



Pt Madan Mohan Malaviya

//



Pt. MADAN MOHAN MALAVIYA

25th December 1861- 2nd November, 1946

Educationist, Journalist, Politician and Freedom Activist
Title of '**Mahamana**' by Mahatma Gandhi and '**Karmayogi**' by Dr. S. Radhakrishnan

ROLE IN FREEDOM STRUGGLE

- ☉ He was **midway between the Moderates and the Extremists**
- ☉ Took part in **Salt Satyagraha** and the **Civil Disobedience Movement (1930)**
- ☉ Elected President of the Indian National Congress for four sessions (1909, 1913, 1919, and 1932)



MAJOR CONTRIBUTIONS

- ☉ Ending the Indian Indenture system (bonded labour)
- ☉ Setting up the **Ganga Mahasabha** in 1905
- ☉ Member of the Imperial Legislative Council for 11 years
- ☉ Popularised the term '**Satyamev Jayate**'
- ☉ Introduction of Devnagri in British-Indian Courts
- ☉ Helped establish the **Hindu Mahasabha** in 1915
- ☉ Founded the **Banaras Hindu University (BHU)** in 1916

JOURNALISM

- ☉ **Abhyudaya** (Hindi weekly) and **Maryada** (Hindi monthly)
- ☉ Chairman of the Board of Directors of the **Hindustan Times**

HONOURS

- ☉ Bharat Ratna (2014)
- ☉ Varanasi-New Delhi **Mahamana** Express (2016)



Drishti IAS

GM Mustard

For Prelims: Dhara Mustard Hybrid (DMH-11), Barnase/Barstar System, Bronchitis, Genetic Engineering Appraisal Committee (GEAC), Bt cotton,

For Mains: The importance and significance of GM Crops and Dhara Mustard Hybrid (DMH-11)

Why in News?

Recently, the [Genetically Modified \(GM\) mustard Dhara Mustard Hybrid \(DMH-11\)](#) was tested in the field and shown to be **more productive**.

- Production of the **DMH-11** variety is not interfering with **honey bees' natural pollination practices**.

What are Genetically Modified (GM) Crops?

- **GM crops** are derived from plants whose **genes are artificially modified**, usually by inserting **genetic material** from another organism, in order to give it new properties, such as **increased yield, tolerance** to a **herbicide, resistance** to **disease** or **drought**, or **improved nutritional value**.
 - Earlier, India approved the commercial cultivation of only one GM crop, **Bt cotton**, but [Genetic Engineering Appraisal Committee \(GEAC\)](#) has recommended GM Mustard for commercial use.

What is GM Mustard?

- **DMH-11** is an indigenously developed **transgenic mustard**. It is a **genetically modified variant of Herbicide Tolerant (HT) mustard**.
- **DMH-11** is a result of a cross between **Indian mustard variety 'Varuna'** and **East European 'Early Heera-2'** mustard.
- It contains **two alien genes ('barnase' and 'barstar')** isolated from a **soil bacterium** called **Bacillus amyloliquefaciens** that enable breeding of **high-yielding commercial mustard hybrids**.
- **Barnase in Varuna induces a temporary sterility** because of which it can't naturally self-pollinate. **Barstar in Heera blocks the effect of barnase allowing seeds to be produced**.
- **DMH-11** has shown approximately **28% more yield** than the **national check** and **37 %** more than the **zonal checks** and its use has been claimed and approved by the **GEAC**.
 - **"Bar gene"** maintains the **genetic purity of hybrid seed**.

Why is the Barnase/Barstar System Required?

- The **hybrid seed production** requires an **efficient male sterility and fertility restoration system**.
- The currently available conventional **cytoplasmic-genetic male sterility system** in mustard has limitations of **breakdown of sterility** under certain environmental conditions leading to **lowering of seed purity**.
- The **genetically engineered barnase/barstar system** provides an **efficient and robust alternative method** for **hybrid seed production in mustard**.
- In India, the **Centre for Genetic Manipulation of Crop Plants (CGMCP)** has made a **successful attempt** with some alterations in the **barnase/ barstar system** which culminated in the development of **GM mustard hybrid MH11** which has undergone the required regulatory

testing processes during **2008-2016**.

Why GM Mustard is Necessary?

- India's **import of edible oils is on continuous rise** to meet the domestic demand. It ultimately led reduction forex. GM Mustard is **essential to reduce the forex drain on Agri-import**.
- **Productivity of oilseed crops** viz., soybean, rapeseed mustard, groundnut, sesame, sunflower, safflower and linseed in India is **much lower than the global productivity of these crops**.
- Crossing of genetically diverse parents results in hybrids with **increased yield and adaptation**

What are the Safety Concerns associated with DMH-11?

- The safety of **three genes** used in the creation of the technique **Barnase, Barstar and Bar** is being questioned.
- Field trials for **three years (two years of BRL-I and one year of BRL-II)** have been conducted to assess the impact on **human health and environment** as per the stipulated guidelines and applicable rules.
- It is important to note that comprehensive research on the toxicity, allergenicity, compositional analysis, field trials, and environmental safety studies of GM mustard has shown that **they are safe for food and feed usage as well as for production**.
- **DMH-11** has "**Bar gene**" which is responsible for herbicide tolerance. Effectiveness of "**Bar Gene**" is under question as per herbicide tolerance is concerned.

What is the Significance of Genetically Modified Crops?

- Crossing of **genetically diverse plants** results in **hybrids** with **increased yield** and **adaptation**, a phenomenon known as **hybrid vigor heterosis** which has been widely exploited in crops like rice, maize, pearl millet, sunflower and many vegetables.
- It has been convincingly demonstrated that hybrids in general show **20-25% higher yield** over the **conventional varieties** across the crops.
- **Hybrid technology** can play an important role in **enhancing the productivity** of **rapeseed mustard** in the country.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q1. Other than resistance to pests, what are the prospects for which genetically engineered plants have been created? (2012)

1. To enable them to withstand drought
2. To increase the nutritive value of the produce
3. To enable them to grow and do photosynthesis in spaceships and space stations
4. To increase their shelf life

Select the correct answer using the codes given below:

- (a) 1 and 2 only
- (b) 3 and 4 only
- (c) 1, 2 and 4 only
- (d) 1, 2, 3 and 4

Ans: (c)

- **Genetically modified crops (GM crops or biotech crops) are plants used in agriculture, the DNA of which has been modified using genetic engineering methods.** In most cases, the aim is to introduce a new trait to the plant which does not occur naturally in the species.

Examples of traits in food crops include resistance to certain pests, diseases, environmental conditions, reduction of spoilage, resistance to chemical treatments (e.g., resistance to a herbicide), or improving the nutrient profile of the crop.

- Some potential applications of GM crop technology are:
 - Nutritional enhancement - Higher vitamin content, more healthful fatty acid profiles, **Hence, 2 is correct.**
 - Stress Tolerance - Tolerance to high and low temperatures, salinity, and drought, **Hence, 1 is correct.**
 - There is no such prospect that enables GM crops to grow and do photosynthesis in spaceships and space stations. **Hence, 3 is not correct.**
 - Scientists have been able to create certain genetically modified crops which stay fresh for a month longer than usual. **Hence, 4 is correct. Therefore, option (c) is the correct answer.**

Q2. Bollgard I and Bollgard II technologies are mentioned in the context of

- (a) clonal propagation of crop plants
- (b) developing genetically modified crop plants
- (c) production of plant growth substances
- (d) production of biofertilizers

Ans: (b)

- **Bollgard I Bt cotton (single-gene technology) is first biotech crop technology approved for commercialization in India in 2002**, followed by Bollgard II- double-gene technology in mid-2006, by the Genetic Engineering Approval Committee, the Indian regulatory body for biotech crops.
- Bollgard I cotton is an insect-resistant transgenic crop designed to combat the bollworm. It was created by genetically altering the cotton genome to express a microbial protein from the bacterium *Bacillus thuringiensis*.
- Bollgard II technology contains a superior doublegene technology - Cry1Ac and Cry2Ab, which provides protection against bollworms and Spodoptera caterpillar, leading to better boll retention, maximum yield, lower pesticides costs, and protection against insect resistance.
- Both Bollgard I and Bollgard II insect-protected cotton is widely planted around the world as an environmentally friendly way of controlling bollworms. **Therefore, option (b) is the correct answer.**

Mains

Q. How can biotechnology help to improve the living standards of farmers? (2019)

[Source: PIB](#)

Good Governance Day

For Prelims: Good Governance Day, Atal Bihari Vajpayee, Quit India Movement

For Mains: Good Governance and related challenges, Government Policies & Interventions

Why in News?

Good Governance Day (25th December) is being celebrated on the birth anniversary of former Prime Minister [Atal Bihari Vajpayee](#).

What is Good Governance?

▪ About:

- Governance is the **process of decision-making and the process by which decisions are implemented (or not implemented)**.
 - Governance can be used in several contexts such as corporate governance, international governance, national governance and local governance.
- Good Governance is defined as **“the manner in which power is exercised in the management of a country’s economic and social resources for development”**
- The concept of good governance existed even during the days of Chanakya. He had mentioned it elaborately in **Arthashastra**.
- Citizens centric administration lies on the foundation of good governance.

▪ 8 Principles of Good Governance:

- **Participation:**
 - **People should be able to voice their own opinions** through legitimate immediate organizations or representatives.
 - This includes men and women, vulnerable sections of society, backward classes, minorities, etc.
 - Participation also **implies freedom of association and expression**.
- **Rule of Law:**
 - **Legal framework should be enforced impartially**, especially on human rights laws.
 - Without rule of law, politics will follow the principle of matsya nyaya i.e. the law of fish which means the strong will prevail over the weak.
- **Consensus Oriented:**
 - Consensus oriented decision-making ensures that even if everyone does not achieve what they want to the fullest, a common minimum can be achieved by everyone which will not be detrimental to anyone.
 - It mediates differing interests to meet the broad consensus on the best interests of a community.
- **Equity and Inclusiveness:**
 - Good governance assures an equitable society.
 - People should have opportunities to improve or maintain their well-being.
- **Effectiveness and Efficiency:**
 - Processes and institutions should be able to produce results that meet the needs of their community.
 - Resources of the community should be used effectively for the maximum output.
- **Accountability:**
 - Good governance aims towards betterment of people, and this cannot take place without the **government being accountable** to the people.
 - Governmental institutions, private sectors, and civil society organizations should be held accountable to the public and institutional stakeholders.
- **Transparency:**
 - Information should be accessible to the public and should be understandable and monitored.
 - It also means free media and access to information.
- **Responsiveness:**
 - Institutions and processes should serve all stakeholders in a reasonable period of time.

What are the Challenges to Good Governance in India?

- **Women Empowerment:**
 - Women are not adequately represented in government institutions, and other allied sectors.
- **Corruption:**
 - The high level of corruption in India has been widely perceived as a major obstacle in improving the quality of governance.
- **Delay in Justice:**
 - A citizen has the right to avail timely justice, but there are several factors, because of which a common man doesn't get timely justice. One such factor is lack of personnel and logistics under disposal of court.
- **Centralisation of Administrative System:**
 - Governments at lower levels can only function efficiently if they are empowered to do so. This is particularly relevant for the **Panchayati Raj Institutions (PRIs)**, which currently suffer from inadequate devolution of funds as well as functionaries to carry out the functions constitutionally assigned to them.
- **Criminalisation of Politics:**
 - The criminalisation of the political process and the unholy nexus between politicians, civil servants, and business houses are having a baneful influence on public policy formulation and governance.
- **Other Challenges:**
 - **Environmental security, [sustainable development](#) and challenges of [globalization](#), [liberalisation](#) and market economy.**

What are the Indian Initiatives to improve Good Governance?

- **[Good Governance Index \(GGI\):](#)**
 - GGI has been launched by the **Ministry of Personnel, Public Grievances & Pensions to determine the status of governance in the country.**
 - It assesses the impact of various interventions taken up by the State Government and UTs.
- **[National e-Governance Plan:](#)**
 - It has the vision to **"make all government services accessible to the common man in his locality**, through common service delivery outlets and ensure efficiency, transparency & reliability of such services at affordable costs to realise the basic needs of the common man."
- **[Right to Information Act, 2005:](#)**
 - It plays an effective role in ensuring transparency in governance.
- **Other Initiatives:** Setting up of [NITI Aayog](#), [Make in India](#) programme, [Lokpal](#), etc.

Who was Atal Bihari Vajpayee?

- Atal Bihari Vajpayee was born on **25th December, 1924 in the erstwhile princely state of Gwalior (now a part of Madhya Pradesh).**
- He entered in national politics during the **[Quit India Movement of 1942](#)** which hastened the end of British colonial rule.
- In 1947, Vajpayee started working as a journalist for newspapers of Deendayal Upadhyaya — Rashtradharm (a Hindi monthly), Panchjanya (a Hindi weekly) and the dailies Swadesh and Veer Arjun. Later, influenced by Syama Prasad Mookerjee, Vajpayee joined the Bharatiya Jana Sangh in 1951.
- He was the **former Prime Minister of India** and was elected to the position twice in **1996 and 1999.**
- As a parliamentarian, **Vajpayee was awarded with the Pandit Govind Ballabh Pant Award for Best Parliamentarian in 1994**, which defines him as **"a role model par excellence for all legislators."**
- He was conferred with the country's highest civilian honour, the **[Bharat Ratna](#)** in 2015 and second-highest civilian honour, the **[Padma Vibhushan](#)** in 1994.

UPSC Civil Services Examination Previous Year Question (PYQ)

Q. Effectiveness of the government system at various levels and people's participation in the governance system are inter-dependent". Discuss their relationship in the context of India. (2016)

Q. What do you understand by the terms 'governance', 'good governance' and 'ethical governance'? (2016)

[Source: PIB](#)

Ban on Liquor

For Prelims: Mahatma Gandhi, Liquor, Article 47, DPSP, Seventh Schedule

For Mains: Pros and Cons of Liquor Ban, Government Policies & Interventions

Why in News?

A recent hooch tragedy in Bihar claimed many lives and left several others critically ill and blind.

What is the Background of Liquor Ban in India?

- In India, **attempts at prohibition have been influenced by the thinking of [Mahatma Gandhi](#)**, who viewed alcohol consumption more as a disease than a vice.
- Following India's independence, **Gandhians continued to push for a liquor ban.**
 - These efforts led to the inclusion of **Article 47 in the Constitution.**
- Several Indian states have enacted bans on alcoholic beverages.
 - For example, **Haryana made several attempts at prohibition but was forced to abandon the policy** due to the inability to control illicit distillation and bootlegging, which also resulted in many deaths.
- **Prohibition has been in effect in Gujarat since 1st May 1960**, but the liquor trade persists through the black market.
- Bihar's prohibition, imposed in April 2016, which initially appeared to succeed and yield certain social gains.
 - However, following several deaths from consuming illicit liquor, the policy is increasingly coming under attack.
- Currently, there are **five states (Bihar, Gujarat, Lakshadweep, Nagaland, and Mizoram) with total prohibition** and some more with partial prohibition.

What is the Indian Constitution's View of Alcohol?

- **[Directive Principles of State Policy \(DPSP\) \(Article 47\):](#)**
 - It mentions that "in particular, the State shall endeavour to bring about prohibition of the consumption except for medicinal purposes of intoxicating drinks and of drugs which are injurious to health."
 - **While DPSPs are not in themselves legally enforceable**, they set goals that the state should aspire towards to establish conditions under which citizens can lead a good life.

- Thus, **alcohol is seen by the Constitution and by extension**, the Indian state, as an undesirable evil that needs to be regulated.
- **Seventh Schedule:**
 - According to the [Seventh Schedule of the Constitution](#), alcohol is a state subject, i.e., state legislatures have the right and responsibility to draft laws regarding it, including “the production, manufacture, possession, transport, purchase and sale of intoxicating liquors.”
 - Thus, laws regarding alcohol differ from state to state, falling in the whole spectrum between prohibition and private sale.

What is the Reason that Not all States have Banned Alcohol?

- While the Constitution sets prohibition on alcohol as a goal, for most states, it is very difficult to declare a ban on alcohol.
- This is primarily because **liquor revenues are not easy to ignore and have consistently contributed a large share of state governments’ revenue.**
 - For instance, in Maharashtra, state liquor revenues amounted to Rs 11,000 crore in April 2020 (during the nationwide Covid lockdown), compared with Rs 17,000 crore in March.

What are the Pros and Cons of Prohibition?

- **Pros:**
 - Various studies have provided **evidence linking alcohol with domestic abuse or domestic violence.**
 - Case of Bihar: Crimes against women have **clearly declined both in terms of rate** (per 100,000 female population) and incidence (absolute numbers).
- **Cons:**
 - **Strengthen Organised Crime Groups:**
 - Prohibition **creates opportunities for a thriving underground economy** that distributes liquor, outside the regulatory framework of the state.
 - This **creates its own problems, from strengthening organised crime groups (or mafias)** to the distribution of spurious liquor.
 - In the case of Bihar, it was reported that a year after prohibition was enforced, **there was a spike in substance abuse.**
 - While the government made liquor more inaccessible, it is impossible to take it out of circulation completely.
 - **Affects Poorer Sections of Society:**
 - Prohibition **disproportionately affects poorer sections of society with upper classes still being able to procure expensive** (and safe) alcohol.
 - In Bihar, most of the cases registered under its prohibition laws are related to **illicit or low-quality liquor consumption.**
 - **Burden on Judiciary:**
 - Bihar introduced complete prohibition in April 2016. While it certainly has led to reduction in alcohol consumption, the related social, economic, and administrative costs have **been far too much to justify gains.** Prohibition crippled the judicial administration.
 - The former NV CJI Ramana had stated that decisions like the liquor ban in Bihar put a huge burden on courts. As of 2021, there are three lakh cases pending in the courts related to liquor ban.

Way Forward

- **A Nuanced Approach is Needed:**
 - There is a **need for a nuanced approach that integrates the regulation of alcohol production and sale** without compromising the requirements of public health.
 - The goal of an **effective and sustainable alcohol policy can only be achieved through coordinated action between multiple stakeholders**, such as women’s groups and vendors.
- **Regulating Liquor:**

- On the regulation side, **the rules on drunken driving and liquor advertisements can be tightened**, and compulsory labelling on the dangers of excessive drinking can be mandated.
 - On the advisory side, developed nations have adopted behavioural counselling, educating their people on the consequences of excessive liquor intake. Such campaigns help people make educated choices about their lifestyles.

[Source: IE](#)

Dark Patterns

For Prelims: Dark Pattern, Deceptive Patterns

For Mains: Dark Pattern, Use of Dark Pattern by Companies, Harm of Dark Pattern to Users

Why in News?

Recently, an increase in the cases of “**Dark Patterns**” or “**Deceptive Patterns**” have been noted where internet-based companies have been **tricking users into agreeing to certain conditions or clicking a few links**.

- Such acceptances and clicks are **flooding inboxes of the users with promotional emails** they never wanted, making it hard to unsubscribe or request deletion.

What are Dark Patterns?

▪ **About:**

- Dark Patterns are **unethical UI/UX (user interface/user experience) interactions**, designed to mislead or trick users to **make them do something they don't want to do**.
 - In turn, they benefit the company or platform employing the designs.
- By using dark patterns, digital platforms **take away a user's right to full information** about the services they are using and their control over their browsing experience.
- **Examples of Dark Patterns include** “baseless” countdowns for online deals, conditions in fine print that add on to costs, making cancellation buttons hard to see or click, making ads appear as news reports or celebrity endorsements, auto-playing videos, forcing users to create accounts to finish a transaction, silently charging credit cards after free trials end, and using dull colours to hide information that users should know about.

▪ **Usage by Companies:**

- Social media companies and Big Tech firms such as **Apple, Amazon, Skype, Facebook, LinkedIn, Microsoft, and Google** use dark or deceptive patterns to downgrade the user experience to their advantage.
 - Amazon came under fire in the [European Union](#) for its confusing, multi-step cancelling process in Amazon Prime subscription.
 - After communicating with consumer regulators, Amazon, in 2022, made its cancellation process easier for online customers in European countries.
- In social media, LinkedIn users often receive unsolicited, sponsored messages from influencers.
 - Disabling this option is a difficult process with multiple steps that requires users to be familiar with the platform controls.
- Another dark pattern on social media platforms like Instagram is **sponsored video ads**

getting scattered between reels and stories users originally opted to view, tricking them for several seconds before they can see the small “sponsored” label.

- **Google-owned YouTube nags** users to sign up for YouTube Premium with pop-ups, obscuring final seconds of a video with thumbnails of other videos.

- **Harm to Users:**

- Dark patterns **endanger the experience of Internet users** and make them more vulnerable to **financial and data exploitation** by Big Tech firms.
- Dark patterns confuse users, introduce online obstacles, make simple tasks time-consuming, have users sign up for unwanted services/products, and force them to pay more money or share more personal information than they intended.

Way Forward

- Dark and deceptive patterns don't just stop with laptops and smartphones. The Federal Trade Commission (FTC) report has warned that as augmented reality (AR) and virtual reality (VR) platforms and devices grow in usage, dark patterns will likely follow users to these new channels as well.
 - Internet users who are able to identify and recognise dark patterns in their daily lives can choose more user-friendly platforms that will respect their right to choice and privacy.

[Source: TH](#)

Purse Seine Fishing

Prelims: 12 Nautical Miles, Western Coasts, Exclusive Economic Zone, State Subject.

Mains: Purse Seine Fishing Technique and its Advantage.

Why in News?

The Centre has told the [Supreme Court](#) that a ban imposed by certain coastal States on purse seine fishing, which is known to disadvantage endangered species, is not justified.

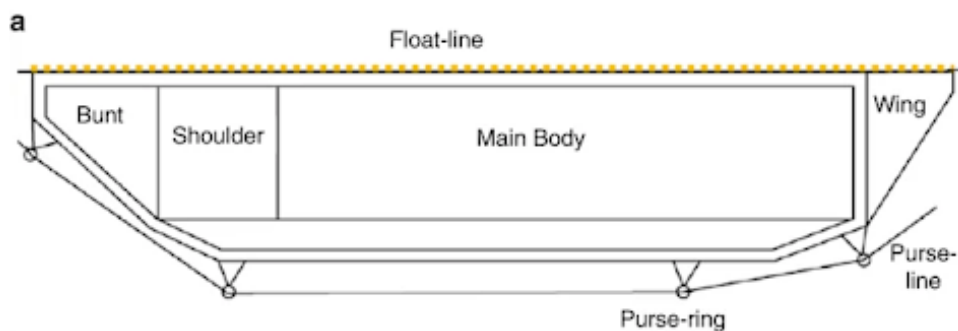
What are the Issues?

- Currently, bans on purse seine fishing are implemented in the **territorial waters** of Tamil Nadu, Kerala, Puducherry, Odisha, Dadra and Nagar Haveli and Daman and Diu, and the Andaman and Nicobar Islands **up to 12 nautical miles**.
- While States such as Gujarat, Andhra Pradesh, Goa, Karnataka, West Bengal have not imposed any such ban.

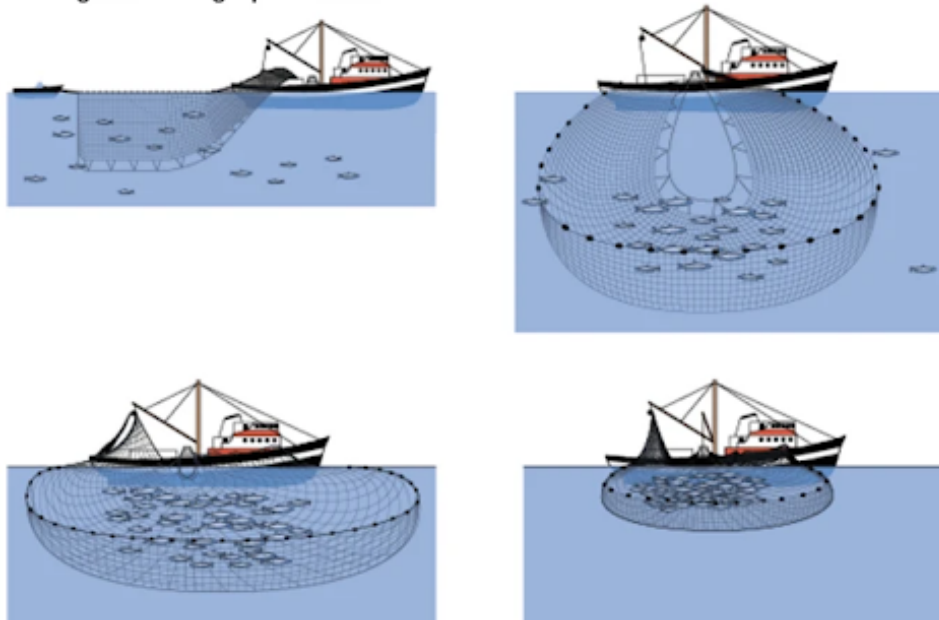
What is Purse Seine Fishing?

- **About:**

- A purse seine is made of a **long wall of netting framed with floating and leadline and having purse rings hanging from the lower edge** of the gear, through which runs a purse line made from steel wire or rope which allow the pursing of the net.
- The technique has been widely deployed on India's western coasts.



b
Setting and hauling a purse seine



▪ **Advantages:**

- Purse-seine fishing in open water is considered to be **an efficient form of fishing**.
- It has **no contact with the seabed** and can have low levels of by catch.
- It can also be **used to catch fish congregating around fish aggregating** devices
- It is used in the open ocean to target dense schools of single-species pelagic (midwater) fish like tuna and mackerel.

What are the Concerns?

- In some States, this technique **linked to concerns about the decreasing stock of small, pelagic shoaling fish** such as sardines, mackerel, anchovies and trevally on the [western coasts](#).
- The scientific community argues that **climatic conditions, including the El Nino phenomenon, are responsible for the declining catch** of such fish in the last ten years.
- However, fishermen using traditional methods have placed the blame squarely on the rise of purse seine fishing, and fear a further fall in the availability of these small fish if the ban is lifted.
 - They have also demanded that, **as the Centre has supported the lifting of the ban, it should publish the expert committee report** it has based its stance on.
- A major concern is the **dwindling availability of oil sardines, a favourite of Kerala fish eaters**.
 - In 2021, Kerala recorded a catch of just 3,297 tonnes of sardine, a sharp decrease from the haul of 3.9 lakh tonnes in 2012.
- Purse seine is a non-targeted fishing gear and catches all sorts of fishes which **come in the way of the net, including juveniles**. Hence, they are very much **detrimental to marine resources**.

What is the Union Government's Argument Against Ban?

- The Union Ministry of Fisheries, Animal Husbandry and Dairying has **recommended the lifting of the ban on purse seine fishing** on a report submitted by an expert committee.
- The expert panel has said that **this mode of fishing “per se has not resulted in any serious resource depletion** so far, given the available evidence”.
- The expert panel has **recommended purse seiners to fish in territorial waters and the Indian Exclusive Indian [Exclusive Economic Zone \(EEZ\)](#)** subject to certain conditions.
- The committee has also suggested the framing of a “national management plan on purse seine fisheries.

What is the Jurisdiction of Fishing?

- **Fishing is a state subject** and the management plan for marine fisheries in territorial waters is the job of the State.
- State subject consists of **61 subjects (originally 66 subjects)**.
 - These are of **local importance such as, local government, public order and police, agriculture, forest, public health and sanitation, fisheries, education, State taxes and duties**. The states under normal circumstances have exclusive power to make laws on subjects mentioned in the State List.

[Source: TH](#)

Cryomesh and Frozen Coral

Why in News?

While working on Australia’s [Great Barrier Reef](#), scientists have successfully trialed a new method for **freezing and storing coral** in their first trial.



What is the Need for Freezing Coral?

- As rising ocean temperatures destabilize the delicate ecosystems of Coral, therefore scientists are striving to **protect coral reefs**.
- The Great Barrier Reef has suffered **four bleaching events in the last seven years**, including the first-ever bleach during a [La Niña phenomenon](#), which typically brings cooler temperatures.

- Scientists used the cryomesh to **freeze coral larvae at the Australian Institute of Marine Sciences (AIMS)**.

What is the Methodology of Freezing Coral?

- **Cryomesh:**
 - Cryomesh was devised by a team from the University of Minnesota's College of Science and Engineering.
 - This is lightweight and can be manufactured cheaply.
 - It better **preserves coral and has the properties of cryoplates**.
 - The mesh technology will help store coral larvae at -196°C (-320.8°F).
- **Significance:**
 - This cryogenically frozen coral **can be stored and later reintroduced to the wild**.
 - But current **process requires sophisticated equipment** including lasers, however a new lightweight **"cryomesh" can be manufactured cheaply and better preserves coral**.

What are Coral Reefs?

- **About:**
 - **Corals** are marine invertebrates or animals which do not possess a spine. In scientific classification, **corals fall under the phylum Cnidaria and the class Anthozoa**.
 - Coral is made up of **genetically identical organisms called polyps**. These polyps have **microscopic algae called zooxanthellae** living within their tissues.
 - The corals and algae have a mutualistic relationship.
 - The coral provides the zooxanthellae with the compounds **necessary for photosynthesis**.
 - In return, the zooxanthellae supply the coral with organic products of photosynthesis, like carbohydrates, which are utilized by the coral polyps for **synthesis of their calcium carbonate skeletons**.
 - In addition to providing corals with essential nutrients, zooxanthellae are **responsible for the unique and beautiful colors of corals**.
 - They are also called the **"rainforests of the seas"**.
- There are two types of corals:
 - **Hard, shallow-water corals**—the kind that builds reefs.
 - **Soft corals and deepwater corals** that live in dark cold waters.
- **Significance:**
 - They support **over 25% of marine biodiversity even though they take up only 1% of the seafloor**.
 - The marine life **supported by reefs further fuels global fishing industries**.
 - Besides, coral reef systems generate USD 2.7 trillion in annual economic value through goods and service trade and tourism.

What is the Great Barrier Reef?

- It is the **world's most extensive** and spectacular coral reef ecosystem composed of over 2,900 individual reefs and 900 islands.
- The reef is located in the **Coral Sea (North-East Coast)**, off the coast of Queensland, Australia.
- It can be seen from outer space and is the **world's biggest single structure made by living organisms**.
- It was selected as a **World Heritage Site in 1981**.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q.1 Which of the following have species that can establish a symbiotic relationship with other organisms? (2021)

1. Cnidarians
2. Fungi
3. Protozoa

Select the correct answer using the code given below.

- (a) 1 and 2 only
(b) 2 and 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Ans: (d)

Exp:

- Symbiosis is a close ecological relationship between the individuals of two (or more) different species.
- The symbiotic association between the invertebrate **phylum Cnidaria (Coelenterate) and the unicellular dinoflagellate algae, called zooxanthellae**, is very common and symbolises mutualistic interaction. The **beautiful colours of coral reefs is due to the different coloured algae symbiotically attached with the coelenterata. Hence, 1 is correct.**
- **Mycorrhizae are symbiotic relationships** that are formed **between fungi and plants**. The fungi colonize the root system of a host plant, providing increased water and nutrient absorption capabilities while the plant provides the fungus with carbohydrates formed from photosynthesis. **Hence, 2 is correct.**
- Symbiosis in protozoa mostly represents a close mutualistic association between a **protozoan and unicellular symbiont** (bacteria, cyanobacteria or/ and unicellular algae) or protozoans and a multicellular organism (ruminants, lower termites, wood-eating cockroaches and plants).
- **Termites have a mutualistic relationship with protozoa** that live in the insect's gut. The termite benefits from the ability of bacterial symbionts within the protozoa to digest cellulose. The termite itself cannot do this, and without the protozoa, it would not be able to obtain energy from its food (cellulose from the wood it chews and eats). **Hence, 3 is correct.**
- **Therefore, option (d) is the correct answer.**

Q.2 Consider the following statements: (2018)

1. Most of the world's coral reefs are in tropical waters.
2. More than one-third of the world's coral reefs are located in the territories of Australia, Indonesia and Philippines.
3. Coral reefs host far more number of animal phyla than those hosted by tropical rainforests.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
(b) 3 only
(c) 1 and 3 only
(d) 1, 2 and 3

Ans: (d)

Q.3 Which of the following have coral reefs? (2014)

1. Andaman and Nicobar Islands
2. Gulf of Kachchh
3. Gulf of Mannar
4. Sunderbans

Select the correct answer using the code given below:

- (a) 1, 2 and 3 only
- (b) 2 and 4 only
- (c) 1 and 3 only
- (d) 1, 2, 3 and 4

Ans: (a)

Mains

Q. Assess the impact of global warming on the coral life system with examples. (2019)

[Source: TH](#)

CAG slams DRDO for delays

Why in News?

Recently, the [CAG \(Comptroller and Auditor General of India\)](#) has released a report, which has flagged time and cost overrun of the **Mission Mode (MM) Projects** of the [DRDO \(Defence Research and Development Organisation\)](#).

- MM projects are taken up by the DRDO on high priority, based on **specific user requirements and with definite timeframes** for their completion.
 - These projects depend on technologies that are already available, proven and readily accessible within the DRDO or India, or from abroad at a short notice.

What are the Issues Highlighted by the Report?

- There have been inefficiencies in overall project management **that have resulted in several instances of cost overruns**, over-assessment of anticipated benefits of projects, and **delay in submission of closure reports**.
- There have been issues of delay in productionisation of successful projects, which defeats the **very purpose of taking up such projects**.
- Despite the fact that MM projects have a very high outcome certainty due to ready availability of underlying technology, there were **considerable delays in the initiation and sanction of such projects by the DRDO**.
- In 119 out of 178 projects, the original time schedules **could not be adhered to**.
 - **In 49 cases**, the additional time was in fact **more than 100 % of the original timeframe**.
- The delays ranged from **16 to 500% and that an extension was taken multiple times**.
- Out of **86 projects declared as successful during January 2010 and December 2019**, in 20 projects one or more key objective(s)/parameter(s) was/were not achieved.
 - Instead of seeking extension of time to achieve all the key objectives/parameters of the project proposal, **these projects were closed as successful**.
- There was also a **lack of synergy between the DRDO and the Services which resulted in divergent views on the Qualitative Requirements**, deliverables, and outcomes of User Trials. This affected the overall success rate of the MM Projects.

Who is the CAG?

- CAG is an **independent authority under the Constitution of India.**
- He is the **head of the Indian audit & account department** and chief Guardian of Public purse.
- It is the **institution through which the accountability of the government and other public authorities (all those who spend public funds) to Parliament and State Legislatures and through them to the people is ensured.**
- The Comptroller and Auditor-General **shall not be eligible for further office either under the Government of India or under the Government of any State** after he has ceased to hold his office.
- **Article 148 provides for an independent office of the CAG.**
 - Other Provisions Related to CAG include: Articles 149-151 (Duties & Powers, Form of Accounts of the Union and the States and Audit Reports), Article 279 (calculation of net proceeds, etc.) and Third Schedule (Oath or Affirmation) and Sixth Schedule (Administration of Tribal Areas in the States of Assam, Meghalaya, Tripura and Mizoram).

What is DRDO?

- **About:**
 - DRDO is the **R&D (Research and Development) wing of the Ministry of Defence** with a vision to empower India with cutting-edge defence technologies.
 - Its **pursuit of self-reliance** and successful indigenous development and production of strategic systems and platforms such as **Agni and Prithvi series of missiles, Light Combat Aircraft, Tejas, multi-barrel rocket launcher, Pinaka, air defence system, Akash, a wide range of radars and electronic warfare systems, etc.** have given quantum jump to India's military might, generating effective deterrence and providing crucial leverage.
- **Various Programmes of DRDO:**
 - **Integrated Guided-Missile Development Programme (IGMDP):**
 - It was one of **Dr. APJ Abdul Kalam's** major works to make Indian defence forces self-sufficient in the field of missile technology.
 - The missiles developed under IGMDP are: Prithvi, Agni, Trishul, Akash, Nag.
 - **Mobile Autonomous Robot System (MARS):**
 - MARS is a smart robust robot **to handle land mines and Inert Explosive Devices (IEDs)** which helps the Indian Armed Forces to disarm them from far distances despite hostile surroundings.
 - With some add-ons, this system can even be used to dig the ground for the object and defuse the Improvised Explosive Device by various methods.
 - **Highest Terrestrial Centre in Ladakh:**
 - DRDO's centre in Ladakh is at 17,600 feet above sea level at Changla near Pangong lake which is intended to serve as a **natural cold storage unit for the preservation of natural and medicinal plants.**

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q1. In India, other than ensuring that public funds are used efficiently and for intended purpose, what is the importance of the office of the Comptroller and Auditor General (CAG)? (2012)

1. CAG exercises exchequer control on behalf of the Parliament when the President of India declares national emergency/financial emergency
2. CAG reports on the execution of projects or programmes by the ministries are discussed by the Public Accounts Committee.

3. Information from CAG reports can be used by investigating agencies to press charges against those who have violated the law while managing public finances.
4. While dealing with the audit and accounting of government companies, CAG has certain judicial powers for prosecuting those who violate the law.

Which of the statements given above is/are correct?

- (a) 1, 3 and 4 only
- (b) 2 only
- (c) 2 and 3 only
- (d) 1, 2, 3 and 4

Ans: (c)

Mains

Q1. “The Comptroller and Auditor General (CAG) has a very vital role to play.” Explain how this is reflected in the method and terms of his appointment as well as the range of powers he can exercise. **(2018)**

Q2. Exercise of CAG’s powers in relation to the accounts of the Union and the States is derived from Article 149 of the Indian Constitution. Discuss whether audit of the Government’s policy implementation could amount to overstepping its own (CAG) jurisdiction. **(2016)**

Source: TH

Benin Bronze

Why in News?

Germany has returned 20 **Benin Bronzes** that were looted in the 19th century to Nigeria.

- The return of these precious artifacts took place after Germany in July 2022 signed an agreement with Nigeria, **pledging to transfer the ownership of around 1,100 Benin Bronzes.**

What is Benin Bronze?

- The **Benin Bronzes are a group of over 3,000 sculptures and artworks** from the ancient Kingdom of Benin in present-day Nigeria. It dates back to at least the **16th century.**
 - They were **looted by British colonial forces during the infamous raid on Benin City in 1897.**
- Several of these pieces were **specially commissioned for the kings or Obas, and Queen Mothers of the kingdom.**
- These artefacts provide insight into the **culture of the Benin Kingdom as well as its relationships with neighbouring states.** Some of these pieces also point to the kingdom’s relationship with Europeans.



Which other looted Artifacts have Countries Demanded to be Returned?

▪ Koh-i-Noor diamond:

- The Koh-i-Noor has a **long and storied history in pre-partition India** and the British Raj. It is said to have been mined in what is present-day Andhra Pradesh.
- The diamond was acquired by Queen Victoria in 1849, following the **second Anglo-Sikh war**, during which **Punjab was brought under the East India Company**.
- The diamond was taken by the British after the signing of the Last Treaty of Lahore.
 - The Lahore treaty held between **Lord Dalhousie and Maharaja Duleep Singh in 1849**, Kohinoor diamond was **surrendered by the Maharaja of Lahore** to the Queen of England.

▪ Rosetta Stone:

- The other well-known example is the **Rosetta Stone**. Currently displayed at the British Museum, it is an **ancient Egyptian stone that features the inscriptions** that formed the basis of Egyptology itself.
- The stone was discovered by the army of **Napoleon Bonaparte near the town of Rashid (Rosetta)** in 1799 during the emperor's campaign to conquer Egypt. It was passed on to the British after they defeated the French in 1801.

Source: IE

PDF Reference URL: <https://www.drishtias.com/current-affairs-news-analysis-editorials/news-analysis/26-12-2022/print>