

# DAILY PT POINTERS

29<sup>th</sup> April, 2024



The Hindu-Art and Culture(GSI)-Page 5

## Palace to unveil true copy of Ravi Varma's Indulekha



**A rare treasure:** Indulekha emerged in the public domain in 2022.

**The Hindu Bureau**  
THIRUVANANTHAPURAM

lone true copy of the painting.

- The first true copy of the painting *Indulekha* by legendary artist Raja Ravi Varma will be unveiled at the Kilimanoor Palace, where the artist was born in 1848, on the occasion of his 176th birth anniversary celebrations.
  - *Indulekha*, the protagonist of the first modern novel in Malayalam literature by O. Chandu Menon published in 1889, emerged in the public domain in 2022 and evoked a great sense of enthusiasm among the art fraternity.
- Raja Ravi Varma was one of the first artists who tried to create a style that was both modern and national
- He mastered the Western art of oil painting and realistic life study, but painted themes from Indian mythology.



## The Hindu-Defense(GSIII)-Page 8

### The significance of carrier aviation

Why is the success of the INS Vikrant important? Who were involved in the development of DMR-249 steel? Is India on its way to get a 'third' aircraft carrier? Why is it important that the country should have a strong naval presence in the Indian Ocean Region (IOR)?

#### EXPLAINER

Dinakar Peri

#### The story so far:

**I**n March 5, both aircraft carriers of the Indian Navy, INS Vikramaditya and INS Vikrant, showcased "twin carrier operations" with MiG-29K fighter jets taking off simultaneously from both and landing cross deck as Defence Minister Rajnath Singh looked on from onboard one of them. This demonstrated an ability that only a handful of nations can boast of. Further one of the carriers, INS Vikrant is indigenously designed and constructed. Commissioned in September 2022, INS Vikrant has been fully operationalised and integrated into the operational cycle in record time. As the two carriers sailed, they were joined by a flotilla of frontline warships of the Indian Navy, a combined tonnage of around 1,40,000 as well as aircraft.

#### What does INS Vikrant signify?

A carrier is a floating city. The design work on the Indigenous Aircraft Carrier (IAC)-1, later christened Vikrant, began in 1999; however 2005-2006 were probably the most crucial years for the carrier and



#### THE GIST

The design work on the Indigenous Aircraft Carrier (IAC)-1, later christened Vikrant, began in 1999. One of the crucial decisions with respect to Vikrant was on the warship grade steel, which till then was procured from Russia. After much brainstorming, it was decided that it would be developed and produced in India.

Vikrant can operate an air wing of 30 aircraft comprising MiG-29K fighter jets, Kamov-31, MH-60R multi-role helicopters, in addition to indigenous Advanced Light Helicopters and Light Combat Aircraft (Navy).

The Navy has already moved a case for a second Indigenous Aircraft Carrier (IAC-II), a repeat of a Vikrant-like carrier.

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INS Vikrant is designed by Indian Navy's in-house Warship Design Bureau (WDB) and built by Cochin Shipyard Limited, a Public Sector Shipyard under the Ministry of Ports, Shipping & Waterways, Vikrant has been built with with state of the art automation features and is the largest ship ever built in maritime history of India.

The Indigenous Aircraft Carrier is named after her illustrious predecessor, India's first Aircraft Carrier which had played a vital role in the 1971 war.

- Vikrant can operate an air wing of 30 aircraft comprising MiG-29K fighter jets, Kamov-31, MH-60R multi-role helicopters, in addition to indigenous Advanced Light Helicopters and Light Combat Aircraft (Navy). It uses the STOBAR (Short Take-Off but Arrested Recovery) method to launch and recover aircraft for which it is equipped with a ski- jump to launch aircraft, and three 'arrestor wires' for their recovery.

## The Hindu-Economy(GSIII)-Page 10

### India's Chinese import bill up 2.3 times in 15 years

Vikas Dhoot

NEW DELHI


India's imports from China crossed \$101 billion in 2023-24 from about \$70 billion in 2018-19, and the country's share of India's industrial goods imports has risen from 21% to 30% over 15 years, says a report by the Global Trade Research Initiative (GTRI) which reckoned that Chinese imports will rise sharply in coming years.

Goods imports from China have risen 2.3 times faster than India's total imports over 15 years, the GTRI study noted, adding that China is the top supplier in eight major industrial sectors, including machinery, chemicals, pharmaceuticals, and textiles, belying the general perception that Chinese imports are high only in

#### Lion's share

The table lists commodities imported by India, where China accounts for the largest share in total imports

	Commodity	China's share in imports
1	Electronics/ telecom/ electrical products	43.9%
2	Machinery	39.7%
3	Textile and clothing	38.2%
4	Chemicals and pharmaceuticals	26.8%
5	Automobiles	26%



Source: GTRI  
Data as of 2022

the electronics sector.

#### Trade deficit concern

"Growing trade deficit with China is a cause of concern," the think tank said in its report analysing India's growing industrial imports from China. Between 2018-19 and 2023-24, India's exports to China have stagnated around \$16 billion annually while imports have surged, result-

ing in a cumulative trade deficit exceeding \$387 billion over six years, it said.

Earlier this month, the Commerce Ministry had said that India's exports to China have increased in the past year in as many as 90 principal commodities out of the total 161 items shipped to the country. These 90 commodities accounted for 67.7% of India's export basket to Chi-

na and include iron ore, telecom instruments and electronic components.

India's total merchandise imports stood at \$677.2 billion in 2023-24, of which 15% or \$101.8 billion worth goods were sourced from China. Of this, \$100 billion of imports were in major industrial product categories, amounting to 30% of such imports; the share stood over 70% for some products. Fifteen years ago, China's share of the same goods' imports was 21%. GTRI noted the "significant reliance on imports from China across various sectors", citing trends from the first 10 months of 2023-24. Almost 42% of India's textile and clothing imports and 40% of its machinery imports in the period came from China, while the number was 38.4% for electronics, tele-

com and electrical products.

China also accounted for 29.2% of chemicals and pharmaceuticals imports into India, 25.8% of plastic product imports and 23.3% of automobile sector inbound shipments. A lower dependence on China was seen in the case of iron, steel and base metal imports, with just a 17.6% share of inflows coming from the nation.

The strategic implications of this dependency are 'profound' and affect not only economic but national security dimensions, the study said, mooting a reassessment of India's import strategies. "This is imperative not only to mitigate economic risks but also to bolster domestic industries and reduce dependency on single-country imports," it said.

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- Global Trade Research Initiative (GTRI) is a research Group focused on Climate Change, technology and trade
  - GTRI aims to create high-quality and jargon-free outputs for governments and industry from the perspective of development and poverty reduction.

## The Hindu-Geography(GSI)

### Anticyclones, hanging even now over India, link warming to heat

The record warming of 2023 has so far not been fully explained since it was much warmer than expected just from the superposition of El Niño on global warming. But the impact of the El Niño during its pre-monsoon demise on the IIT tends to produce a stronger and more persistent anticyclone and thus longer lasting and intense heat waves

Rajna Marjagade

**T**he complexities of the ways in which global warming manifests in local weather continue to underscore the need to model globally but predict locally. The waning phase of the strong El Niño of 2023 brings the expected warm temperatures across the globe – while cooler temperatures spread from Pakistan across India to West Bengal during March. This band remained cool throughout 2023 even as record temperatures made national headlines.

What do the heat waves have to do with global warming?

Global warming also creates unique features locally that modulate heat waves on top of cool background temperatures. Heat waves over India have been of special concern this season because of the several elections. Some persistent circulation patterns have been causing heat waves and this pattern should serve as another focal point for improving predictions.

It was apparent in March that the anticyclonic circulations over the North Indian Ocean were the drivers of unusual rainfall over eastern India, an anticyclone has made moving in a clockwise direction with air sinking down in the middle of it. As this air hits the ground, it is compressed and warmed and can create a high pressure heat dome. An anticyclonic circulation could also explain the famous 'hot air' bluffs of April 17.

And these anticyclones exist over the North Indian Ocean and the Indian subcontinent even now.

**What links anticyclones to heat?**

The persistence of the anticyclones is not unusual in itself. During the pre-monsoon season, the upper level Indian Westerly Jet (IJ) tends to take shape in the upper atmosphere, at around the 10 degree N latitude, across the Arabian Sea, Persian Gulf, and the Bay of Bengal. A strong westerly jet exists in the north around 10 degrees N, and the two together can generate an anticyclonic pattern over the Indian Ocean and the Indian subcontinent.

An easterly jet refers to strong winds coming from the east while westerly jets come from the west. These are natural seasonal features. The westerly jet is pushed north during the monsoon season and the IJ dominates the Indian subcontinent. During the pre-monsoon season, a strong anticyclone can bring dry and hot weather over many parts of India while a weak anticyclone produces milder weather.

The key question then is whether the entire heat dome that we see and if that



A person rides a bike with a child on the back during a heat wave in Maharashtra.

is related to global warming and, thus, the heat waves.

**How are heat waves amplified?**

The pre-monsoon season in India's summer and heat waves are to be expected. The focus is always on predicting them accurately and providing early warnings to save lives. The background drivers of the duration, intensity, and frequency of heat waves are helpful to identify the hotspots of heat waves at the time relevant to the evolution of the weather and the climate.

The record warming of 2023 has so far not been fully explained since it was much warmer than what we expected just from the superposition of El Niño on global warming. But the impact of the El Niño during its pre-monsoon demise on the IIT tends to produce a stronger and more persistent anticyclone and thus longer lasting and more intense heat waves.

So, the heat wave season this year is consistent with the warmer temperatures due to the El Niño itself as well as the 'westerly' being added by the unexplained warming of 2023.

This background state of cool seasonal temperatures but strong and persistent anticyclone is important. It can help the India Meteorological Department (IMD) and other agencies to make accurate background conditions and build the early warnings accordingly.

**Stages of early warnings**

Interventions for local-scale adaptation of



Some persistent circulation patterns have been creating heat waves and this pattern should serve as another focal point for improving predictions.

global warming, accurate early warning systems take a three-step approach called the 'ready-seg' system, under the so-called 'Subseasonal-to-Seasonal Prediction' project of the World Climate Research Program under the World Meteorological Organization. India is part of this project, has invested heavily in S2S predictions, and has made large-scale progress in improving the accuracy of predictions.

Preparing the system and guiding the National Disaster Management Agency (NDMA) requires this three-step approach to function efficiently and effectively. Considering there are more than 1.2 million polling stations for the general elections this year, the optimal use of resources in preparing for, mitigating, and recovering from extreme events requires location-specific information at each step.

The 'ready' step provides a seasonal outlook – where the background state, or the external factors such as global warming and the El Niño, are used to maximize the accuracy of longer-lead forecasts. The 'ready' step allows the NDMA, its local agencies, and all other stakeholders to ready their disaster

#### THE GIST

Anticyclonic circulations were the drivers of an east rainfall over India. An anticyclone was also moving in a clockwise direction. An anticyclonic circulation could also explain the 'hot air' bluffs of April 17.

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response systems.

The subseasonal prediction refers to the extended range of weeks to a few, which contribute to the 'seg' step. Resource allocations and identifying potential hotspots to move resources including personnel into disaster-preparedness in advance.

The 'seg' step is based on short- (days 1-2) and medium- (days 3-30) range forecasts. At this step, everything from the road to manage a disaster, including rescue efforts, hydration camps, heat shelters, etc.

**Preparedness and recovery**

All evidence suggests India's prediction system and early warning system continues to improve and the NDMA has worked these details well into its 'ready-seg' system.

The remaining challenges are to build resilience for the future by better predicting the trajectory of the weather at every location over India. This is a significant challenge but building efforts for predictions at 30-year timescales have shown promise.

The coordination from national to neighbourhood levels and early warnings from days to a decade are taking shape. Governments, their departments, and the people at large need to be trained and engaged with to make this a sustained success. India's dream of sustained economic development depends on this.

Rajna Marjagade is a visiting professor at IIT Bombay, and an associate professor at the University of Queensland.

- Anticyclones can be defined as a large wind system that rotates about a centre of high atmospheric pressure, clockwise in the northern hemisphere and counter-clockwise in the southern hemisphere. It denotes an atmospheric system just opposite to cyclones.
- anticyclones are characterized by clear and fine weather



## The Hindu- S&T(GSIII)

### Combustion: a question of fuel

**Vasudevan Mukunth**

Internal combustion engines are everywhere, yet they are not a common sight. They power most cars and motorcycles by combusting a fossil fuel like petroleum (although these vehicles are slowly being replaced by electric vehicles).

Combustion is a type of chemical reaction called a redox reaction, short for 'reduction-oxidation'.

Here, one substance loses electrons and the other gains them. The losing substance is called the oxidant. (Historically, the oxidant was a substance that provided oxygen atoms in a reaction. Over time chemists generalised the term to include all substances that participated in a chemical reaction the way oxygen did, by donating electrons.) The gaining substance is called the reductant. During combustion, the fuel is the reductant.

All combustion reactions release energy. Sometimes, the heat energy in this release will vaporise the fuel, producing a flame. The combustion reaction also releases a gaseous mix of highly oxidised matter called smoke. Combustion science is the branch of science devoted to studying combustion.

The combustion of fossil fuels in internal combustion engines and industrial processes is an



Combustion is a type of chemical reaction called a redox reaction. CULLAN SMITH/UNSPASH

important cause of global warming. Combustion scientists study the reaction in different ways — including in space — to understand the different ways it can be controlled and the reaction products made cleaner.



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## Indian Express- Environment(GSIII) –Page 12

# Global treaty on plastic waste

Negotiators and observers from 175 countries including India are currently meeting in Ottawa to thrash out a planet-saving treaty on plastic waste. Here's why such a treaty matters, and why it is not going to be easy

ALIND CHAUHAN  
NEW DELHI, APRIL 28

PLASTIC WASTE is everywhere, from the peak of Mount Everest to the floor of the Pacific Ocean, in the bodies of animals and birds, and in human blood and breast milk.

Last week, thousands of negotiators and observers from 175 countries arrived in Ottawa, Canada, to begin talks on the first global treaty to curb plastics pollution. India is also a part of the talks, and is represented by a senior official from the Union Ministry of Environment, Forest, and Climate Change.

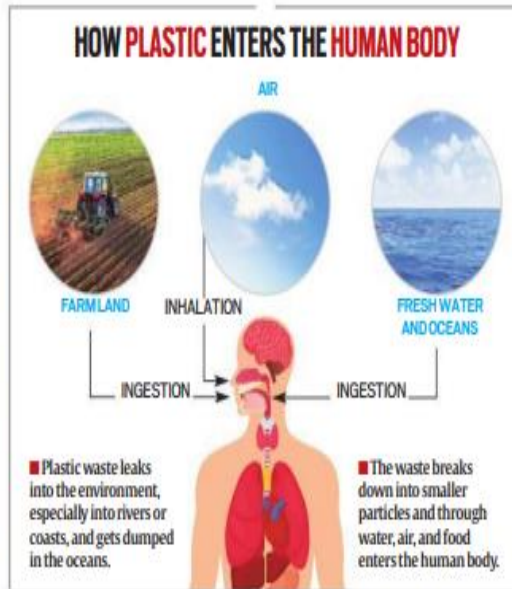
Scheduled to run till April 29, this is the fourth round of negotiations since 2022, when the UN Environmental Assembly agreed to develop a legally binding treaty on plastics pollution by the end of 2024. The final round of negotiations will take place in South Korea in November.

The proposed plastics treaty could be the most important environmental accord since the 2015 Paris Agreement on climate change, in which nations agreed to cut greenhouse gas (GHG) emissions.

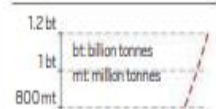
### Why is a global plastic treaty needed?

Since the 1950s, plastic production across the world has skyrocketed. It increased from just 2 million tonnes in 1950 to more than 450 million tonnes in 2019. If left unchecked, production could double by 2050, and triple by 2060.

Although plastic is a cheap and versatile



### GLOBAL PLASTIC PRODUCTION AND PROJECTION



from chemicals sourced from fossil fuels. If current trends continue, emissions from plastic production could grow 20% by 2050, a recent report by Lawrence Berkeley National Laboratory in the United States said.

### What can the plastics treaty entail?

While none of the treaty's details are final yet, experts believe that it can go beyond just

anteed. Some of the biggest oil and gas-producing countries, as well as fossil fuel and chemical industry groups, have been lobbying to narrow the scope of the treaty to focus only on plastic waste and recycling.

As a result, treaty negotiations have been deeply polarising so far. Since the first round of talks in Uruguay in November 2022, oil-producing nations like Saudi Arabia, Russia, and Iran have opposed plastic production caps, and have used a range of delaying tactics such as arguing over procedural matters, to derail constructive dialogue.

Countries are yet to decide if the plastic treaty would be agreed upon by consensus or through a majority vote, according to a report published in the journal *Nature*. Consensus would mean that a single country could veto the treaty, and prevent it from getting passed.

On the other end, there is a coalition of around 65 nations — known as the "High-Ambition Coalition" — which seeks to tackle plastic production. The coalition, which includes African nations and most of the European Union, also wants to end plastic pollution by 2040, phase out "problematic" single-use plastics, and ban certain chemical additives that could carry health risks.

The US has not joined the HAC. While it has said it wants to end plastic pollution by 2040, unlike the HAC, it advocates that countries should take voluntary steps to end plastic pollution. "The underlying reason why the US is not ambitious is we are a fossil gas country," US Senator Jeff Merkley (Democrat from Oregon) told the Associated Press.

- , thousands of negotiators and observers from 175 countries arrived in Ottawa, Canada, to begin talks regarding the very first global treaty to curb plastics pollution. Scheduled to run till April 29, this is the fourth round of negotiations **since 2022, when the UN Environmental Assembly** agreed to develop a legally binding treaty on plastics pollution by the end of 2024. The final round will take place in November this year, in South Korea.
- A global plastics treaty is urgently required to limit plastic's contribution to climate change, biodiversity loss, and pollution.

## Why is a global plastics treaty needed?

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# HEADLINES OF THE DAY

## News on air – Places (GSI)

### Earthquake Of Magnitude 6.9 Strikes Bonin Islands Of Japan



- Ogasawara Islands (also known as the Bonin Islands) are located 1000 km south of the main Japanese mainland. In 2011, the islands were listed as a UNESCO World Heritage site, in recognition of their serving as an outstanding example of the ongoing evolutionary processes in oceanic island ecosystems.

