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S.NO.	TOPIC
1.	SC PUTS BRAKES ON 'BULLDOZER CULTURE'
2.	THE PERFECT COCKTAIL OF LAYERED DISCRIMINATION
3.	INDIA'S TEA, SUGAR EXPORTS RAISE SUSTAINABILITY CONCERNS AT HOME
4.	'SEA RANCHING' LAUNCHED OFF VIZHINJAM COAST

SC PUTS BRAKES ON 'BULLDOZER CULTURE'

SC puts brakes on 'bulldozer culture'

Bench says States indulging in naked display of 'might is right'; issues 'binding directives' that include 15 days' prior notice to occupants

Krishnadas Rajagopal
NEW DELHI

The Supreme Court on Wednesday said the States that metamorphose into judges to punish accused persons awaiting trial by driving bulldozers into their homes, indulge in a naked display of "might is right" without sparing a thought for families rendered shelterless overnight.



Wheels of injustice: Workers razing the property of an accused in an RSS attack case in Jaipur in October, citing violations. PTI

A Bench of Justices B.R. Gavai and K.V. Viswanathan invoked extraordinary powers under Article 142 of the Constitution to issue a slew of "binding directives" to fasten accountability on public officials.

Art 142

They include 15 days' prior notice of demolition to the occupants with details of the nature of the unauthorised construction

and grounds warranting demolition; the owner or occupants who want to challenge the State action must be given a fair opportunity; the demolition must be videographed, etc.

Officials will face action
Officials who violate these directives would face contempt action and would be prosecuted. They would be

liable for the restitution of the demolished property, the court said. The judgment followed petitions representing citizens from States, including Uttar Pradesh, Madhya Pradesh and Rajasthan, who had sought redress against the States' "bulldozer culture".

CONTINUED ON
» PAGE 12

- ❖ The Supreme Court criticized the practice of demolishing homes of accused persons awaiting trial, deeming it an act of "might is right" that disregards families' rights and leaves them homeless.
- ❖ Exercising powers under Article 142, the Court issued binding directives to hold officials accountable.

Article 142(1)

- ❖ The Supreme Court in the exercise of its jurisdiction may pass such decree or make such order as is necessary for doing complete justice in any cause or matter pending before it.
- ❖ Any decree so passed or order so made shall be enforceable throughout the territory of India.





- ❖ It may be in such manner as may be prescribed by or under any law made by Parliament and, until provision in that behalf is so made, in such manner as the President may by order prescribe.

Article 142(2)

- ❖ The Supreme Court shall have all and every power to make any order for the purpose of securing the attendance of any person, the discovery or production of any documents, or the investigation or punishment of any contempt of itself.

Important instances when Article 142 was invoked

- ❖ **Bhopal Gas tragedy case:** The SC awarded a compensation of \$470 million to the victims and held that “prohibitions or limitations or provisions contained in ordinary laws cannot, ipso facto, act as prohibitions or limitations on the constitutional powers under Article 142.”
- ❖ **Babri Masjid demolition case:** The Supreme Court ordered framing of a scheme by the Centre for formation of trust to construct Ram Mandir at the Masjid demolition site in Ayodhya.
- ❖ **Liquor sale ban case:** The Supreme Court banned liquor shops within a distance of 500 metres from National as well as State highways in order to prevent drunken driving.

Question:

Q.1 With reference to the Constitution of India, prohibitions or limitations or provisions contained in ordinary laws cannot act as prohibitions or limitations on constitutional powers under Article 142. It could mean which one of the following? (2019)

- The decisions taken by the Election Commission of India while discharging its duties cannot be challenged in any court of law.
- The Supreme Court of India is not constrained in the exercise of its powers by laws made by the Parliament.
- In the event of grave financial crisis in the country, the President of India can declare Financial Emergency without the counsel from the Cabinet.
- State Legislatures cannot make laws on certain matters without the concurrence of Union Legislature.





THE PERFECT COCKTAIL OF LAYERED DISCRIMINATION

The perfect cocktail of layered discrimination

Delimitation, the biggest elephant in the room called the Indian Union, is about to take centre stage. Statesmen such as Indira Gandhi and Atal Bihari Vajpayee appreciated the explosive potential of delimitation and kicked the can down the road, as it were, to be handled by a future generation. Here we are as that future generation. Do we kick the can further down the road? Do we detonate it? Or do we defuse it? We, the people of India, are at a historical crossroad. Will India remain a federal union? Or will it become an ethno-linguistic majoritarian mega state with minority ethno-linguistic minorities?

Federalism is part of the inviolable basic structure of the Constitution of India. The Indian Union is a federal union. States are the federating units. Most States find their basis in language and many States of the Indian Union are continuations of ethno-linguistic homelands that have existed for centuries or even millennia. This is precisely why the Supreme Court of India has termed States as political units and not arbitrary administrative units.

Indian unity was forged in the anti-imperialist struggle against British imperialism and that unity continues in independent India through a delicate balance of power distribution between federating units and ongoing dialogue between diverse peoples of the Indian subcontinent.

What is delimitation? Article 82 of the Indian Constitution requires that the number of Lok Sabha seats per State is recalibrated after each Census by the Delimitation Commission, in accordance with the population. Delimitation last happened based on the 1971 census, when in 1976, the Indira Gandhi government suspended the delimitation process for 25 years, until 2001. It was further suspended for another 25 years by the A.B. Vajpayee government, and would lapse by 2026, unless another amendment is introduced. The freezing of delimitation was done in order not to disincite States that were effective in population control. However, the Narendra Modi government has given hints about undertaking fresh delimitation before the elections in 2029.

Delimitation as a threat

Total Fertility Rate (TFR) is a demographic indicator that estimates the average number of children a woman gives birth to during her reproductive years. Even today, TFR of non-Hindi States such as Kerala, Tamil Nadu and West Bengal is in the 1.6-1.8 range, below the replacement level of 2.1. The TFR of Hindi heartland States such as Bihar, Chhattisgarh, Madhya Pradesh, Rajasthan and Uttar Pradesh, at about 3.5, is well above the replacement level. This has been true for many decades and thus by now, a recalibration via delimitation will mean a radical decrease in the proportion of non-Hindi State seats in the Lok Sabha. For example, if



Salem Dharamidharan

a spokesperson of the Dravida Munnetra Kazhagam (DMK) party and the Deputy Secretary of the party's IT wing



Garga Chatterjee

General Secretary, Bangla Poikho

Under the existing formulation of delimitation, there is a grave risk of some 'unsuccessful' States becoming the 'owners of an imperial centre', imperilling 'successful' States

delimitation takes place, the proportion of seats in Parliament for the southern States would be reduced from 25% to 17% and the number of seats from Hindi heartland States where the Bharatiya Janata Party (BJP) has electoral dominance would increase from 40% to 60%.

States such as Karnataka, Maharashtra and Tamil Nadu already receive only about 30% of the total funds that contribute as direct taxes, while Bihar and Uttar Pradesh receive between 250% and 350% of their overall contribution. The decision of 16th Finance Commission to include the 20th Census instead of the 1971 Census to devolve funds to States will be even more discriminatory to developed States. It is cause for worry that continuation of the same pattern would profoundly exacerbate the already existing bias against the non-Hindi States.

Fostering discrimination

India was conceived as a permanent, multi-ethnic, multi-lingual federal union, and not as a mono-ethno-linguistic majoritarianism territory. The difference with states such as China and Russia is that they are only federal in name, the population being made of an ethno-linguistic group with a majority of upwards of 80% and several other small minority nationalities. In India's case, however, there never was a majority ethno-linguistic group. India is a federation of various ethno-linguistic stakeholders, none of whom is a majority in India. But the major ones among them form the basis of various linguistic States, where they are super majority. But with long-term differences of TFR among States, and thereby, ethno-linguistic groups, this long-settled pattern faces the threat of being unsettled. Since 1947, the population proportion of Bengali, Kannada, Malayalam, Marathi, Odia, Punjabi, Tamil and Telugu have all decreased while the population proportion of one language, Hindi, has massively increased, from 36% to nearly 43%; 43% is not too far away from the majority.

The ratio of Lok Sabha seats allocated to a State to the total number of Lok Sabha seats represents the Stakeholdership Index of a State in matters of the Union. Delimitation will reward the non-performers of population control policies that will effectively dominate and determine the policy of the Union. The performers will have a declining say and will be reduced to being mere revenue contributors. The proportion of GDP and revenue from non-Hindi States is much greater than their population percentage while the proportion of GDP and revenue from Hindi States is lesser than their population percentage.

Post delimitation, States such as Bihar and Madhya Pradesh, where the BJP is dominant, will have their Stake holdership Index nearly double, whereas States such as Kerala and Tamil Nadu where the BJP has one to zero seats will see it being reduced by 30%-40%. Such a situation would skew Indian democracy in favour of the

Hindi States, with other regions risking a loss of electoral dominance. Without electoral dominance and representation in the Union, this would further alienate the non-Hindi states.

Thus, the implementation of delimitation will create the perfect cocktail of layered discrimination. Non-Hindi States that have implemented population control measures successfully will lose a say in Union affairs. Non-Hindi States that contribute a majority of GDP, resources, revenue and taxes will lose say in how their monies are used. The 'unsuccessful' will create policies for the 'successful' with money from the 'successful'. No taxation without representation was the cry in the Boston Tea Party. In a similar vein, delimitation will further shrink the representation of States that produce taxes. This is a very risky and dangerous path to pursue. There is no place for any system in India where some States increasingly look like owners of an imperial centre while others mimic colonies. Therefore, it is necessary to balance two competing constitutional values: formal equality in voting and federalism.

Possible solutions

There can be many solutions. First, just follow what Mrs Gandhi and A.B. Vajpayee did and extend the freeze by another 25 years and defer to a future generation.

Second, permanently freeze delimitation as far as the India-wide redistribution of seats across States is concerned.

Third, go through with delimitation as envisaged. But supplement it with a long due new grand federal compact such that the Concurrent List is abolished in favour of an expanded State list, all residual powers vested to the States and large scale transfer of subjects are made from the Union list to the State list, keeping external defence, external affairs and currency in Delhi's hands. This would balance delimitation with decentralisation, softening the majoritarian blow inherent in delimitation.

Fourth, preserve the present seat proportion between States in the Lok Sabha but increase the number of seats in each State to partially offset the representational deficit of population explosion States.

India is a unique experiment. It is not an ethnic-linguistic majoritarian empire like Russia or China. It is not a mono-linguistic nation state such as Bangladesh and Thailand. India is like Africa or Europe, a tapestry of languages, ethnicities, cultures, civilisations and faiths, but with a crucial difference. It is bound in an inseparable political Union born in the crucible of anti-imperialist struggle with one, unified voice when speaking to others. India is the grandest experiment of plurality in modern human history. Majoritarianism and partisanship cannot be allowed to undo it and threaten its unity. History will not forgive us.

- ❖ Delimitation, a critical and potentially contentious issue in the Indian Union, is poised to take center stage once again. Historically, leaders like Indira Gandhi and Atal Bihari Vajpayee recognized the explosive potential of this process and chose to defer it, leaving the matter for future generations to address. As we approach the year 2026, the suspension of delimitation is set to lapse, raising crucial questions about India's federal structure and the balance of power among its diverse states.

Understanding Delimitation

- ❖ **Definition:** Delimitation is the process of redrawing the boundaries of electoral constituencies based on the latest census to ensure equal representation.
- ❖ **Constitutional Basis:** Article 82 of the Indian Constitution mandates the recalibration of Lok Sabha seats per state after each Census by the Delimitation Commission.





- ❖ **Historical Suspension:** The last delimitation was based on the 1971 Census. In 1976, the process was suspended for 25 years to prevent penalizing states that effectively controlled population growth. This suspension was extended for another 25 years in 2001.

Potential Resumption Before 2029 Elections

- ❖ The current government has hinted at undertaking fresh delimitation before the 2029 elections, which could significantly alter the political landscape.

❖ Impact on Federalism

- **Basic Structure Doctrine:** Federalism is an inviolable part of India's Constitution. States are not arbitrary administrative units but political entities with historical and cultural significance.
- **Ethno-Linguistic Composition:** Many Indian states are based on linguistic identities, reflecting centuries-old ethno-linguistic homelands.
- **Risk of Majoritarianism:** Redrawing constituency boundaries could shift power towards states with higher population growth, predominantly Hindi-speaking, potentially undermining the federal balance.

❖ Demographic Disparities

- **Total Fertility Rate (TFR):**
 - **Low TFR States:** Kerala, Tamil Nadu, and West Bengal have TFRs between 1.6 and 1.8, below the replacement level of 2.1.
 - **High TFR States:** Bihar, Chhattisgarh, Madhya Pradesh, Rajasthan, and Uttar Pradesh have TFRs around 3.5.
- **Consequences of Delimitation:**
 - States with high population growth would gain more Lok Sabha seats.
 - Southern states could see their representation reduced from 25% to 17%, while Hindi heartland states could increase from 40% to 60%.

❖ Economic Contributions vs. Representation

- **Fiscal Imbalance:**
 - States like Karnataka, Maharashtra, and Tamil Nadu contribute significantly more in direct taxes compared to what they receive.
 - Bihar and Uttar Pradesh receive funds that are 250%-350% of their contributions.
- **16th Finance Commission's Role:**
 - Using the 2011 Census data for fund allocation could further disadvantage developed states.
 - There's a concern about exacerbating the existing economic and representational biases.

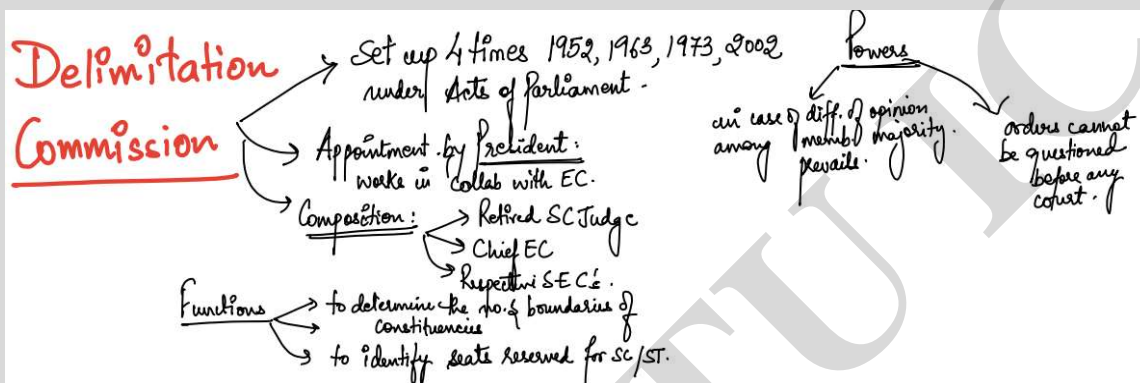
❖ Threat to Unity and Diversity

- **Shift in Population Proportions:**
 - The Hindi-speaking population has grown from 36% to nearly 43% since 1947.
 - Other major linguistic groups have seen a decline in their population proportions.
- **Stakeholdership Index:**
 - Represents a state's share of Lok Sabha seats relative to the total.
 - Delimitation could double the index for some Hindi-speaking states while reducing it for others like Kerala and Tamil Nadu.



❖ Potential for Discrimination and Alienation

- **Layered Discrimination:**
 - Successful states in population control may lose representation.
 - Economic contributors may have less say in how their funds are utilized.
- **Risk of Regional Discontent:**
 - Non-Hindi states might feel marginalized, leading to increased regionalism and potential unrest.



❖ Possible Solutions

- **Extend the Freeze:**
 - Continue the suspension of delimitation for another 25 years.
- **Permanent Freeze on Redistribution:**
 - Maintain the current allocation of seats among states.
- **Balanced Delimitation with Decentralization:**
 - Proceed with delimitation but decentralize power by:
 - Abolishing the Concurrent List.
 - Expanding the State List.
 - Transferring more subjects from the Union to the State List.
 - Retaining only external defense, foreign affairs, and currency with the Union.
- **Adjust Representation Without Redistribution:**
 - Keep the current state-wise seat proportions but increase the total number of seats to address representation deficits.

Conclusion

- ❖ India is a unique experiment. It is not an ethnic-linguistic majoritarian empire like Russia or China. It is not a mono-linguistic nation state such as Bangladesh and Thailand. India is like Africa or Europe, a tapestry of languages, ethnicities, cultures, civilisations and faiths, but with a crucial difference. It is bound in an inseparable political Union born in the crucible of anti-imperialist struggle with one, unified voice when speaking to others. India is the grandest experiment of plurality in modern human history. Majoritarianism and partisanship cannot be allowed to undo it and threaten its unity. History will not forgive us.



Question: (UPSC PYQ 2012)

Q.2 With reference to the Delimitation Commission consider the following statements: (2012)

1. The orders of the Delimitation Commission cannot be challenged in a Court of Law.
2. When the orders of the Delimitation Commission are laid before the Lok Sabha or State Legislative Assembly, they cannot effect any modification in the orders.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

SOLUTION: C





INDIA'S TEA, SUGAR EXPORTS RAISE SUSTAINABILITY CONCERNS AT HOME

India's tea, sugar exports raise sustainability concerns at home

Agricultural commodity production in India lives in a unique context – high domestic consumption and now rapidly growing exports – that may benefit producers and consumers, but increasing dependencies between different parts of the supply chain compromise ecological sustainability

Dasari Giridhar
Manan Bhan

India is one of the world's largest agricultural product exporters. Indian agricultural export was valued at \$53.1 billion in 2022-23, up from \$8.7 billion in 2004-05, a six-fold increase in less than two decades. For an economically developing economy like India, exports play a significant role in strengthening the economy by increasing revenue, foreign exchange, and transactional options. But the rapid surge in exports poses multiple challenges to sustainability of the production, processing, and distribution systems of the respective commodities.

In this context, it's important to answer two questions regarding the sustainability of an agricultural commodity.

First, when can an agricultural commodity be considered truly sustainable? The sustainability of such a commodity isn't just about economic sustainability, which is driven by productivity. Ecological and social factors, aided by good governance, help build a sustainable production system, so the sustainability of an agricultural system depends on three pillars: ecological factors, economic aspects, and social aspects, underpinned by robust policies underlying all of them.

Second, should sustainability considerations only apply to production? No. Since the lifecycle of a commodity extends across pre-sowing, on-farm production, and post-harvest stages, sustainability applies to them all. Tea and sugar, two prominent commodities in India with a large domestic and export-oriented consumption base, offer good examples to illustrate the problems herein.

Tea

India is the world's fourth-largest tea exporter and second-largest producer, contributing 10% of global exports. The latter totalled 188.76 million kg in 2022, with a value of \$641.34 million, and an increase of 21.47% year on year in volume and 12.43% year on year in value. The total value of Indian tea exports for 2022-23 was \$793.78 million. Domestic consumption constitutes 80% of total production. The top export destinations of Indian tea are the United Arab Emirates, Russia, Iran, the U.S., and the U.K.

There is also growing evidence of stresses being imposed on production systems across the tea value chain. Three major challenges in the tea industry are the management of human-wildlife interactions, burgeoning chemical use, and labour concerns. An estimated 70% of tea plantations are situated at the periphery of forests and host the migratory routes elephants need to move around, resulting in frequent interactions with humans and human property and damage.

Likewise, synthetic pesticides constitute up to 85% of total pesticide use in tea plantations. This degree of reliance on such pesticides increases the chemical residue in the final product. Researchers have already documented an increase in the incidence of DDT, Endosulfan 35 EC, Dicofol 18.5 EC, and Cypermethrin 10 EC in tea. Exposure to these substances can increase the risk of cancer, diabetes, impaired neurodevelopment in children, and neurotoxicity.

- ❖ India, a leading global exporter of agricultural products, has seen significant growth in its agricultural export value, rising from \$8.7 billion in 2004-05 to \$53.1 billion in 2022-23. While this export boom strengthens India's economy through increased revenue, foreign exchange, and transaction options, it also brings challenges, especially regarding the sustainability of production, processing, and distribution systems



Sweet and sour: Workers harvest sugar cane in Kolhapur district in Maharashtra. FILE PHOTO

Finally, the labour rights and working conditions of the tea estates cannot be undermined. More than half of tea plantation workers are women and they are often underpaid. The working conditions are also hazardous and workers often lack protective gear. Despite regulations under the Plantations Labour Act 1951 (amended in 2010 to strengthen worker safety), safety standards are almost never fully enforced. There is a critical need for better management practices in and around tea estates in India, stricter monitoring of the maximum residue limits for pesticides, and better enforcement of existing labour regulations.

Sugar

India is the world's second-largest sugar producer, with 34 million metric tonnes of production, which is about a fifth of the global production. India's sugar exports grew by 291% from \$1.177 million in FY 2013-14 to \$4,600 million in FY 2021-22 and 64.90% in 2021-22. The country exported sugar to 121 countries, according to the Directorate General of Commercial Intelligence and Statistics. About 50 million farmers depend on sugar cane cultivation in India. An additional half million depend on sugar and allied factories. According to NITI Aayog, the industry has an annual turnover of ₹1 lakh crore.

But for the exports' economic value and the industry's significant rural employment, it also has considerable adverse environmental effects – but in particular water resource management.

Sugar cane is well-known for requiring a lot of water to cultivate. On average, 1 kg of sugar requires between 1,500 and 2,000 kg of water. Sugar cane and paddy occupy around 25% of the gross cropped area in India and consume 60% of the country's total irrigation water, reducing the availability for other crops and also stressing groundwater resources. In the

There needs to be more focus on addressing environmental issues and safeguarding the health and safety of both workers and consumers, to develop an inclusive agrarian economy that benefits both local communities and global markets

last six or seven years, the area under sugar cane cultivation has almost doubled in Karnataka and Maharashtra.

Natural ecosystems like grasslands and savannahs in these states have also been converted to plant sugar cane. Along with the ensuing biodiversity loss, this change has increased the pressure on water resources and increased the need for sustainable water use and alternate cropping patterns. In fact, implementing drip irrigation in these States could lower water consumption by 40-50%.

The social dynamics of sugar industries narrate another story. Media reports have unearthed poor working conditions, including long working hours. Rising temperatures in peninsular India acts as a threat multiplier, increasing the risks to workers' physical and mental well-being. Workers trapped in vicious debt cycles incur even more stress. Strengthening regulations and encouraging structured and responsible production practices are important to reduce these effects and promote sustainability.

Millets

Even as the sustainability challenges of these commodities persist, there are others that promote long-term ecological and socio-economic sustainability, and their successes could serve as templates to address the problems plaguing tea and sugar.

One prime example is millets, a sustainable option with which to increase

domestic consumption as well as exports. Millets are resilient to harsh conditions and don't require more inputs to weather resource constraints. They preserve soil health and ensure nutritional security.

The growing importance of millet export is evident in the export statistics. India reached a major milestone in 2021-22 when it exported millets valued at \$62.95 million, up from \$26.07 million in 2020-21, almost a 2.5-fold increase in a single year. In FY 2022-23, the country shipped 169,049.11 metric tonnes of millets and millet-related products worth \$75.45 million. This rising demand highlights their potential as a sustainable agricultural commodity contributing to economic growth and environmental resilience.

Agricultural commodity production in India lives in a unique context: a large domestic consumption base and now a rapidly growing export base. These dynamics may benefit producers and consumers but they could also yield a paradox: whereby increasing dependencies between different actors in the supply chain compromise ecological and social sustainability concerns. There are successful tales of increasing production and trade volumes but concerns also continue regarding the trickling down of some of those economic benefits to producers and farm labourers, and regarding the vitality of India's natural resources.

There needs to be more focus on addressing environmental issues and safeguarding the health and safety of both workers and consumers to develop an inclusive agrarian economy that benefits both local communities and global markets.

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Defining Sustainability for Agricultural Commodities

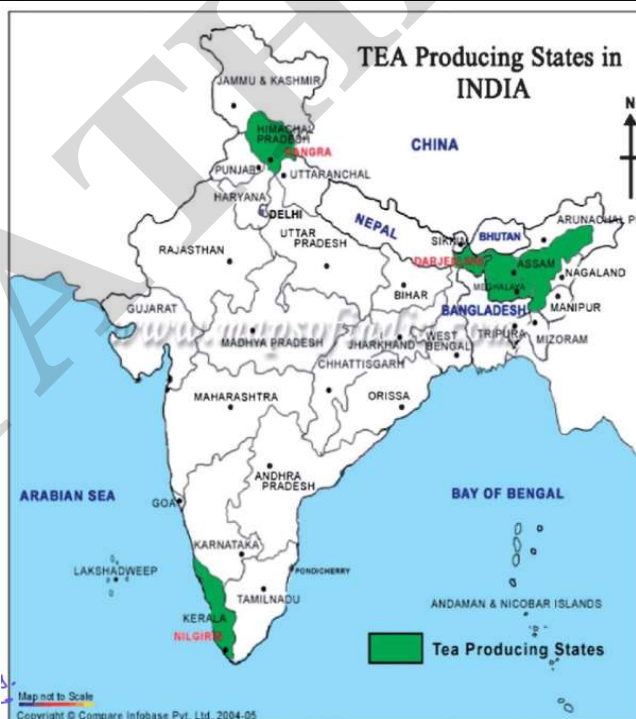
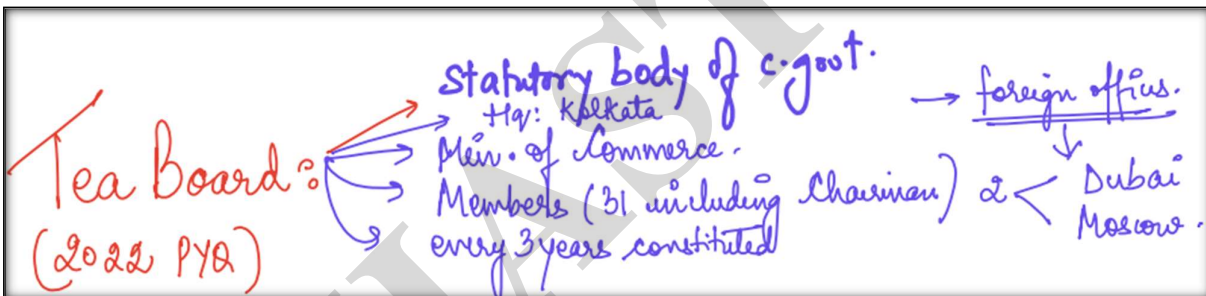
❖ Three Pillars of Sustainability:

- **Ecological Sustainability:** Ensuring minimal environmental impact, protecting biodiversity, and managing resources sustainably.
- **Economic Sustainability:** Driven by productivity and profitability for long-term financial viability.
- **Social Sustainability:** Ensuring fair labor practices, good working conditions, and community benefits.
- **Applicability Across the Lifecycle:** Sustainability considerations apply to all stages of a commodity's lifecycle—pre-sowing, production, and post-harvest. This holistic approach is essential for sustainable agriculture.

Tea Industry in India

❖ Production and Export:

- India is the world's fourth-largest tea exporter and second-largest producer.
- In 2022, tea exports amounted to 188.76 million kg, valued at \$641.34 million, with domestic consumption constituting 80% of total production.
- Major export destinations include the UAE, Russia, Iran, the U.S., and the U.K.



Tea:
Beverage, Camellia sinensis plant.

Growth conditions

- ↳ tropical, subtropical plant (hot humid climate)
- ↳ Temp: 20°C-30°C
- ↳ Rainfall: 150-200cm. annually.
- ↳ Soil: slightly acidic (without Calcium)



Challenges:

- ❖ **Human-Wildlife Conflicts:** Approximately 70% of tea plantations border forests, resulting in frequent human-elephant conflicts, impacting both human safety and wildlife conservation.
- ❖ **Pesticide Usage:** Up to 85% of pesticides used are synthetic, leading to chemical residues in tea products. Chemicals like DDT, Endosulfan, and Cypermethrin pose health risks, including cancer and neurotoxicity.
- ❖ **Labor Rights:** Many tea plantation workers are underpaid and lack protective gear, despite regulations under the Plantations Labour Act (1951, amended 2010) to ensure safety

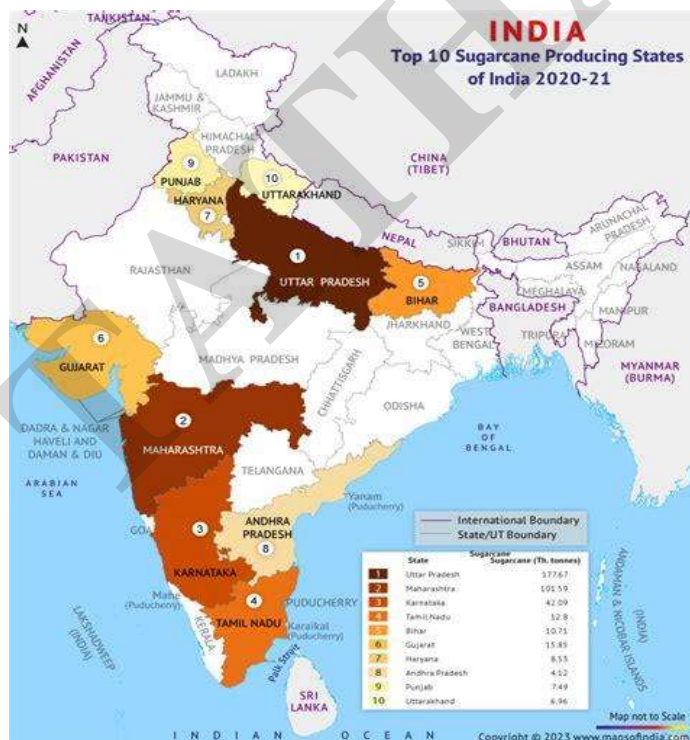
Suggested Solutions:

- ❖ Better management practices around tea estates.
- ❖ Stricter pesticide monitoring to maintain acceptable residue limits.
- ❖ Enhanced enforcement of labor laws for improved worker safety and fair wages.

Sugar Industry

❖ **Production and Export:**

- India is the second-largest sugar producer globally, with a 34 million metric tonne production, contributing about 20% to global production.
- Sugar exports saw a 291% increase from FY 2013-14 to FY 2021-22, reaching \$4,600 million. Around 50 million farmers depend on sugar cane, alongside half a million involved in processing.



Sugarcane → Temp: 21-27°C
 Rainfall: 75-100cm
 Soil: deep rich loamy soil
 Top states: MP > UP > Kar.





Challenges:

- ❖ **Water Intensive Crop:** Producing 1 kg of sugar requires 1,500-2,000 kg of water. Sugar cane occupies 25% of India's cropped area but uses 60% of irrigation water, straining resources and impacting other crops.
- ❖ **Ecosystem Impact:** Increased sugar cane cultivation, especially in Karnataka and Maharashtra, has led to habitat loss and biodiversity decline.
- ❖ **Labor Concerns:** Poor working conditions, debt cycles, and long working hours, worsened by rising temperatures, place workers at physical and mental risk.

Suggested Solutions:

- ❖ Promoting drip irrigation to reduce water consumption by 40-50%.
- ❖ Introducing sustainable cropping patterns to conserve water and diversify agriculture.
- ❖ Strengthening labor regulations and promoting responsible production practices.

Sustainable Alternative: Millets

- ❖ **Sustainability Benefits:**
 - Millets are resilient, require fewer inputs, and are better suited to harsh conditions, conserving soil health and providing nutritional security.
- ❖ **Growth in Exports:**
 - Millet exports increased to \$62.95 million in 2021-22 and further to \$75.45 million in 2022-23. This trend showcases their economic potential and role in promoting sustainable agriculture.
- ❖ **Role in Sustainable Agriculture:**
 - Millets offer a model for balancing ecological resilience with economic growth, serving as a template for addressing sustainability challenges in other sectors.

Conclusion: Towards a Sustainable Agrarian Economy

- ❖ **Balancing Growth and Sustainability:**
 - India's agricultural success is tied to both domestic and international markets, but ecological and social sustainability are vital for long-term prosperity.
- ❖ **Key Focus Areas:**
 - Address environmental issues like water use and biodiversity.
 - Improve labor rights and ensure the health and safety of workers and consumers.
- ❖ **A Path Forward:**
 - An inclusive approach to agricultural policy can create a sustainable economy that benefits both local communities and global markets. By investing in sustainable practices across all stages, India can secure a robust future for its agricultural sector.





Question: (UPSC PYQ 2015)

Q.3 The Fair and Remunerative Price (FRP) of sugarcane is approved by the (2015)

- (a) Cabinet Committee on Economic Affairs
- (b) Commission for Agricultural Costs and Prices
- (c) Directorate of Marketing and Inspection, Ministry of Agriculture
- (d) Agricultural Produce Market Committee

Solution: A

Question: (UPSC PYQ 2020)

Q.4 With reference to the current trends in the cultivation of sugarcane in India, consider the following statements: (2020)

1. A substantial saving in seed material is made when 'bud chip settlings' are raised in a nurse, and transplanted in the main field.
2. When direct planting of setts is done, the germination percentage is better with single budded setts as compared to setts with many buds.
3. If bad weather conditions prevail when setts are directly planted, single-budded setts have better survival as compared to large setts
4. Sugarcane can be cultivated using settlings prepared from tissue culture.

Which of the statements given above is/are **correct**?

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

SOLUTION: Ans: (c)

- ❖ **Tissue Culture Technology** is a technique in which fragments of plants are cultured and grown in a laboratory. It provides a new way to rapidly produce and supply disease-free seed cane of existing commercial varieties. It uses meristem to clone the mother plant. It also preserves genetic identity. The tissue culture technique, owing to its cumbersome outfit and physical limitation, is turning out to be uneconomical.
- ❖ **Bud Chip Technology** –As a viable alternative of tissue culture, it reduces the mass and enables quick multiplication of seeds. This method has proved to be more economical and convenient than the traditional method of planting two to three bud setts. The returns are relatively better, with substantial savings on the seed material used for planting. Hence, statement 1 is correct.
- ❖ The researchers have found that the setts having two buds are giving germination about 65 to 70% with better yield. Hence, statement 2 is not correct.
- ❖ Large setts have better survival under bad weather but single-budded setts also give 70% germination if protected with chemical treatment. Hence, statement 3 is not correct.
- ❖ Tissue culture can be used to germinate and grow sugarcane settlings which can be transplanted later in the field. Hence, statement 4 is correct. Therefore, option (c) is the correct answer.



'SEA RANCHING' LAUNCHED OFF VIZHINJAM COAST

'Sea ranching' launched off Vizhinjam coast as follow-up to artificial reef project in Kerala

The Hindu Bureau
THIRUVANANTHAPURAM

Twenty-thousand pompano (*Trachinotus blochii*) fingerlings were deposited in the sea off Vizhinjam on Wednesday as a follow-up to the artificial reef project designed to replenish marine fishery resources and promote sustainable fishing practices.

The fingerlings were released at the coordinates of artificial reef modules deposited about 1.5 nautical miles off Vizhinjam coast.

They formed the first batch of a State Fisheries Department sea ranching project aimed at releasing 10 lakh pompano and cobia (*Motha*) fingerlings at



Sea ranching in progress off the coast of Vizhinjam in Thiruvananthapuram on Wednesday. NIRMAL HARINDRAN

10 locations off Thiruvananthapuram coast – one lakh each in the selected locations – where artificial reefs were deployed under Pradhan Mantri Matsya Sampada Yojana (PMMSY).

Development Board (NFDB) had cleared the Centrally funded ₹3-crore PMMSY scheme in March.

On Wednesday, Minister of State for Fisheries George Kurian inaugurated the project aboard a Coast

Guard vessel out at sea. The fingerlings, with size ranging between 8 to 10 gm, were released from two small fishing vessels at the coordinates of the artificial reef.

For the project, the State Fisheries Department had stocked and reared 10 lakh pompano and cobia fry at the Ayranchengu fish farm of the Agency for Development of Aquaculture Kerala.

Artificial reefs were created at 42 locations off 33 fishing villages in Thiruvananthapuram district. They consist of 150 triangular, flower and pipe-shaped reef modules. The sea ranching project constitutes the next step in this

process. According to the department, the reefs have already attracted a large variety of fish including tuna, trevally and mackerel.

The Fisheries Department is also awaiting Central government sanction for extending the artificial reef project beyond Thiruvananthapuram district. In the second phase, the department proposes to cover 96 villages in Kollam, Alappuzha, Ernakulam and Thrissur districts at an estimated cost of ₹29.76 crore. Ninety-six villages in the northern districts Malappuram, Kozhikode, Kannur and Kasaragod are proposed to be covered in the ₹25.82 crore Phase III, department officials said.

NFDB established 2006, autonomous org. under Min. of Agri. F. Welfare. Now Min. of Fisheries, Animal Husbandry & Dairying.

Trachinotus blochii (Pompano)
Cobia (L. Radycusson canadum) or "Motha"
Both are fish species

What is Sea Ranching?

- ❖ Sea ranching is a marine resource replenishment technique where young fish, shellfish, or other marine species (known as fingerlings or fry) are released into the sea to support natural fish populations.
- ❖ This practice is aimed at enhancing fishery resources and promoting sustainable fishing. It is often used in conjunction with artificial reefs, which provide a habitat that attracts and supports marine life, boosting local biodiversity and fish stocks.





❖ **Project Overview:**

- Under the Pradhan Mantri Matsya Sampada Yojana (PMMSY), the sea ranching initiative aims to replenish marine fish stocks.
- 20,000 pompano fingerlings were released off Vizhinjam, Kerala, marking the first batch in a larger project.
- The State Fisheries Department plans to release a total of 10 lakh pompano and cobia fingerlings at 10 locations along the Thiruvananthapuram coast.

❖ **Artificial Reef Creation:**

- 150 artificial reef modules in triangular, flower, and pipe shapes were deployed at 42 locations off the Thiruvananthapuram coast.
- These reefs provide habitats for marine species, attracting diverse fish populations and supporting ecosystem growth.

❖ **Funding and Implementation:**

- The project is funded with ₹3 crore from the National Fisheries Development Board (NFDB).
- Fingerling rearing takes place at the Ayiramthengu fish farm, managed by the Agency for Development of Aquaculture Kerala.

— Keep Learning and Keep Revising! —

