

2024_10_16 DAILY CURRENT AFFAIRS

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Indian diplomats were involved in extortion and homicide, alleges Canada

GS Paper II:India-Canada

Prior to the expulsion of six Indian diplomats from Canada, the Canadian authorities had confronted these officials with information about their alleged role in violent acts in Canada, including extortion and homicide, with the aim of disrupting ongoing violence against Canadian citizens, according to Canadian Prime Minister Justin Trudeau.

The relations between India and Canada have been unravelling since Mr. Trudeau told the Canadian parliament in September 2023 that Indian agents were behind the slaying of a Canadian citizen and pro-Khalistan figure Hardeep Singh Nijjar in June last year.

Speaking at a press conference in Ottawa on Monday, Mr. Trudeau and his colleagues, Foreign Minister Mélanie Joly and Public Safety Minister Dominic LeBlanc, emphasised that the nature of the alleged violence caused by agents of the Indian government was “ongoing” and that the reason the Canadian authorities precipitated a diplomatic situation was to disrupt the pattern after failing to obtain the cooperation of the Indian government.

The Royal Canadian Mounted Police (RCMP) had approached the Indian authorities as recently as last week, as per Mr. Trudeau, but the Indian side had “rejected those advances”, necessitating Monday’s actions. Ms. Joly claimed that sitting Indian diplomats were involved in acts of violence and the level of violence had increased since last year, when Mr. Trudeau first



Resolute stance: Canadian Prime Minister Justin Trudeau with Ministers during a press meet in Ottawa on Monday. AP

made the allegations.

The Government of India had made “a fundamental error” by thinking it could engage in “murders or extortion or other violent acts” against Canadians on Canadian soil, Mr. Trudeau said.

‘Deny and obfuscate’

He said India’s response had been to “deny, to obfuscate, to attack me [Mr. Trudeau] personally, and the integrity of the Government of Canada and its officials and its police agencies”, ever since he made his allegations about Indian involvement in the killing of Nijjar.

Mr. Trudeau told presspersons that he had emphasised to Prime Minister Narendra Modi last week in Laos, when the two men interacted on the fringes of the ASEAN Summit, how “incredibly important” the meeting between the countries’ national security advisers [Ajit Doval and Canadian NSA Nathalie Drouin] in Singapore [reportedly held on October 12] was. “Canada fully res-

pects the sovereignty and territorial integrity of India. We expect the Indian government to do the same for Canada,” he said. New Delhi, however, does not share that view. The government has repeatedly said that domestic political compulsions and “vote bank” politics in Canada have led to a very “permissive” environment in the country for India-related secessionist activity.

When asked about the number of homicides that were allegedly being orchestrated by Indian agents, the Security Minister, Mr. LeBlanc, demurred, not wanting to get ahead of the RCMP investigations.

The Foreign Minister said she had been in touch with External Affairs Minister S. Jaishankar on Monday and that Canada would “continue to ask” for India’s cooperation. She also confirmed she had spoken with her ‘Five Eyes’ counterparts.

INDIA REJECTS CLAIMS

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Indian diplomats were involved in extortion and homicide, alleges Canada (16 October)

- Prior to the expulsion of six Indian diplomats from Canada, Canadian authorities confronted them with information regarding their alleged involvement in violent acts, including extortion and homicide.
- Canadian Prime Minister Justin Trudeau stated that this action aimed to disrupt ongoing violence against Canadian citizens.
- Relations between India and Canada have deteriorated since Trudeau alleged in September 2023 that Indian agents were responsible for the killing of Canadian citizen and pro-Khalistan figure Hardeep Singh Nijjar in June 2022.
- At a press conference, Trudeau, Foreign Minister Mélanie Joly, and Public Safety Minister Dominic Leblanc emphasized that the alleged violence by Indian agents was ongoing.
- Trudeau noted that Canadian authorities acted diplomatically after failing to gain cooperation from the Indian government.
- The Royal Canadian Mounted Police (RCMP) had approached Indian authorities about these concerns as recently as last week, but the Indian side rejected their advances.
- Joly claimed that sitting Indian diplomats were involved in violent acts, which had reportedly increased since Trudeau first made his allegations.
- Trudeau criticized the Indian government for believing it could engage in violent acts against Canadians on Canadian soil.
- He stated that India's response to the allegations has been to deny and obfuscate, attacking his credibility and that of the Canadian government and its officials.
- Trudeau emphasized to Indian Prime Minister Narendra Modi during their recent interaction in Laos the importance of a meeting between the countries' national security advisers.
- Trudeau affirmed that Canada respects India's sovereignty and territorial integrity and expects India to do the same for Canada.
- New Delhi countered, asserting that political dynamics in Canada create a permissive environment for India-related secessionist activities.
- When asked about the number of homicides allegedly orchestrated by Indian agents, Leblanc refrained from commenting, citing ongoing RCMP investigations.
- Joly mentioned she communicated with Indian External Affairs Minister S. Jaishankar and that Canada would continue seeking India's cooperation, having also spoken with her 'Five Eyes' counterparts.

In Telangana, Rajnath lays foundation stone for Navy radar station

PCS

VIKARABAD

Defence Minister Rajnath Singh laid the foundation stone for Navy's second Very Low Frequency (VLF) radar station in Vikarabad district of Telangana on Tuesday.

The facility, which is set to be operational by 2027, is expected to enhance Navy's communication with ships and submarines. "Once it becomes operational, it will significantly support the armed forces. With warfare becoming increasingly dynamic, seamless coordination between 'men and machine' is essential," said Mr. Singh.

He also commended Telangana Chief Minister Re-



Rajnath Singh and Revanth Reddy at the event held in Vikarabad on Tuesday. PTI

vanth Reddy for his cooperation on the project.

A total of 1,174 hectares of forest land in Damagundam will be transferred to the Navy for the project.

This is India's second such station. The first, INS Kattabomman, has been operational in Tirunelveli since 1990.

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- He emphasized the importance of seamless coordination between 'men and machine' in modern warfare.
- Singh commended Telangana Chief Minister Revanth Reddy for his cooperation on the project.
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U.S. says India is not cooperating with Canada investigation (16 October)

- The Biden administration stated that India is not cooperating with Canadian authorities investigating links between Indian government agents and violent incidents in Canada, particularly involving pro-Khalistan figures.

- State Department spokesperson Matt Miller emphasized the seriousness of the allegations and the need for India to cooperate with Canada in its investigation.
- Miller noted that India has not chosen to cooperate on this matter.
- Canadian authorities recently alleged that Indian government agents were involved in various unlawful activities in Canada, including homicides and extortion.
- An investigative committee from India was in Washington to probe an assassination plot against Khalistani separatist and Sikhs for Justice (SFJ) leader Gurpatwant Singh Pannun.
- Miller indicated that the timing of this meeting was coincidental and not related to the Canadian investigation.
- The U.S. Department of Justice (DoJ) has charged Indian citizens with directing a plot to kill Pannun, who is designated as a terrorist in India and is a U.S. citizen.
- Miller mentioned that the Indian government has claimed to take the allegations seriously, stating that the activities mentioned in the DoJ indictment do not represent government policy.

India, U.S. conclude \$3.5-billion deal for procurement of 31 armed UAVs

GS Paper III: Internal Security

Dinakar Peri

NEW DELHI

India and the U.S. on Tuesday concluded a \$3.5-billion deal for the procurement of 31 MQ-9B armed high-altitude long endurance (HALE) remotely piloted aircraft systems (RPAS) manufactured by General Atomics through an inter-governmental agreement, via the Foreign Military Sales programme of the U.S.

One contract was signed with the U.S. government for Tri-Service procurement of 31 MQ-9B Sky/Sea Guardian HALE systems, the Defence Ministry said. "Another contract has been signed with General Atomics Global India Pvt Ltd for performance based-logistics for these RPAS through Depot Level Maintenance, Repair & Overhaul in India," the Ministry said on X. The contracts were inked in the presence of Defence Secre-



These advanced UAVs can significantly augment India's Intelligence, Surveillance, and Reconnaissance capabilities. PTI

tary Giridhar Aramane.

The deal also includes 170 AGM-114R Hellfire missiles; 16 M36E9 Hellfire captive air training missiles; 310 GBU-39B/B laser Small Diameter Bombs (SDB); and 08 GBU-39B/B LSDB guided test vehicles with live fuses among others.

Force multiplier

The deal for 31 MQ-9B UAVs, 15 Sea Guardians for the Indian Navy and 16 Sky Guardians— eight each for the Indian Army and Air

Force— was formally approved by the Cabinet Committee on Security last week along with another major deal for the indigenous construction of two Nuclear Attack Submarines (SSN).

These advanced UAVs, once inducted, will significantly augment India's Intelligence, Surveillance, and Reconnaissance (ISR) capabilities. For the Navy, it is a great force multiplier in keeping an eye over large swathes of the Indian Ocean Region and will re-

duce the wear and tear on its P-8I long-range maritime patrol aircraft.

As reported by *The Hindu* earlier, end-July the Defence Acquisition Council chaired by Defence Minister Rajnath Singh had approved amendments to the MQ-9B deal related to indigenous content and related aspects.

40-hour capacity

The MQ-9B is designed to fly over the horizon via satellite for up to 40 hours, depending on the configuration, in all types of weather, and safely integrate into civil airspace, according to its manufacturer. For instance, the Sea Guardian configuration can include a 360-degree surface-search maritime radar, automatic identification system, sonobuoy monitoring system, and sonobuoy dispensers for persistent anti-surface and anti-submarine warfare missions.

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- The deal was finalized through an inter-governmental agreement via the U.S. Foreign Military Sales programme.
- One contract was signed with the U.S. government for the Tri-Service procurement of the 31 MQ-9B Sky/Sea Guardian HALE systems.
- A second contract was signed with General Atomics Global India Pvt Ltd for performance-based logistics, including Depot Level Maintenance, Repair & Overhaul in India.
- The contracts were signed in the presence of Defence Secretary Giridhar Aramane.
- The deal includes additional armaments: 170 AGM-114R Hellfire missiles, 16 M36E9 Hellfire captive air training missiles, 310 GBU-39B/B laser Small Diameter Bombs (SDB), and 8 GBU-39B/B LSDB guided test vehicles with live fuses.
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- The 31 MQ-9B UAVs consist of 15 Sea Guardians for the Indian Navy and 16 Sky Guardians—eight each for the Indian Army and Air Force.
- Once inducted, these advanced UAVs will significantly enhance India's Intelligence, Surveillance, and Reconnaissance (ISR) capabilities.
- For the Navy, the UAVs will act as a force multiplier, monitoring large areas of the Indian Ocean Region and reducing wear and tear on P-8I long-range maritime patrol aircraft.
- In late July, the Defence Acquisition Council approved amendments to the MQ-9B deal concerning indigenous content.
- The MQ-9B is designed to fly over the horizon via satellite for up to 40 hours, depending on the configuration, and can operate in all weather conditions while safely integrating into civil airspace.
- The Sea Guardian configuration can include a 360-degree surface-search maritime radar, automatic identification system, sonobuoy monitoring system, and sonobuoy dispensers for anti-surface and anti-submarine warfare missions.

'Consensus across all establishments in Pakistan for healthy ties with India'

Senator seen as close to Islamabad's military establishment says Jaishankar's visit is an opportunity to explore sentiments on both sides

GS Paper II:
India-Pakistan

**Anwaar-ul-Haq
Kakar**

Suhasini Haidar
ISLAMABAD

There's consensus across all establishments for healthy ties with India, says Pakistan's former Prime Minister and Senator Anwaar-ul-Haq Kakar. Mr. Kakar, a representative from Balochistan, was the longest-serving caretaker Prime Minister of Pakistan between August 2023 and March 2024. He oversaw the elections earlier this year, and is seen as close to the military establishment. Mr. Kakar says External Affairs Minister S. Jaishankar's visit to Pakistan will offer an opportunity to explore whether Delhi and Islamabad are ready for better ties.

How do you see the visit of External Affairs Minister S. Jaishankar to Pakistan, the first in nine years by an Indian Foreign Minister, and the fact that he has come for an SCO meeting?

I would link it with the former Foreign Minister Bilawal Bhutto Zardari's presence for the SCO (Foreign Ministers) multilateral meeting in India [in May 2023]. I think that has been reciprocated. It's a multilateral event, and both sides



understand that it is not a bilateral engagement, but at the same time, such moments, they sometimes create history. They sometimes give you an opportunity to connect to things which, in normal circumstances, probably the parties that have taken extreme positions wouldn't think of. We need to know what is going on in the mind of India intellectually?

What is going on in the mind of the Pakistani political establishment, the other players who are stakeholders in both countries? Let's give that a chance.

What, according to you, is on the mind of Pakistan's military establishment, especially given the LoC ceasefire since 2021?

I believe honestly, there's consensus on the Pakistani side: when it comes to India, everyone wants a good relationship, the military political establishment, even Pakistan's right, religious political entities, the Jamaat-e-Islami. All of them agree that we should have

healthy, constructive balance, equal or equitable relations. Does it translate into [similar sentiments] in India?

Some would argue that the ball is actually in Pakistan's court – it was Pakistan that cancelled trade with India, and stopped road and rail links in 2019. Do you think there will be a rollback of those decisions now?

Pakistan's external security is paramount – and obviously there will be a response to any threat. We have spent some five decades on our security doctrine development, enhancing our conventional capability; it's a realistic expectation.

Do you think that some of the people-to-people transport links could be restored anytime soon?

Who would argue against the interaction between common people? I would love to see that happening, but to my mind when I see Indian diaspora and Pakistani diaspora interacting for the last seven decades in the West and the rest of the world, I wonder. Has it brought us any closer?

I think we should be more realistic that people-to-people ties may not actually help resolve issues by themselves when there are such entrenched positions on both sides, and the challenge is how to get over this.

Jaishankar arrives in Islamabad, 'shakes hands' with Sharif

Suhasini Haidar
ISLAMABAD

Attending a dinner hosted by Pakistan Prime Minister Shehbaz Sharif shortly after arriving in Islamabad on Tuesday, External Affairs Minister S. Jaishankar shook hands and exchanged greetings with Mr. Sharif.

On Wednesday, Mr. Jaishankar will address the Shanghai Cooperation Organisation (SCO) Council of Heads of Government (CHG) meeting here and is expected to repeat concerns raised by Prime Minister Narendra Modi at past SCO summits over terrorism and extremism in the region, as well as connectivity and transit issues.

Neither side has expressed a desire to hold a bilateral interaction, although Mr. Jaishankar will be at the same venue as his counterpart Ishaq Dar and the CHG chaired by Mr. Sharif.

Asked by Indian media about the possibility of a meeting, Pakistan Foreign Office spokesperson Mumtaz Zahra Baloch confirmed that no bilateral meetings had been planned between India and Pakistan.

The leaders, including seven Prime Ministers from Russia, China, Belarus, and Central Asian nations, Iran's Vice-President and Mr. Jaishankar, will gather for group photographs on Wednesday morning, followed by the plenary session of the 23rd SCO CHG. This would be followed by the signing of a number of documents and an official lunch at the Jinnah Convention Centre. Mr. Jaishankar is expected to leave later in the after-



Pakistan PM Shehbaz Sharif with External Affairs Minister S. Jaishankar in Islamabad. ANI

noon from Islamabad for Delhi.

This is the first such visit by an Indian Foreign Minister in nine years, and the first such interaction between the Indian and Pakistani leadership since the SCO Foreign Minister's meeting in May 2023, which ended in an acrimonious exchange of statements between Mr. Jaishankar and then-Pakistani Foreign Minister Bilawal Bhutto Zardari. While the handshake between Mr. Jaishankar and Mr. Sharif was a formality, it was in distinct contrast to the meeting of the SCO Foreign Ministers in Goa, where Mr. Jaishankar pointedly avoided shaking hands with Mr. Bhutto, greeting him with a 'namaste' instead.

On Tuesday, Mr. Bhutto, who is no longer in the Cabinet post-elections, although his party, the PPP, supports the government, said that he welcomed Mr. Jaishankar's visit to Pakistan.

"The SCO is going ahead successfully because it does not allow bilateral ties to overshadow its agenda, which was one of the reasons SAARC (South Asian Association for Regional Cooperation) failed," said Mr. Bhutto.

Opposition MPs write to Speaker on conduct of JPC Chairperson

Pal conducting proceedings on Waqf Bill in a 'biased' manner, they say in letter to Birla; they highlight 'violation of rules' in deposition by witness

GS Paper II: Polity

The Hindu Bureau

NEW DELHI

Opposition MPs on Tuesday wrote to Lok Sabha Speaker Om Birla on the "gross violation of parliamentary code of conduct" by Chairperson Jagdambika Pal at the meeting of the Joint Parliamentary Committee examining the Waqf (Amendment) Bill.

The members said it would be very difficult to continue working in the JPC in the current "partisan and politically motivated environment".

The letter was signed by Congress MPs Gaurav Gogoi, Syed Naseer Hussain and Imran Masood, A. Raja and M.M. Abdulla of the DMK, Asaduddin Owaisi of the AIMIM, and Kalyan Banerjee of the Trinamool Congress.

The Opposition members had walked out in protest from Monday's meeting after Mr. Pal ignored their demand not to allow former Karnataka State Minorities Commission Chairman Anwar Manipaddy from deposing be-



Opposition MPs after boycotting a meeting of the Joint Parliamentary Committee on Waqf Bill in New Delhi on Tuesday. PTI

fore the panel. Mr. Manipaddy named several Opposition leaders, including Congress president Mallikarjun Kharge and K. Rahman Khan, for alleged embezzlement of Waqf properties, citing a 2012 report.

"The proceedings of the Committee were conducted in a biased and partisan manner by the Chairperson Shri Jagdambika Pal," the Opposition members said in the letter. They said Mr. Manipaddy's presentation "contained no observations on the Waqf (Amendment) Bill. "Instead, it was full of politically motivated allegations against leaders of the Karnataka Congress, including

Mallikarjun Kharge, Hon'ble Leader of Opposition (Rajya Sabha)," they said.

The members said allowing the witness to continue with his deposition was against the Rules of Procedure and Conduct of Business in Lok Sabha. Under Rule 353, they said, "defamatory or incriminatory" allegations cannot be made against a person unless the members are given adequate advance notice. "Most importantly, members of the committee were deprived of their fundamental right to voice their concerns and thoughts in a space which is expected to operate with the highest alignment to democratic values," the members said.

Opposition MPs write to Speaker on conduct of JPC Chairperson (16 October)

- Opposition MPs wrote to Lok Sabha Speaker Om Birla regarding a “gross violation of parliamentary code of conduct” by Chairperson Jagdambika Pal during a Joint Parliamentary Committee (JPC) meeting on the Waqf (Amendment) Bill.
- The letter expressed concerns about continuing work in the current “partisan and politically motivated environment.”
- Signatories included Congress MPs Gaurav Gogoi, Syed Naseer Hussain, and Imran Masood, as well as A. Raja and M.M. Abdulla from the DMK, Asaduddin Owaisi from AIMIM, and Kalyan Banerjee from the Trinamool Congress.
- Opposition members had protested by walking out of the previous meeting after Pal ignored their request not to allow former Karnataka State Minorities Commission Chairman Anwar Manippady to testify.
- Manippady made allegations of embezzlement against several Opposition leaders, including Congress president Mallikarjun Kharge and K. Rahman Khan, citing a 2012 report.
- The Opposition letter claimed that the committee proceedings were conducted in a biased and partisan manner by Jagdambika Pal.
- They noted that Manippady’s presentation did not address the Waqf (Amendment) Bill but contained politically motivated allegations against Karnataka Congress leaders.
- The members argued that allowing Manippady to continue with his deposition violated the Rules of Procedure and Conduct of Business in Lok Sabha.
- Under Rule 353, “defamatory or incriminatory” allegations cannot be made without providing members with adequate advance notice.
- The letter stated that committee members were deprived of their fundamental right to voice concerns in a space meant to uphold democratic values.

Coastal flooding harms different tree species differently: study

New findings can help forest managers understand how much risk a coastal forest faces due to tidal flooding by inventorying what species are there and recording conditions specific to that site. This way, they can avoid prioritising species that face less risk while being too late to save others in more danger

GS Paper III: Environment

Madhurima Pattanayak

Global warming is raising sea levels and making flooding more common in some areas. Researchers have held both of these effects, among others, responsible for discouraging the growth of plants of many tree species in coastal areas. But a new study by researchers at Drexel University in Philadelphia and the Northern University of Arizona has called for a pause in this thinking.

The study paper, published in the journal *Frontiers in Forests and Global Change* on August 28, has reported that a rising sea and coastal flooding could actually enhance the resilience of some coastal tree species while being detrimental to others.

Trees respond quickly

How well trees grow in a place depends on the place's ambient temperature, average rainfall, soil health, access to water with the appropriate qualities, and the location of other vegetation nearby, among other factors. Trees can respond fairly quickly to these changes, too. For example, even as sea levels are rising by a few millimetres a year, many species of coastal trees have started to move further inland, where the tides are lower and the salinity is more tolerable – but also where other conditions may be more inhospitable.

The study's authors, LeeAnn Haaf and Salli F. Dymond, previously studied coastal forests in the Delaware Bay in the U.S. state of Delaware and the Barnegat Bay in New Jersey. In a paper published in 2021, they reported that different plant species here responded differently when exposed to rising seas and repeated coastal flooding.

"In our recent study, we found species – and site – specific patterns related to sea level rise, temperature, and precipitation pattern, (associated to tree growth), and that also extends to how those factors change with climate change," Haaf, an environmental scientist at Drexel University, said.

One species in particular, the American holly (*Ilex opaca*), responded to more water in its surroundings by increasing the rate at which it grew – while loblolly pine (*Pinus taeda*) and pitch pine (*Pinus rigida*) trees suffered under higher water levels.

Tracking the rings

In the new study, Haaf and Dymond used a method called dendrochronology to understand how trees grew in response to specific conditions. In dendrochronology, scientists estimate when a tree formed a



The Sundarbans are the biggest natural mangrove forest in the world, straddling Bangladesh and India. GETTY IMAGES/ISTOCKPHOTO

particular tree ring and, based on that, develop a time-wise correlation between a climatic condition and the tree's response.

They wrote in their paper that they compared changes in "environmental conditions" to the growth of American holly, loblolly pine, and pitch pine trees in the Delaware and Barnegat Bays. They also used "gradient boosted linear regression, a machine-learning approach ... to investigate tree growth responses across gradients in temperature, precipitation, and tidal water levels."

In this way, Haaf and Dymond assessed whether tree rings became larger or smaller as each natural condition varied over time.

Gradient-boosted linear regression

The tree rings consist of water vessels. When a tree is exposed to a lot of rain along with appropriate levels of sunlight and ambient temperature, it also develops more water vessels. But a heavy downpour and a deluge would disrupt this process altogether and prevent the plant from growing normally. So thicker rings signify abundant tree growth, while thinner ones mean stunted growth. And because older rings remain at the centre of the tree trunk and newer ones near the periphery, dendrochronology can help provide timestamps for climatic conditions in the past.

Gradient-boosted linear regression is a machine-learning model used to understand patterns in tree rings. It helps by estimating the effects of a combination of forces acting on a system. Such



As climates change and sea levels rise, some sites or species may confer benefits to growth, whereas other sites may experience conditions that reduce growth

problems are too complicated for techniques like a correlation test that indicate how closely the changes in the values of only two variables are related and overlook interactions between variables that cause other effects. Pratik Karmakar, a computer science researcher at the National University of Singapore who wasn't involved in the study, said "the gradient-boosted linear regression model of machine learning is an appropriate method used in this study."

While the data are specific to the mid-Atlantic region, the "methods would certainly work in any temperature location in the world," Haaf said.

She added that the correlation with temperature, precipitation, and sea level may not be significant everywhere – "but I think that is part of understanding how at-risk forests are."

Sea-level rise accelerating

Sea levels were increasing by around 2 mm/year in 1993. This rate has since doubled, and climate researchers expect floods in coastal areas will increase threefold by 2050 and the average number of days of flooding will increase twofold. Haaf continued, "Our study can help forest managers understand how

at-risk a coastal forest is to tidal flooding by inventorying what species are there and considering other conditions specific to that site." For example, some temperate coastal forests are predominantly loblolly. "Such forests may do better than others as temperature rises, so these forests may not need to be prioritised yet."

More than three billion people worldwide live near the coast and depend on coastal ecosystems' services to meet many of their needs, including livelihoods. Conserving coastal vegetation is thus valuable.

'Site-specific mechanisms'

The new study highlights the coastal plant conservation strategies that currently emphasise sea level rise and coastal inundation and need amendments to take other weather and soil factors into account. "As climates change and sea levels rise, some sites or species may confer benefits to growth, whereas other sites may experience conditions that reduce growth," the researchers wrote in their paper.

"Site-specificity of results underscores the importance of local conditions on tree growth in coastal forests. To aid future management efforts, future research should examine site-specific mechanisms and explore non-linear relationships that may contribute to tree responses to climate and tidal flooding."

(Madhurima Pattanayak is a freelance science writer and journalist based in Kolkata. madhurima.pattanayak@gmail.com)

THE GIST

How well trees grow depends on temperature, rainfall, soil, and nearby vegetation. Trees can respond quickly. Even as sea levels are rising, many species of coastal trees have moved further inland, where tides are lower and salinity tolerable

Researchers used dendrochronology to understand how trees respond to conditions. Scientists estimate when a tree forms a tree ring and develop a time-wise correlation between a climatic condition and the tree's response

The study underscores the importance of local conditions on tree growth in coastal forests. Research should examine site-specific mechanisms and explore non-linear relationships that may contribute to tree responses

Coastal flooding harms different tree species differently: study (16 October)

New findings can help forest managers understand how much risk a coastal forest faces due to tidal flooding by inventorying what species are there and recording conditions specific to that site. This way, they can avoid prioritising species that face less risk while being too late to save others in more danger

- Global warming is raising sea levels and increasing flooding in some areas.
- Researchers have traditionally linked these effects to the decline in growth of many tree species in coastal regions.
- A new study from Drexel University and Northern Arizona University calls for a reconsideration of this perspective.
- Published in the journal *Frontiers in Forests and Global Change* on August 28, the study suggests that rising sea levels and coastal flooding could enhance the resilience of some coastal tree species while harming others.
- Tree growth is influenced by various factors, including ambient temperature, average rainfall, soil health, water quality, and nearby vegetation.
- Trees can respond quickly to environmental changes; for instance, some coastal tree species are moving further inland due to rising sea levels, where conditions may be less favorable.
- The study's authors, LeeAnn Haaf and Salli F. Dymond, previously examined coastal forests in Delaware Bay and Barnegat Bay, finding varying responses among plant species to rising seas and flooding.
- Haaf noted that the recent study identified species- and site-specific patterns related to sea level rise, temperature, and precipitation that affect tree growth.
- One specific finding was that the American holly (*Ilex opaca*) increased its growth rate with more water, whereas loblolly pine (*Pinus taeda*) and pitch pine (*Pinus rigida*) experienced negative effects under higher water levels.

Tracking the rings

- Haaf and Dymond used dendrochronology to study tree growth in response to specific conditions.
- Dendrochronology involves estimating when a tree formed a particular ring and correlating climatic conditions with tree responses over time.

- The researchers compared changes in environmental conditions to the growth of American holly, loblolly pine, and pitch pine in Delaware and Barnegat Bays.
- They utilized gradient boosted linear regression, a machine-learning approach, to investigate tree growth responses across gradients in temperature, precipitation, and tidal water levels.
- This method allowed them to assess whether tree rings became larger or smaller as environmental conditions varied over time.
- Tree rings consist of water vessels; more rain, sunlight, and suitable temperatures lead to more water vessels and thicker rings, indicating abundant growth.
- Conversely, heavy downpours can disrupt growth, resulting in thinner rings that signify stunted growth.
- Dendrochronology provides timestamps for past climatic conditions as older rings remain at the center of the trunk, while newer ones are near the periphery.
- Gradient-boosted linear regression helps estimate the effects of multiple interacting forces on tree growth, which is complex for simpler correlation tests.
- Pratik Karmakar, a computer science researcher, noted that the gradient-boosted linear regression model is appropriate for this study.
- Although the data is specific to the mid-Atlantic region, Haaf mentioned that the methods could be applied globally.
- She acknowledged that the correlation with temperature, precipitation, and sea level may vary in significance across different locations, which is crucial for understanding at-risk forests.

Sea-level rise accelerating

- Sea levels were increasing by around 2 mm/year in 1993, a rate that has since doubled.
- Climate researchers expect flooding in coastal areas to increase threefold by 2050, with the average number of flooding days expected to double.
- Haaf stated that the study can help forest managers assess the risk of tidal flooding in coastal forests by inventorying species present and considering site-specific conditions.
- Some temperate coastal forests, predominantly composed of loblolly pine, may perform better as temperatures rise, suggesting they may not need immediate prioritization.
- Over three billion people globally live near coasts and rely on coastal ecosystems for their livelihoods and services.
- Conserving coastal vegetation is crucial for these communities.
- The study emphasizes the need for coastal plant conservation strategies to account for factors beyond just sea level rise and flooding.
- The researchers noted that some sites or species may benefit from changing conditions, while others may face reduced growth.
- The site-specific nature of results highlights the importance of local conditions on tree growth in coastal forests.

- Future research should focus on examining site-specific mechanisms and exploring non-linear relationships affecting tree responses to climate change and tidal flooding.

Why motion or height unsettles you

GS Paper III: Basic Science



Q.What induces vomiting when we travel or look down from a

height?

A: Giddiness occurs when we lose our sense of balance.

Sensations perceived by the eye, the inner ear, the skin, the muscles, and joints help the body to know whether it is stable.

Several unusual situations, such as travelling in a bus or looking down from a great height, overstimulate and confuse the part of the brain that controls balancing. This part is close to the part that induces vomiting.

When we look down from a great height, abnormal visual signs are transmitted to the brain without any corresponding information from other parts of the body. Likewise, while looking out in a fixed direction while travelling in a bus, the eye sends rapidly changing visual signals to the brain. Such signals confuse the mechanism in the brain, leading to giddiness and vomiting.

D. Kavitha, Chennai



When we look down from a great height, abnormal visual signs are transmitted to the brain. JUAN CARLOS RAMIREZ

For feedback and suggestions

for 'Science', please write to science@thehindu.co.in

with the subject 'Feedback'

Why motion or height unsettles you (16 October)

- Giddiness occurs when we lose our sense of balance.
- Sensations from the eyes, inner ear, skin, muscles, and joints help the body maintain stability.
- Unusual situations, like traveling in a bus or looking down from a great height, can overstimulate and confuse the brain's balancing center.
- This balancing center is located near the area of the brain that induces vomiting.
- When looking down from a height, abnormal visual signals are sent to the brain without corresponding information from the body.
- While traveling in a bus and looking ahead, rapidly changing visual signals confuse the brain's mechanisms.
- These confusions can lead to giddiness and vomiting.

Food access is about equitable agrifood systems

GS Paper III: Agriculture

October 16, 2024 is World Food Day with the theme this year being 'right to foods for a better life and a better future'. The theme highlights the importance of **access to safe, nutritious, and affordable food for all**. The Rome-based agencies, the **Food and Agriculture Organization of the United Nations (FAO)**, the **International Fund for Agricultural Development (IFAD)** and the **World Food Programme (WFP)** are collaborating with the Government of India to uphold this human right, which is essential for healthy, productive lives free from hunger and malnutrition.

Food security is vital for individual well-being and social stability. Access to food supports peaceful, prosperous communities. The **FAO's 2024 report estimates that 733 million people face hunger**, highlighting the urgency of addressing food insecurity.

India's Green Revolution was crucial for food availability. Now, the focus includes nutrition, which is vital for children's development and economic productivity. Initiatives such as the **White Revolution in milk** and the **Blue Transformation in fisheries** have transformed India's agrifood system. These efforts highlight the need for diverse food sources, ensuring safe and nutritious food for everyone. We can address inequalities and empower marginalised communities by prioritising the right to food and nutrition security.

India's journey towards food security

India has made significant strides in food security over the past 60 years. Once a food-deficient nation, it has transformed itself into a food-surplus country, driven by the Green Revolution, effective policies, advancements from institutions such as the **Indian Council of Agricultural Research**, and improved supply chains. Millions have contributed to ensuring reliable food access for India's growing population, even in these challenging times.

A key pillar of India's food security is the **National Food Security Act (NFSA) of 2013**, which provides food entitlements to over **800 million citizens**. Prime Minister Narendra Modi recently approved the **distribution of fortified rice from July 2024 to December 2028**, reflecting India's commitment to improving nutrition and food security.

Takayuki Hagiwara

the Food and Agriculture Organization of the United Nations (FAO) Representative in India

Han Ulaş Demirag

International Fund for Agricultural Development (IFAD), Country Director and Representative Asia Hub

Elisabeth Faure

World Food Programme (WFP) India Country Director and Representative

Addressing food inequality and ensuring that everyone has access to nutritious food are essential steps

India's food safety systems reflect a strong commitment to preventing hunger among its citizens. The effective collaboration between national policies and local initiatives showcases the robustness of the country's food security framework. As India advances, these systems will be crucial for **fostering resilience to future environmental, economic, or health-related issues**.

Challenges in the agriculture sector

While India's agricultural sector is the cornerstone of its economy, it faces several challenges. **Of its 93.09 million agrarian households, approximately 82% are small and marginal farmers holding less than two hectares of land**. These farmers encounter various difficulties that impact productivity and rural livelihoods.

Natural resource degradation challenges us. **Overusing groundwater strains water tables while chemical fertilizers and monocropping harm soil and agricultural productivity**. Ongoing improvements in water usage and soil management are crucial. **Fragmented landholding limits smallholder farmers' adoption of modern techniques, reducing productivity and income**. Enhancing access to appropriate technologies is vital.

Improving market access is also crucial. Many smallholder farmers need help accessing markets effectively due to infrastructure limitations and supply chain inefficiencies. By facilitating better links between production and markets, farmers can increase their incomes and reduce food waste.

Rural poverty and inequality also present ongoing challenges. Ensuring that **small and marginal farmers can access financial services, technology and modern irrigation systems will be vital for improving agricultural productivity and enhancing their livelihoods**.

While climate change continues to pose risks to agriculture, including erratic weather patterns, addressing these risks through sustainable agricultural practices such as water conservation and soil health restoration can help to build resilience in farming communities.

The Rome-based agencies and the Government of India also promote natural resource

management, market access and modern agricultural practices. By providing education, technology, financial support and resources to vulnerable communities, we aim to empower smallholder farmers and create a sustainable agricultural system that ensures food security and rural prosperity.

The Right to Food extends beyond agriculture and touches the lives of all citizens, including the millions living in non-agricultural households. Access to safe, nutritious and affordable food is a fundamental human right for all, regardless of employment or location. With increasing urbanisation, ensuring food security for non-farming families is as important as supporting rural farmers.

Food availability for non-agricultural households relies on a resilient food system. Addressing food inequality and ensuring everyone has access to nutritious food, especially in urban areas, are essential. Strong social safety nets and market interventions are crucial for stabilising prices and supporting the most vulnerable.

Through the Public Distribution System, India has made significant progress in ensuring food access across agricultural and non-agricultural households. Continued efforts are necessary to address food access inequalities and ensure that everyone benefits from India's agricultural advancements.

Collective responsibility

On World Food Day 2024, we are reminded that **ensuring food access is not just about increasing production but also building equitable, resilient, and sustainable agrifood systems that work for everyone**. The partnership between the FAO, the IFAD, the WFP, and the Government of India underscores our collective responsibility to achieve food security.

We must continue to support both farmers and non-agricultural families, strengthen livelihoods, and reduce food inequalities, ensuring that no one is left behind in our collective responsibility to achieve the foundation for a healthier, more prosperous, and peaceful society where everyone can contribute to and benefit from a better life and a better future.



Food access is about equitable agrifood systems

- October 16, 2024, is World Food Day with the theme 'right to foods for a better life and a better future.'
- The theme emphasizes the importance of access to safe, nutritious, and affordable food for all.
- The Food and Agriculture Organization (FAO), International Fund for Agricultural Development (IFAD), and World Food Programme (WFP) are collaborating with the Government of India to uphold this human right.
- Food security is vital for individual well-being and social stability, supporting peaceful and prosperous communities.

- The FAO's 2024 report estimates that 733 million people face hunger, highlighting the urgency of addressing food insecurity.
- India's Green Revolution significantly improved food availability; current focus includes nutrition for children's development and economic productivity.
- Initiatives like the White Revolution in milk and the Blue Transformation in fisheries have transformed India's agrifood system.
- There is a need for diverse food sources to ensure safe and nutritious food for everyone.
- Prioritizing the right to food and nutrition security can address inequalities and empower marginalized communities.
- Over the past 60 years, India has made significant strides in food security, evolving from a food-deficient to a food-surplus nation.
- This transformation was driven by the Green Revolution, effective policies, advancements from the Indian Council of Agricultural Research, and improved supply chains.
- The National Food Security Act (NFSA) of 2013 is a key pillar, providing food entitlements to over 800 million citizens.
- Prime Minister Narendra Modi recently approved the distribution of fortified rice from July 2024 to December 2028, reflecting a commitment to improving nutrition and food security.
- India's food safety systems demonstrate a strong commitment to preventing hunger, showcasing effective collaboration between national policies and local initiatives.
- These systems will be crucial for fostering resilience to future environmental, economic, or health-related challenges as India advances.

Challenges in the agriculture sector

- India's agricultural sector is vital to its economy, facing multiple challenges.
- Out of 93.09 million agrarian households, approximately 82% are small and marginal farmers with less than two hectares of land.
- These farmers face difficulties that affect productivity and rural livelihoods.
- Natural resource degradation is a major challenge, with overused groundwater and harmful effects of chemical fertilizers and monocropping on soil.
- Improvements in water usage and soil management are essential.
- Fragmented landholding limits the adoption of modern techniques among smallholder farmers, decreasing productivity and income.
- Enhancing access to appropriate technologies is critical.
- Improving market access is vital as many smallholder farmers struggle with infrastructure limitations and supply chain inefficiencies.
- Better links between production and markets can increase farmers' incomes and reduce food waste.

- Rural poverty and inequality persist, necessitating access to financial services, technology, and modern irrigation for small and marginal farmers.
- Climate change poses risks like erratic weather patterns, making sustainable practices crucial for resilience.
- The Rome-based agencies and the Government of India promote natural resource management, market access, and modern agricultural practices.
- Education, technology, financial support, and resources for vulnerable communities aim to empower smallholder farmers and create sustainable agricultural systems.
- The Right to Food is a fundamental human right affecting all citizens, including those in non-agricultural households.
- Access to safe, nutritious, and affordable food is essential, especially amid increasing urbanization.
- A resilient food system is necessary for food availability in non-agricultural households.
- Addressing food inequality and ensuring access to nutritious food in urban areas is critical.
- Strong social safety nets and market interventions are necessary for stabilizing prices and supporting the vulnerable.
- The Public Distribution System has improved food access for agricultural and non-agricultural households.
- Continued efforts are needed to address food access inequalities and ensure equitable benefits from agricultural advancements.
- On World Food Day 2024, the focus is on building equitable, resilient, and sustainable agrifood systems for everyone.
- The partnership between FAO, IFAD, WFP, and the Government of India emphasizes collective responsibility for food security.
- Support for both farmers and non-agricultural families is essential to strengthen livelihoods and reduce food inequalities.
- The aim is to create a healthier, more prosperous, and peaceful society where everyone can contribute to and benefit from a better future.

Food and Agriculture Organization (FAO)

The **Food and Agriculture Organization** (FAO) is a specialized agency of the United Nations that leads international efforts to combat hunger, improve nutrition, and ensure food security. Established on **October 16, 1945**, in **Quebec City, Canada**, its headquarters are located in **Rome, Italy**. The FAO's mission is to achieve food security for all and ensure that people have regular access to enough high-quality food to lead active, healthy lives.

Key Objectives of FAO:

1. **Eradicate Hunger, Food Insecurity, and Malnutrition:** FAO works to ensure that every individual has access to sufficient, safe, and nutritious food.
2. **Make Agriculture, Forestry, and Fisheries More Productive and Sustainable:** The organization advocates for sustainable agriculture practices that are resilient to climate change and biodiversity loss.
3. **Reduce Rural Poverty:** FAO promotes rural development and supports farmers, particularly smallholders, to enhance their livelihoods.
4. **Enable Inclusive and Efficient Agricultural and Food Systems:** FAO facilitates global trade and market systems to make food supply chains more efficient and resilient.
5. **Increase Resilience to Crises:** FAO helps countries prepare for and respond to crises that impact food and agriculture, including natural disasters and conflicts.

Major Programs and Initiatives

- **Global Food Price Monitoring:** FAO provides reports like the **Food Price Index** to track and analyze food price fluctuations globally. This helps governments, producers, and consumers in making informed decisions.
- **Sustainable Development Goals (SDGs):** FAO plays a crucial role in achieving **SDG 2 (Zero Hunger)** by 2030. It coordinates efforts to reduce hunger, promote sustainable agriculture, and ensure food security across the globe.
- **Locust Control Operations:** FAO has led major efforts in managing locust swarms, especially in regions like Africa and South Asia. In 2020, FAO mobilized resources to combat the worst desert locust outbreak in East Africa in decades, thereby saving millions of livelihoods.
- **Globally Important Agricultural Heritage Systems (GIAHS):** FAO identifies and supports traditional agricultural systems that have sustained communities for centuries, ensuring their preservation and resilience.

FAO and India

India has a long-standing partnership with the FAO. India was one of the founding members, and over the years, FAO has assisted in various sectors:

- **Green Revolution:** FAO played a pivotal role during India's Green Revolution in the 1960s by providing technical assistance and policy support to boost wheat and rice production, making India self-sufficient in food grains.
- **Pradhan Mantri Fasal Bima Yojana (PMFBY):** FAO collaborates with India in policy planning and development, such as offering advice on crop insurance schemes like PMFBY.

Recent Updates and Data (as of 2023-24):

- According to **FAO's 2023 report**, around **828 million people** globally still suffer from hunger, marking an increase from the pre-pandemic period due to ongoing conflicts, climate change, and economic downturns.
- FAO's **Food Price Index** for September 2024 indicated a **2% increase in global food prices** compared to the previous year, driven by geopolitical tensions and climate anomalies affecting production in several countries.
- **FAO's State of Food Security and Nutrition (SOFI) Report 2023** indicated that **Asia** remains home to the majority of undernourished people globally, and the impact of COVID-19 and climate-related disruptions is still felt strongly in South Asia.

Key Data on Agriculture and Food Security:

- **Agriculture's Role:** Agriculture provides livelihood to about **60-70%** of the population in developing countries, with more than **80%** of farms being smallholder farms.
- **Global Hunger Index (GHI) 2023:** The world is not on track to eliminate hunger by 2030, and many countries in Africa and Asia are facing alarming levels of food insecurity. India ranks **107th out of 121 countries** in the GHI, highlighting ongoing food insecurity challenges.

Sufferers, awarded

The Peace Nobel this year should stir debates on nuclear disarmament

Seventy-nine years after Hiroshima and Nagasaki were subject to unprecedented devastation following the U.S.'s act of dropping atomic bombs on these cities, **Nihon Hidankyo**, the organisation that worked for the welfare of the survivors – called the **hibakusha** – and steadfastly sought to build consensus on the need for the abolition of nuclear weapons, has been awarded the Nobel Peace Prize for 2024. Today, there are barely more than a lakh survivors of the bombings, with the average age of the hibakusha more than 86 years. An estimated 1.5 lakh people died due to the bombings, and many more later due to the after-effects of the exposure to radioactivity. The horrors of the atomic bombings and the inaction by the post-war government, largely due to U.S. censorship of news of the suffering of the hibakusha, crystallised in the formation of the Hidankyo which lobbied and agitated for medical and welfare benefits to the hibakusha and took a steadfast position against atomic weapons. This is emphasised in their slogan, “no more hibakusha”. Besides their activism in Japan, the Hidankyo also went on tours to several countries, including India, to share their suffering and sensitise the world to the horrors of the use of atomic weapons. The Nobel Committee must be commended for recognising the Hidankyo, whose activism as some scholars aver, helped shift the political discourse in Japan towards greater democracy and justice and sensitise the public to the doctrine of pacifism, which was incorporated into Japan's Constitution after its defeat in the Second World War.

Yet, despite the activism of anti-war organisations and social movements – in these the selflessness of the Hidankyo and the fact that they were the direct sufferers of the use of atomic weapons stand out – nuclear states continue to deploy weapons in their arsenal and use them for sabre-rattling. A case in point is Russia's recent and unambiguous statement that it will not hesitate to use its nuclear weapons to retaliate against a conventional attack and its use of this threat to brazenly prolong its invasion of Ukraine. There is also the fact that countries such as Israel have surreptitiously acquired nuclear weapons, leading to a nuclear arms race in volatile regions such as West Asia. Existing mechanisms for nuclear non-proliferation also seem to be vitiated by geopolitics even as the nuclear powers have shown little appetite for serious disarmament. Against such a sad reality, the recognition for the Hidankyo, whose hibakusha members are in the evening of their lives, should at least remind the world yet again about the horrors of atomic bomb attacks and stir a debate on meaningful nuclear disarmament.

Sufferers, awarded

The Peace Nobel this year should stir debates on nuclear disarmament

- Nihon Hidankyo, an organization for the welfare of atomic bomb survivors (hibakusha), has been awarded the 2024 Nobel Peace Prize.
- Seventy-nine years after the bombings of Hiroshima and Nagasaki, there are over a lakh survivors, with an average age exceeding 86.
- Approximately 1.5 lakh people died due to the bombings, with many more suffering from after-effects of radioactivity.
- The horrors of the atomic bombings and government inaction, influenced by U.S. censorship, led to the formation of Hidankyo.
- Hidankyo lobbied for medical and welfare benefits for hibakusha and advocates against atomic weapons with the slogan “no more hibakusha.”
- They also toured countries, including India, to share their experiences and raise awareness about the impact of atomic weapons.
- The Nobel Committee is praised for recognizing Hidankyo’s efforts, which some scholars argue helped shift Japan's political discourse toward democracy and justice.
- Despite anti-war activism and the unique position of Hidankyo as direct victims, nuclear states continue to maintain and threaten the use of nuclear weapons.
- Russia's recent statement indicates a willingness to use nuclear weapons in response to conventional attacks, particularly in relation to its invasion of Ukraine.
- Countries like Israel have covertly acquired nuclear weapons, contributing to a nuclear arms race in unstable regions like West Asia.
- Existing nuclear non-proliferation mechanisms are undermined by geopolitics, and nuclear powers show little interest in serious disarmament.
- The recognition of Hidankyo serves as a reminder of the horrors of atomic bomb attacks and aims to stimulate debate on meaningful nuclear disarmament.

Half of UAPA investigations pending for over three years

While stalled investigations are par for the course, the draconian nature of the UAPA makes the process the punishment

- Recent developments highlight issues related to prolonged detentions, stalled investigations, and delays in bail under the Unlawful Activities (Prevention) Act (UAPA), 1967.

- On October 12, former Delhi University Professor G.N. Saibaba died months after being acquitted in a UAPA case, following a decade in prison.
- Umar Khalid, a Jawaharlal Nehru University student arrested under the UAPA four years ago, had his bail plea postponed again due to judges being on leave.
- Last month, the Supreme Court granted bail to a UAPA accused who had been in prison for over four years, citing delays in the trial.
- The Supreme Court made observations regarding bail denials and trial delays in UAPA cases twice this year.
- In August, the Court stated that “bail is the rule and jail is the exception,” even for UAPA offences.
- In September, the Court noted that the more severe the offence and the stricter the bail conditions, the faster the trial should be conducted.
- Data indicates that half of the UAPA cases filed were pending at various stages of police investigation for over three years as of the end of 2022.
- This represents the second-highest share across 122 crime categories, including murder and gambling.
- Over 2,020 UAPA cases were pending investigation for over three years, making up 50% of the total 4,037 UAPA cases pending at that time.
- The UAPA has a notably high share of cases pending for more than three years compared to other laws.
- Cases under the Forgery and Counterfeiting Act, 1981 (57%) and Passports Act, 1967 (43%) had the next highest shares of prolonged pending investigations.
- The share of UAPA cases pending for over three years increased from 40% at the end of 2019 to 50% at the end of 2022.
- Chart 3 presents data on arrests under the UAPA from 2017 to 2022, including those charge sheeted, discharged, acquitted, and convicted.
- It’s important to note that the individuals arrested during this period may differ from those convicted or acquitted.
- The data indicates that the number of convictions, acquittals, and discharges accounted for less than 10% of the total arrests, highlighting delayed trials.
- Stalled police investigations and delayed trials are common in the Indian justice system.
- The UAPA is considered draconian because individuals arrested under it are rarely granted bail.
- Chart 4 details the number of people arrested under the UAPA between 2018 and 2020, including those convicted, acquitted, granted bail, and those not categorized.
- The same caveat about overlapping individuals applies to Chart 4.
- Among those arrested under the UAPA, 23% were granted bail, 3% were convicted, and 7% were acquitted.
- The remaining 67% of those arrested remained in jail without being categorized as either convicted or acquitted.

- Together, the charts illustrate that in UAPA cases, the legal process itself acts as a form of punishment.

A Nobel for explaining why nations fail

According to the three Nobel prize winners, why are some countries rich and some others poor? What is the difference between 'inclusive' and 'extractive' institutions? Why did colonial powers set up extractive systems in some colonies and inclusive ones in others?

GS Paper III: Inequality

EXPLAINER

Prashanth Perumal

The story so far:

The 2024 Economics Nobel prize was awarded to U.S. economists Daron Acemoglu, Simon Johnson and James A. Robinson on Monday "for studies of how institutions are formed and affect prosperity." The prize committee credited the winners for enhancing our understanding of the root causes of why countries fail or succeed.

What is their work's significance?

Why are some countries rich while others are poor is a question that has been debated by economists for a long time now. According to the Nobel committee, the richest 20% of countries in the world today are 30 times richer in terms of average income than the poorest 20%. Ever since the Industrial revolution led to the "Great Divergence" in living standards between the East and the West, various theories have been proposed to explain the huge difference in living standards in rich versus poor countries.

Some blame Western colonialism as the primary reason for the Western world's prosperity even today. Other scholars have argued that disparities in natural resource endowment explains differences in economic prosperity across countries. Some others have argued that intelligence and even historical accidents could explain a nation's fate.

The 2024 Nobel laureates, however, have argued that differences in the quality of economic and political institutions is what best explains the divergence in the economic fates of countries. This thesis is most famously elaborated in the 2012 book *Why Nations Fail: The Origins of Power, Prosperity, and Poverty* written by Daron Acemoglu and James A. Robinson, and also in the 2004 paper 'Institutions as a Fundamental Cause of Long-Run Growth', written together by all three of



Rules of the game: Members of the Nobel Assembly announce the Swedish Riksbank's prize in economic sciences in memory of Alfred Nobel 2024 in Stockholm, Sweden on October 14. REUTERS

this year's Nobel laureates.

Why is the quality of institutions so important?

According to Douglass North, a Nobel laureate and a pioneer of New Institutional Economics, institutions are the "rules of the game" that define the incentives of human individuals. For example, institutions that stop the state from seizing the property of honest citizens would give ordinary citizens the incentive to work hard without the fear of expropriation and that in turn would lead to general economic prosperity.

Institutions that legalise expropriation, on the other hand, would affect individual incentives negatively and cause economic

stagnation.

Now, Acemoglu and Johnson argued in their book that institutions can either be "inclusive" or "extractive". Inclusive institutions are characterised by secure private property rights and democracy while extractive institutions are marked by insecure private property rights and the lack of political freedom. They tried to empirically demonstrate that inclusive institutions lead to long-run economic growth and higher living standards while extractive institutions lead to economic degradation and poverty.

To this end, they studied the kinds of institutions that colonists set up in different colonies and the impact that this had on the long-term economic fate of

these colonies. When a colonial power did not want to settle in a certain country for various reasons (such as higher mortality rates due to geography), it set up institutions that were extractive in nature and inimical to long-term economic growth. This may have been the case in India where the British set up institutions that were mostly devised to plunder resources within a short span of time rather than promote long-term economic growth. But in countries where colonists wanted to settle for the long-run, they set up inclusive institutions that encouraged investment and long-term economic growth over short-term plunder. This may have been the case in the U.S. where the British set up inclusive institutions that promoted long-term economic prosperity.

It should be noted that institutions can also include factors like culture, which influence the more explicit "rules of the game" expressed by political and economic institutions.

Why don't we have more inclusive institutions?

The Nobel laureates have also shed light on why inclusive institutions, which are found to be extremely important for long-term economic growth, have not been adopted by more countries in the world. They attribute this to the different choices that rulers face in their respective countries. When the rulers of a country are able to safely extract sufficient resources for their personal gains through extractive institutions, the laureates argue, they have little reason to bring in political and economic reforms (or inclusive institutions) that can benefit the wider population over the long run. In such cases, extractive institutions may prevail for a really long time as long as the masses do not revolt against the status quo. But if there is a real threat of a popular uprising against extractive institutions, at least some rulers may decide to yield to popular demand and reluctantly set up more inclusive institutions which aid economic growth.

THE GIST

According to the Nobel committee, the richest 20% of countries in the world today are 30 times richer in terms of average income than the poorest 20%.

Inclusive institutions are characterised by secure private property rights and democracy while extractive institutions are marked by insecure private property rights and the lack of political freedom.

The Nobel laureates have shed light on why inclusive institutions, which are found to be extremely important for long-term economic growth, have not been adopted by more countries in the world.

A Nobel for explaining why nations fail

According to the three Nobel prize winners, why are some countries rich and some others poor? What is the difference between 'inclusive' and 'extractive' institutions? Why did colonial powers set up extractive systems in some colonies and inclusive ones in others?

- The 2024 Economics Nobel Prize was awarded to U.S. economists Daron Acemoglu, Simon Johnson, and James A. Robinson for their studies on how institutions are formed and affect prosperity.
- The prize committee recognized their contributions to understanding the root causes of national success or failure.
- The question of why some countries are rich while others are poor has long been debated by economists.
- The Nobel committee noted that the richest 20% of countries are 30 times richer in average income than the poorest 20%.
- The Industrial Revolution led to a “Great Divergence” in living standards between the East and the West, prompting various theories to explain these differences.
- Some theories blame Western colonialism for the prosperity of the Western world.
- Other scholars attribute differences in economic prosperity to disparities in natural resource endowment.
- Some argue that intelligence and historical accidents could explain a nation's fate.
- The 2024 Nobel laureates assert that differences in the quality of economic and political institutions best explain the economic divergence between countries.
- This thesis is elaborated in their 2012 book *Why Nations Fail: The Origins of Power, Prosperity, and Poverty* by Acemoglu and Robinson.
- Their arguments are also presented in the 2004 paper titled "Institutions as a Fundamental Cause of Long-Run Growth," co-authored by all three laureates.

Why is the quality of institutions so important?

- According to Douglass North, institutions are the "rules of the game" that define individual incentives.
- Institutions that protect property rights encourage citizens to work hard, leading to economic prosperity.
- Conversely, institutions that allow expropriation negatively impact individual incentives and result in economic stagnation.
- Acemoglu and Johnson categorize institutions as either "inclusive" or "extractive."
- Inclusive institutions feature secure private property rights and democracy, while extractive institutions lack these features.
- Their research shows that inclusive institutions promote long-term economic growth and higher living standards, whereas extractive institutions lead to poverty and economic degradation.
- They examined the types of institutions established by colonists in different colonies and their long-term economic impacts.
- In areas where colonial powers did not intend to settle (due to factors like high mortality rates), extractive institutions were set up, hindering long-term growth.

- An example is India, where British institutions were primarily designed for resource extraction rather than promoting sustainable economic development.
- In contrast, in regions where colonists wanted to settle (like the U.S.), inclusive institutions were created to encourage investment and long-term growth.
- Institutions also encompass cultural factors that influence the explicit rules defined by political and economic systems.
- The laureates address why more countries do not adopt inclusive institutions despite their importance for growth.
- They suggest that rulers often prefer extractive institutions that allow them to safely extract resources for personal gain.
- When rulers benefit from extractive systems, they have little incentive to implement reforms that would establish inclusive institutions for the broader population.
- Extractive institutions may persist as long as there is no significant public opposition.
- However, if there is a threat of popular uprising, some rulers may respond by adopting more inclusive institutions to appease demands for economic growth.

On the need to make more containers to boost trade

Does India have a shortage of containers for the swift transport of goods?

GS Paper III: Trade

N. Bhanu Prakash

The story so far:

India's rapid trade growth is planned around the containerised transport of goods. However, there is a key logistical bottleneck. India just does not make enough containers.

How important are containers?

Containers can seamlessly be transported via rail, ship and road. It revolutionised world trade by rapidly cutting transportation time, port delays and so on. It can be said that the untold story of swift trade movements that have enabled globalisation is actually the containerisation of goods. Container boxes are standardised in dimensions and cargo-carrying capacities. Once the cargo is stuffed inside the container and sealed, the boxes can be moved over long distances without any disturbance.

What is the scene in India?

India has sought to increase container

handling capacity in various ports to boost exports. Ambitious new ventures such as the VadHAVAN and Galathea Bay ports as well as the multimodal India Middle East Europe Economic Corridor are built around containers. India's container market is expected to more than double from 11.4 million TEU (twenty-foot equivalent unit) in 2023 to 26.6 million TEU by 2028.

India manufactures around 10,000 to 30,000 container boxes a year and this production can support only a fraction of the projected doubling. China, in comparison, manufactures 2.5 to 3 million container boxes per year. In India, it takes \$3,500 to \$4,800 to make one container whereas in China it costs \$2,500 and \$3,500. India therefore has to lease the container boxes, mostly from China. All our plans for ramping up trade are put at risk by inadequate container production within India. Moreover, shortage of containers often jacks up freight rates in the country, with congestion at Indian ports also increasing. Indian ports are at a strategic location on

the East-West trade route but cannot aspire to be hub ports because of container shortage. As a result, Colombo, Dubai and Hong Kong draw mother ship traffic, not Indian ports. Indian shippers are forced to depend on short distance feeder vessels where the providers of containers do not see much business and profits. This in turn, leads to higher tariff for our shippers.

The crisis in West Asia often casts a shadow on ship traffic through Suez Canal. Circumnavigating Africa lengthens voyages by 10 to 15 days and container availability takes a hit as a result. The Russia-Ukraine war has led to closure of some ports, changes in routes and insurance costs, as well as enhanced container freight rates. Piracy has also increased freight costs. In these conditions, it makes sense to build a large and secure supply of container boxes.

What can the government do?

The government has come up with Make In India initiatives to promote indigenous production of container boxes either in

PPP mode between the Container Corporation of India and private players or by directly incentivising private production. Direct subsidy and viability gap funding are two support measures available with the government.

A few more measures can help. A reduction in the charges of repositioning and storing empty containers can help ease the shortage of containers. Enhancing container yard capacities at Indian ports can promote business. The key would be to ensure that when scaled up, the cost of production comes down to global levels. The government has mulled Production Linked Incentives (PLI) but they need to be implemented.

Incentives, including relaxation of GST to the manufacturers of raw materials required for containers will help in reducing input costs of container production. Incentives to Indian shippers using Indian containers and facilitating long-term contracts between shippers and Indian container manufacturers can build market confidence. Mandating the use of Indian-made containers enhances domestic demand resulting in better prospects for the sector. The development of a tracking and tracing mechanism of containers through a Unified Logistics Interface Platform and Logistics Data Bank by the government can reduce the turnaround time of export containers and ease their shortage.

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On the need to make more containers to boost trade

Does India have a shortage of containers for the swift transport of goods?

- India's rapid trade growth relies on the containerised transport of goods, but there is a significant logistical bottleneck due to insufficient container production.
- Containers can be easily transported via rail, ship, and road, revolutionising world trade by reducing transportation time and port delays.
- The standardisation of container dimensions and cargo capacities allows for long-distance movement without disturbance once sealed.
- India aims to increase container handling capacity at various ports to boost exports, with new projects like Vadhavan and Galathea Bay ports and the India Middle East Europe Economic Corridor focused on containers.
- India's container market is expected to grow from 11.4 million TEU (twenty-foot equivalent unit) in 2023 to 26.6 million TEU by 2028.
- Current production in India is about 10,000 to 30,000 container boxes annually, which only supports a fraction of the projected increase.
- In contrast, China manufactures 2.5 to 3 million container boxes per year.
- The cost to produce one container in India is \$3,500 to \$4,800, compared to \$2,500 to \$3,500 in China.
- India often has to lease containers from China due to inadequate domestic production.
- The lack of container production threatens India's plans for expanding trade and raises freight rates due to container shortages and port congestion.
- Indian ports, strategically located on the East-West trade route, cannot become hub ports because of the container shortage, leading to reliance on ports like Colombo, Dubai, and Hong Kong.
- Indian shippers depend on short-distance feeder vessels, which do not provide enough business or profits for container suppliers, resulting in higher tariffs for shippers.
- The crisis in West Asia affects ship traffic through the Suez Canal, lengthening voyages by 10 to 15 days and further impacting container availability.
- The Russia-Ukraine war has caused port closures, route changes, increased insurance costs, and higher container freight rates.
- Increased piracy has also contributed to higher freight costs.
- Given these challenges, building a large and secure supply of container boxes is essential for India.

What can the government do?

- The government has initiated the Make In India program to promote indigenous production of container boxes.
- This initiative involves Public-Private Partnerships (PPP) between the Container Corporation of India and private players, as well as direct incentives for private production.

- Support measures include direct subsidies and viability gap funding.
- Additional measures to ease container shortages include reducing charges for repositioning and storing empty containers.
- Enhancing container yard capacities at Indian ports can further promote business.
- It is essential to ensure that scaling up production reduces costs to global levels.
- The government is considering Production Linked Incentives (PLI), which need to be implemented effectively.
- Providing incentives, such as GST relaxation for manufacturers of raw materials for containers, can lower input costs.
- Incentives for Indian shippers using domestically produced containers and facilitating long-term contracts between shippers and manufacturers can build market confidence.
- Mandating the use of Indian-made containers would enhance domestic demand and improve the sector's prospects.
- Developing a tracking and tracing mechanism for containers through a Unified Logistics Interface Platform and Logistics Data Bank can reduce turnaround time for export containers and alleviate shortages.