decision-making will be accelerated.

Jointness in operations: The Chiefs of Staff Committee-COSC (predecessor of CDS), has been dysfunctional because its chairmanship is held by one of the three chiefs on a part-time rotational basis.

Historically, the chairman COSC lacked the authority as well as capacity and inclination to tackle tri-service issues of substance.

With the CDS now being designated as "permanent chairman of COSC", he will be able to devote undivided attention to the administration of tri-service organisations.

Operationalisation of Theatre Command: Creation of DMA will facilitate the operationalisation of joint/theatre command.

Although a successful template for joint operations was created in the Andaman & Nicobar Command, the lack of political direction and indifference of the COSC has led to inactivity of this joint command.

Theatre commands would need staff with the knowledge and experience to deploy land, maritime and air forces. Given the disruptive impact of each of these measures, they would best be implemented by the CDS.

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CULTURE

Modi to open new Nalanda University campus today

CONTEXT: On the eve of Prime Minister Narendra Modi's visit to Bihar's Nalanda University to inaugurate its new campus on Wednesday, the university's interim Vice-Chancellor Abhay Kumar Singh termed the occasion "historic".



About Nalanda University

- Nalanda, the ruins of one of the world's most prestigious seats of learning, is located 95 kilometres from Patna, the capital of Bihar, and 110 km from Bodh Gaya, the site of the Buddha's enlightenment.
- Declared a World Heritage Site in 2016, Nalanda is seen as the world's most ancient university, flourishing much before Europe's oldest university, Bologna, came into being in the 11th-12th century.
- Contemporary sources, however, describe the site as a mahavihara, a great monastery.
- Nalanda, therefore, functioned as a premier monastic-cum-scholastic establishment in ancient and early medieval India.
- Today, one can see there the remains of temples, monastic dwellings, votive structures and art works in stucco, bronze and stone dating from the 5th century C.E. to the 12th century C.E.

Literary Sources –

- As far as literary sources are concerned, most of the information on the history, functioning and, sometimes, the layout of the mahavihara comes from the accounts of Chinese Buddhist monks such as Xuanzang (also known as Hiuen Tsang) and Yijing (also known as I Tsing), primarily the former.
 - Both travelled to India and stayed in the great monastery complex in the 7th century.
 - Xuanzang's account links both the Buddha (6th century BCE) and the Mauryan king Asoka (c. 268-232 BCE) with Nalanda.
 - The Chinese monk likewise credits Asoka with the construction of a stupa/temple in honour of Sariputra, one of the Buddha's closest disciples.
 - Further, the archaeological findings—the material remains at Nalanda belong to the Gupta period/5th century C.E. onwards—do not support Xuanzang's

pre-Gupta history of the site.

Decline of Nalanda

- The two major theories that explain the decline of Nalanda both talk about a possible destruction of the mahavihara and of a somewhat sudden or cataclysmic decline.
- The most common theory for the decline of Nalanda says the site was ransacked and destroyed by Bakhtiyar Khalji.
 - This theory is entirely based on a Persian work by Minhaj al-Siraj Juzjani (1193-1260) called *Tabaqat-I-Nasiri*, which forms an elaborate history of the Islamic world during the reign of the Delhi sultan Nasiruddin Mahmud Shah (1246-66).
 - It is important to note that the word "Nalanda" is mentioned nowhere in Minhaj's account.
- The second theory broadly locates the decline in the context of the animosity between Brahmins and Buddhists. It finds expression in the writings of historians such as D.N. Jha, B.N.S. Yadava, R.K. Mookerji and Sukumar Dutt.

SCIENCE AND TECHNOLOGY

Russia ready to ship turbine hall valves for Kudankulam

CONTEXT: Russia is all set to ship the first batch of 26 turbine hall pipeline valves, totally weighing about 27.5 tonnes, for the Kudankulam Nuclear Power Project's (KKNPP) reactors 5 and 6. Russian State Atomic Energy Corporation, Rosatom's machine-building plant Petrozavodskmash is shipping the turbine hall pipeline valves to KKNPP, where 2 X 1,000 MWe VVER reactors built with Russian technical know how are generating power while four more reactors with similar capacity are under construction.



The Kudankulam Nuclear Power Project (KKNPP) is India's largest nuclear power plant located in Kudankulam, Tamil Nadu. The plant was built in collaboration with Russia's Rosatom State Atomic Energy Corporation and was constructed in two phases. The first phase involved the construction of Units 1 and 2, which started generating power on December 31, 2014. The second phase involves the construction of four additional reactors, which are currently under construction. Recently, a pressuriser was delivered for Reactor 5 of this power plant by

AEM-Technologies Izhora, which is part of the machine-building division of Rosatom – Atomenergomash.

Advantages of Nuclear Energy in India

India's growing energy demand necessitates optimal utilization of all energy sources, with nuclear power showing significant potential for sustainable long-term energy security.

- **Energy security:** India's nuclear power could provide a reliable solution to the country's power demand in contrast to wind and solar, which are not available around the clock.
- **Reduction in GHGs:** Nuclear power plants produce no significant levels of greenhouse gasses or pollutants. This could reduce India's contribution to global Green House Gases (GHGs), which currently stands at 6.55%, with the energy sector accounting for slightly more than two-thirds of it.
- **Sustainable future:** With an aim to increase its atomic power contribution from 3.2% to 5% by 2031, this surge in the nuclear energy contribution in India will help the country lead towards a more sustainable and economic future.
- **Weather-independent power:** Renewable energy such as solar and wind power face limitations tied to weather conditions and land needs. In comparison, nuclear energy offers consistent, weather-independent power with a smaller land footprint.

Disadvantages of Nuclear Energy in India

The following are the limitations of nuclear energy:

- **Limited participation of the private sector:** India permits private involvement in nuclear plant technology and construction, but operations and fuel management remain under public sector control.
- **Nuclear liability issues:** India's Civil Liability for Nuclear Damage Act 2010, remains an item on the "agenda which was brought in addition to the International Convention on Supplementary Compensation (CSC), is considered excessive by foreign companies, which could be liable to pay hundreds of millions of dollars in the event of a nuclear accident.
 - As a result, despite signing civil nuclear deals with several countries, including the U.S., France and Japan, the only foreign presence in India is that of Russia in Kudankulam, projects that predate the Law.
- **Challenges for Atomic Energy Regulatory Board:** The Atomic Energy Regulatory Board faces multiple challenges in regulating dispersed nuclear and radiation facilities, meeting modern safety expectations, and ensuring security for a large number of radioactive sources.
- **Uranium scarcity and import dependency:** India's uranium scarcity necessitates regular imports, causing fuel supply uncertainties and placing the country's energy interests in the hands of foreign suppliers.



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POLITY

Women's panel receives over 12,600 complaints in 2024

CONTEXT: The highest number of complaints received by the National Commission for Women (NCW) so far this year has been from Uttar Pradesh followed by Delhi and then Maharashtra. Strife-torn Manipur has recorded only three complaints of "crime against women" with the commission.

Of the total 12,648 complaints received by the NCW till now in 2024, 6,492 were from Uttar Pradesh. Delhi was a distant second with 1,119 complaints, while the number for Maharashtra was 764, according to the official data from the panel.

Among other States, Tamil Nadu recorded 304 complaints, Karnataka 305, Bihar 586, Madhya Pradesh 516, Haryana 509, Rajasthan 409 and West Bengal 307.



What is the National Commission for Women?

The National Commission for Women (NCW) is an autonomous and statutory body established in 1992 under the **National Commission for Women Act, 1990**, to protect and promote women's rights in India.

- It is responsible for reviewing and addressing issues related to the rights of women and for making recommendations for the protection and promotion of these rights.

As per Section 3 of the National Commission for Women Act 1990, the Commission shall consist of a Chairperson, 5 Members, and a Member-Secretary who are nominated by the Central Government.

- **Term:** The Chairperson and every Member shall hold office for a period of three years.
- **Removal:** The Central Government may by order remove the Chairperson or any other Member from office if the Chairperson or any other member:
 - Is adjudged insolvent.
 - Engages during his term of office in any paid employment outside the duties of his office.
 - Refuses to act or becomes incapable of acting.
 - Is of unsound mind and stands so declared by a competent court.

- Has so abused his office as to render his continuance in office detrimental to the public interest.
- Is convicted and sentenced to imprisonment for an offense which in the opinion of the Central Government, involves moral turpitude.

What are the various functions and responsibilities of NCW?

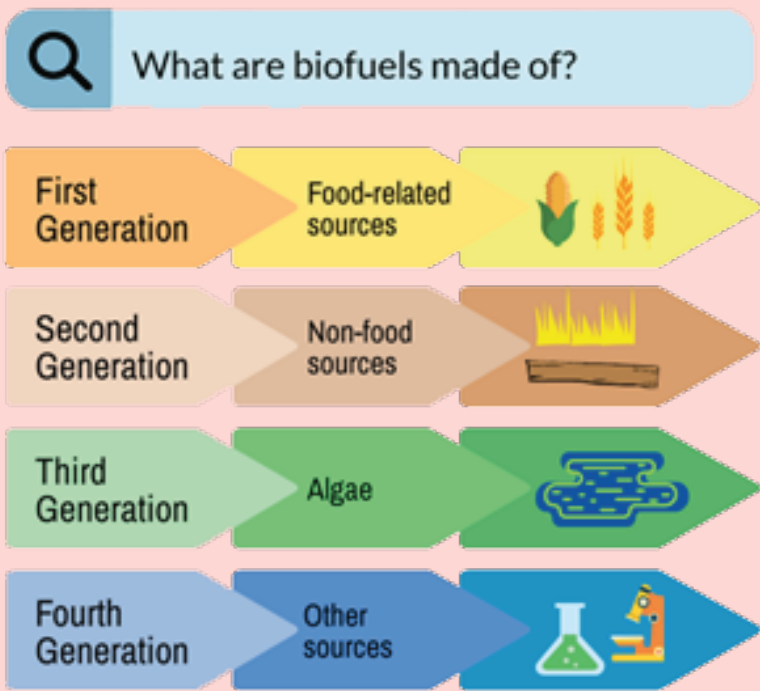
As per Section 10 of the National Commission for Women Act, 1990, The commission shall perform all or any of the following functions:

- Investigate and examine all matters relating to the safeguards provided for women under the Constitution and other laws.
- Present to the Central Government annually reports upon the working of these safeguards.
- Make in such reports recommendations for the effective implementation of those safeguards for improving the conditions of women by the union or any state.
- Review the existing provisions of the Constitution and other laws affecting women and recommend amendments thereto so as to suggest remedial legislative measures to meet any lacunae, inadequacies, or shortcomings in such legislations.
- Take up cases of violation of the provisions of the Constitution and of other laws relating to women with the appropriate authorities.

SCIENCE AND TECHNOLOGY

Scientists from India, China, U.K. develop catalyst to produce cheaper biodiesel

CONTEXT: A team of scientists from Assam and Odisha in India, China, and the U.K. has developed a water-repellent catalyst that can cut the cost of producing “environmentally benign” bio- diesel substantially from the current levels.



Biofuels

Biofuel is a type of fuel that is generated naturally or artificially from the biomass of **plant or algae material, and animal wastes**. It is considered a renewable energy source because the feedstock material can be replenished easily. They can be in solid, liquid, and gaseous forms but the liquid biofuels have the most potential to replace conventional transportation fuels.

With rising crude oil prices, biofuels are seen as a sustainable alternative to be used mainly as a blending with petroleum-based fossil fuels. India also has set targets of 20% ethanol blending in petrol and 5% biodiesel blending in diesel by 2030 under the **National Policy on Biofuels 2018**.

Biodiesel: Biodiesel is a liquid fuel produced from vegetable oils and animal fats through transesterification.

It is used as a replacement or as a blending with petroleum-based diesel in various combinations such as B5, B20, B100, etc.

B20 (commonly used due to cost-effectiveness, low emissions and compatibility with conventional engines) is a blend containing 20% biodiesel and 80% petroleum diesel.

B100 (less commonly used) is a pure biodiesel.

Bioethanol: Bioethanol is ethyl alcohol (Ethanol) generated through microbial fermentation of plant materials like corn, sugarcane or agricultural residues using *Saccharomyces cerevisiae*.

It is mainly used as a blending agent with petrol to increase octane and cut down carbon monoxide and other harmful emissions.

Biogas: Biogas is a renewable fuel produced by anaerobic digestion of organic matter, such as food or animal waste, in an oxygen-free environment, either naturally occurring or intentionally created for industrial use.

It mainly consists of methane, with trace amounts of CO2 and H2S, etc.

It is used for heating, power generation and vehicle fuel purposes providing an alternative to natural gas.

Upgraded biogas can also displace transportation and pipeline-quality natural gas.

Bio CNG: Bio CNG is a purified form of biogas, processed to produce 95% pure methane gas, similar to commercially available natural gas.

The process residue is a high-quality concentrated liquid fertilizer, and CO2 is measured and packed for food-grade CO2.

Bio-CNG is profitable due to multiple revenue streams for organic liquid and solid fertilizers.

It has a similar calorific value to Compressed Natural Gas (CNG) and involves commercial refining to increase methane content. The raw material is segregated biodegradable waste.

Biobutanol: Biobutanol refers to butanol produced from the fermentation of biomass feedstocks such as starch.

It is unmixable in water and has a higher energy content, It can be added to diesel to reduce emissions.

The energy content in butanol is the highest among the other gasoline alternatives.

Advantages and Applications of Biofuels

Biofuels provide several technical, economic and

environmental benefits that make them promising substitutes for conventional fossil fuels.

- **Energy security:** Encouraging domestic production of biofuels can help reduce dependence on imported fossil fuels, thereby enhancing energy independence and supply resilience.
 - In India, the current E10 and E20 ethanol blending targets will help reduce the country's oil import burden by \$4 billion per year while also supporting the sugar industry economically.
- **Rural economy:** Additionally, farmers can earn additional revenue by selling raw materials like grain, sugar, or oilseeds to biofuel manufacturers, and
 - They can also generate extra income by cultivating agricultural residues and dedicated energy crops.
- **Environmental gains:** Biofuels recycle carbon during their lifetime, unlike fossil fuels that have been buried for a long time, and therefore utilising biofuels does not increase atmospheric CO2 if replantation sustains feedstock supplies.
 - Furthermore, biofuels have lower particulate emissions.
 - Biofuels burn cleaner with less sulfur and carbon monoxide emissions.
 - Some biofuels such as biochar are being used for carbon sequestration in the soil.
 - They will help India's environmental programmes such as the Swachh Bharat Mission and Waste to Wealth Creation.

Initiatives in India

The Indian Government has acknowledged the strategic role of biofuels in the Indian energy basket and prepared a road map to facilitate the early adoption of biofuels.

- **National Policy on Biofuels - 2018 (amended in 2022):** It aims at reducing dependence on imports by encouraging fuel blending.
 - It emphasises the production of second-generation biofuels derived from forest and agricultural residues and increasing capacity for the production of fuel additives, and R & D in feedstock.
 - As a part of the policy, Ethanol Blending Programme (EPB), is undertaken with an enhanced focus on bioethanol, biodiesel and bioCNG.
 - It guides us to achieve the target of 20% ethanol blending in India by 2025-26.
 - The National Biofuel Coordination Committee is the agency to coordinate this blending programme.

SCIENCE AND TECHNOLOGY

Does H5N1 pose a threat for humans?

CONTEXT: The highly pathogenic avian influenza (HPAI) H5N1 strain has been affecting cattle across several States in the U.S., and for the first time, three cases of human infection in dairy farm workers were also reported, raising fears of the risks of a wider transmission of this virus from cattle to humans. The districts of Alappuzha, Kottayam and Pathanamthitta in Kerala, where water bodies, migratory birds, fowls and integrated farms form part of the ecosystem, have reported H5N1 outbreaks in 19 places since April.



What are the symptoms of H5N1?

The common symptoms of H5N1 are similar to those of influenza-A illnesses, including respiratory difficulties, fever, cough, sore throat and pneumonia, all of which can potentially worsen, especially in those who are immunocompromised or have underlying conditions. In the U.S., conjunctivitis or pink eye was the only symptom that was reported in one of the farm workers who was infected.

What are the necessary precautions?

People should avoid unprotected exposure to infected birds or animals or their contaminated environments. If at all one has been exposed to a possible H5N1-contaminated environment, they should monitor themselves for new respiratory illness symptoms, including conjunctivitis for 10 days and seek proper medical advice. It would be better to ensure that people use only pasteurised milk and poultry meat and eggs should be well-cooked to prevent any possible food-borne transmission of H5N1.

In a recent editorial, The Lancet, spoke about the need for a robust and coordinated response to H5N1. It pointed out that the concept of 'One Health', although often acknowledged, is rarely prioritised and operationalised.

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INTERNATIONAL RELATIONS

Net direct tax receipts rise 21%, CIT share dips to 39.1%

CONTEXT: Direct tax collections made a brisk start in the first quarter of 2024-25, with net taxes rising 21% to almost ₹4.63 lakh crore by June 17, from ₹3.82 lakh crore over the same period a year earlier, the Finance Ministry said on Tuesday.

Prior to refunds, the gross direct tax collections had risen 22.2% to about ₹5.16 lakh crore by June 17, compared with ₹4.22 lakh crore at the same time last year. Gross CIT collections were ₹2.26 lakh crore and PIT, STT receipts stood at ₹2,88,993 crore. Among minor heads for tax receipts, Tax Deducted at Source (TDS) yielded ₹3,24,787 crore.



ECONOMY

23 NATO allies on track to spend 2% GDP on defence'

CONTEXT: North Atlantic Treaty Organisation (NATO) Secretary-General Jens Stoltenberg said on Monday that 23 of the alliance's 32 members were on track to meet a decade-old pledge to spend at least two per cent of Gross Domestic Product (GDP) on defence, a long-standing demand of Washington.

When NATO allies made the pledge at a 2014 summit, only three countries met the target — the U.S., Britain, and Greece which has longstanding tensions with neighbouring Turkey.

Mr. Stoltenberg last reported that around 20 allies were meeting the target, with once hesitant nations such as Germany ramping up defence spending following Russia's invasion of Ukraine.



What is NATO?

- Formed in 1949 with the signing of the Washington Treaty, NATO is a security alliance of 30 countries from North America and Europe.
- Recently, Finland joined the alliance as 31st member.
- NATO's fundamental goal is to safeguard the Allies' freedom and security by political and military means.
- It is a system of collective defence where independent member states agree for mutual defence in case of any attack by external party.
- Article 5 of the Washington Treaty states that an attack against one Ally is an attack against all.

This article forms the core of the Alliance, a promise of collective defense.

Headquarters - Brussels, Belgium.

What are the functions of NATO?

Political : NATO promotes democratic values and enables members to consult and cooperate on defence and security-related issues to solve problems, build trust and, in the long run, prevent conflict.

Military : NATO is committed to the peaceful resolution of disputes. If diplomatic efforts fail, it has the military power to undertake crisis-management operations.

Should India join NATO?

Arguments in favour of joining

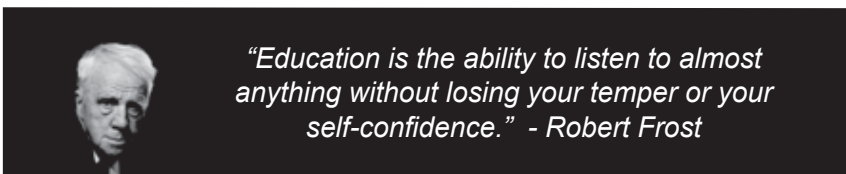
End of Cold War era

- During the Cold War, India's refusal was premised on its non-alignment.
- This argument has little justification once the Cold War ended



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during 1989-91.

- NATO has regular consultations with both Russia and China, despite the gathering tensions with them in recent years.
- This presents a case for India to join the alliance.

To combat terrorism

India has seen many terrorist attacks – 26/11 Mumbai terror attack, Pulwama, Uri attack etc.

Hence, security analysts suggest that India should join NATO to combat terrorism on a long-term basis.

Members of NATO are well-established partners of India

- Indian membership would simply mean having regular contact with a military alliance, most of whose members are well-established partners of India.
- India has military exchanges with many members of NATO — including the US, Britain, and France — in bilateral and minilateral formats.
- Hence, collective engagement with NATO should not be problematic.

To contain China

- NATO is increasing its footprints in Indian Ocean Region where China is aggressive.

- NATO membership would help India in containing China.

Arguments against joining the alliance

Fear of antagonising Russia

Russia has been a long-term ally for India. Even, during the current Ukraine war, India has not openly criticised Russia.

India still is heavily dependent on the Russian military equipment. Hence, joining NATO will lead to the deterioration of the relationship.

It would hurl India headlong into the Global War on Terror

Joining NATO on full-term basis could become problematic for India as it would drag India into various conflicts around the globe.

Collective self-defence article would force India to contribute its troops to support NATO.

Sovereignty and Principle of Non-Alignment

Joining the alliance would lead to the establishment of NATO bases on India's territory which may be considered an infringement of our sovereignty.

So far, India has not joined any military bloc and remained true to the principle of non-alignment which forms the core of India's foreign policy.



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