



1.Ninth Schedule of the Indian Constitution

Topic: Polity and Governance

Schedules	Subject
First Schedule	List of States & Union Territories
Second Schedule	Salary of President, Governors, Chief Judges, Judges of High Court and Supreme court, Comptroller and Auditor General
Third Schedule	Forms of Oaths and affirmations
Fourth Schedule	Allocation of seats in the Council of States.
Fifth Schedule	Provisions as to the Administration and Control of Scheduled Areas and Scheduled Tribes
Sixth Schedule	Provisions as to the Administration of Tribal Areas in the States of Assam, Meghalaya, Tripura and Mizoram.
Seventh Schedule	Gives allocation of powers and functions between Union & States. It contains 3 lists
	1. Union List (For central Govt) 97 Subjects.
	2. States List (Powers of State Govt) 66 subjects
	3. Concurrent List (Both Union & States) 47 subjects.
Eighth Schedule	List of 22 languages of India recognized by Constitution (Assamese , Bengali, Gujarati, Hindi, Kannada, Kashmiri, Manipuri, Malayalam, Konkani, Marathi, Nepali, Oriya, Punjabi, Sanskrit, Sindhi, Tamil, Telugu, Urdu, Santhali, Bodo, Maithili, Dogri)
Ninth Schedule	Added by 1st amendment in 1951, contains acts & orders related to land tenure, land tax, railways, industries.
Tenth Schedule	Added by 52nd amendment in 1985, Provisions as to disqualification on ground of defection.
Eleventh Schedule	By 73rd amendment in 1992, contains Powers, authority and responsibilities of Panchayats.
Twelfth Schedule	By 74th amendment in 1992, contains Powers, authority and responsibilities of Municipalities, etc.

In News: Jharkhand government has urged the Prime Minister to enlist the amended reservation provisions of the state, which provides for 76% reservation in ninth schedule.

More on the Topic

- The 76 per cent reservation breaches the 50 per cent ceiling set by the Supreme Court in the landmark 1992 Indra Sawhney v Union of India verdict.
- However, placing a legislation in the Ninth Schedule shields it from judicial scrutiny.

About Ninth Schedule of the Indian Constitution:

- The Ninth Schedule contains a **list of central and state laws which cannot be challenged in courts.**
- Currently, 284 such laws are shielded from judicial review. Most of the laws protected under the Schedule concern agriculture/land issues.
- The Schedule **became a part of the Constitution in 1951**, when the document was amended for the first time.

- It was created by the new Article 31B, which along with 31A was brought in by the government to protect laws related to agrarian reform and for abolishing the Zamindari system.
- While A. 31A extends protection to ‘classes’ of laws, A. 31B shields specific laws or enactments.

Are laws in the Ninth Schedule completely exempt from judicial scrutiny?

- While the Ninth Schedule provides the law with a “safe harbour” from judicial review, the protection is not blanket.
- When the Tamil Nadu law was challenged in 2007 (**I R Coelho v State of Tamil Nadu**), the Supreme Court ruled that while laws placed under Ninth Schedule **cannot be challenged on the grounds of violation of fundamental rights**, they can be challenged on the ground of **violating the basic structure of the Constitution**.
- The court clarified that **the laws cannot escape the “basic structure” test if inserted into the Ninth Schedule after 1973**, as it was in 1973 that the basic structure test was evolved in the **Kesavananda Bharati case** as the ultimate test to examine the constitutional validity of laws.

Source: Indian Express

2. Indus Water Treaty

Topic: International Relations



In News: A meeting of the steering committee was held to take stock of the ongoing modification process of the Indus Waters Treaty (IWT).

More on the Topic:

- The Indus Waters Treaty is a Waters-sharing agreement signed between India and Pakistan in 1960, under the supervision of the World Bank.



- The **treaty aims to allocate the use of and resolve disputes over the Indus River and its tributaries**, which flow through China, India, and Pakistan.
- **The pact regulates the use and distribution of the Indus River system**, which consists of the main Indus River and its five tributaries - the Ravi, the Beas, the Sutlej, the Jhelum, and the Chenab.

What does the IWT lay out?

- The treaty has a preamble, 12 articles, and eight annexures that provide **India with absolute control over the waters of the eastern rivers - the Ravi, Sutlej, and Beas - while Pakistan receives unrestricted use of the western rivers - the Indus, Jhelum, and Chenab.**
- India can create storage (via hydro-plants) on the western rivers according to the treaty.
- The IWT also establishes a **Permanent Indus Commission (PIC)** consisting of two Commissioners, one from India and one from Pakistan.
- PIC intends to promote cooperation between the two nations and resolve any questions arising from the treaty's interpretation or implementation.
- Once a year, the PIC meets alternately in India and Pakistan and whenever either Commissioner asks to meet.
- As part of its work, PIC also inspects rivers and works to find out what's going on with various developments.

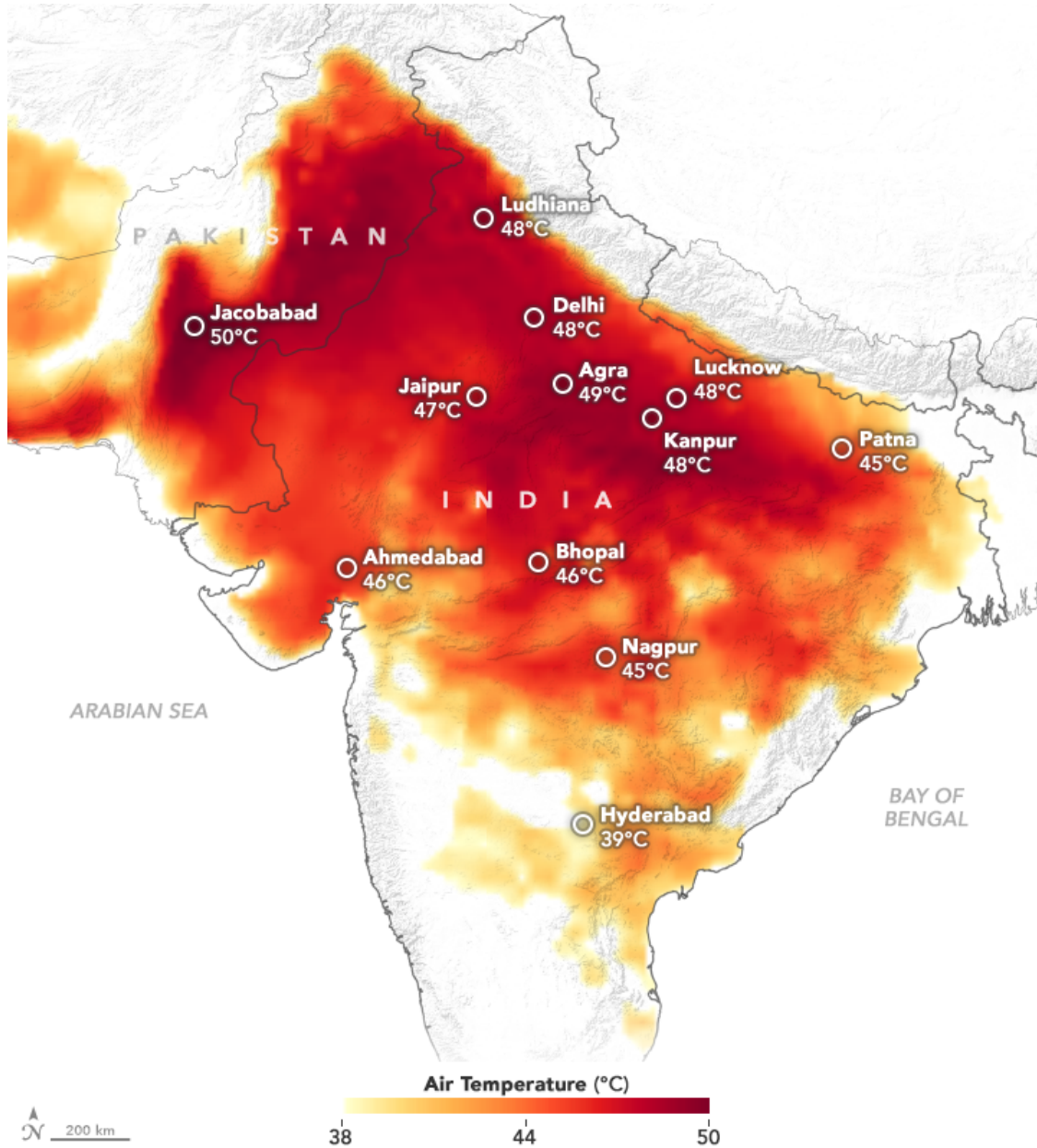
Why has India served a notice to Pakistan, seeking changes to IWT?

- India announced earlier this month, that it wants to modify the 62-year-old Indus Waters Treaty (IWT) with Pakistan, **citing Pakistan's non-cooperation in resolving disputes over the Kishenganga and Ratle hydroelectric power projects, both located in Jammu and Kashmir.**
- Pakistan first raised objections to India's construction of the **Kishenganga hydroelectric project** on the Jhelum river back in 2006, and then **objected to plans to construct the Ratle Hydroelectric Project on the Chenab river as well.**
- Both India and Pakistan do not agree on whether the technical details of the projects conformed with the treaty.
- While Pakistan is in its full right under the treaty to raise these objections, the problem is that **Pakistan betrayed the treaty protocol and instead went to an arbitration court at The Hague.**
- This directly goes against the treaty, which says that the World Bank will appoint a 'neutral expert' to inspect and resolve the argument.

Source: Hindu

3. Heat wave in India

Topic: Geography



In News: The Indian Meteorological Department (IMD) has issued a heat wave alert for states in northern and eastern India amid rising temperatures.

More on the Topic:



- Qualitatively, heat wave is a condition of air temperature which becomes fatal to human body when exposed.
- Quantitatively, it is defined based on **the temperature thresholds over a region in terms of actual temperature or its departure from normal.**
- In certain countries it is defined in term of the heat index based on temperature and humidity or based on extreme percentile of the temperatures.
- Heat wave is considered if maximum temperature of a station reaches at least 40 degree Celsius or more for Plains and at least 30 degree Celsius or more for Hilly regions.
- **a) Based on Departure from Normal**
- Heat Wave: Departure from normal is 4.5 degree Celsius to 6.4 degree Celsius
- Severe Heat Wave: Departure from normal is >6.4 degree Celsius
- **b) Based on Actual Maximum Temperature**
- Heat Wave: When actual maximum temperature \geq 45 degree Celsius
- Severe Heat Wave: When actual maximum temperature \geq 47 degree Celsius
- If above criteria met at least in 2 stations in a Meteorological sub-division for at least two consecutive days and it declared on the second day.
- **criterion for describing Heat Wave for coastal stations:**
- When maximum temperature departure is 4.5 degree Celsius or more from normal, Heat Wave may be described provided actual maximum temperature is 37 degree Celsius or more.

How India Meteorological Department (IMD) monitors the Heat wave?

- IMD has a big network of surface observatories covering entire country to measure various metrological parameters like **Temperature, Relative humidity, pressure, wind speed & direction etc.**
- Based on daily maximum temperature station data, climatology of maximum temperature is prepared for the period 1981-2010 to find out normal maximum temperature of the day for particular station.
- Thereafter, IMD declared heat wave over the region as per its definition.

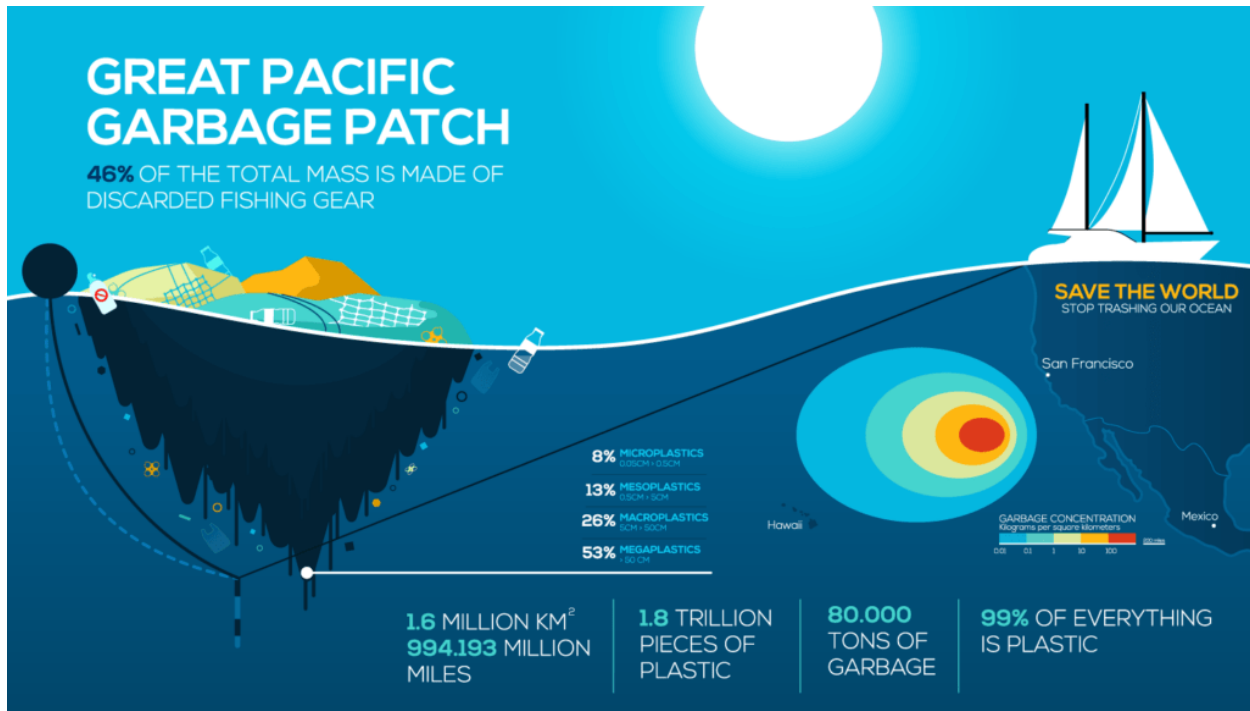
What are favorable conditions for Heat wave?

- **a. Transportation / Prevalence of hot dry air over a region** (There should be a region of warm dry air and appropriate flow pattern for transporting hot air over the region).
- **b. Absence of moisture in the upper atmosphere** (As the presence of moisture restricts the temperature rise).
- **c. The sky should be practically cloudless** (To allow maximum insulation over the region).
- **d. Large amplitude anti-cyclonic flow over the area.**

Source: Hindu

4.The Great Pacific Garbage Patch

Topic: Environment and Ecology



In News: Scientists have found thriving communities of coastal creatures, including tiny crabs and anemones, living thousands of miles from their original home on plastic debris in the Great Pacific Garbage Patch.

More on the Topic:

- The findings suggest **plastic pollution in the ocean might be enabling the creation of new floating ecosystems of species** that are not normally able to survive in the open ocean.
- Unlike organic material that decomposes and sinks within months or, at most, a few years, plastic debris can float in the oceans for a much longer time, giving creatures the opportunity to survive and reproduce in the open ocean for years.
- The Great Pacific Garbage Patch, which is twice the size of Texas, is **the largest accumulation of ocean plastic in the world.**
- The patch is bounded by **an enormous gyre -- the biggest of five huge, spinning circular currents in the world's oceans** that pull trash towards the center and trap it there, creating a garbage vortex.

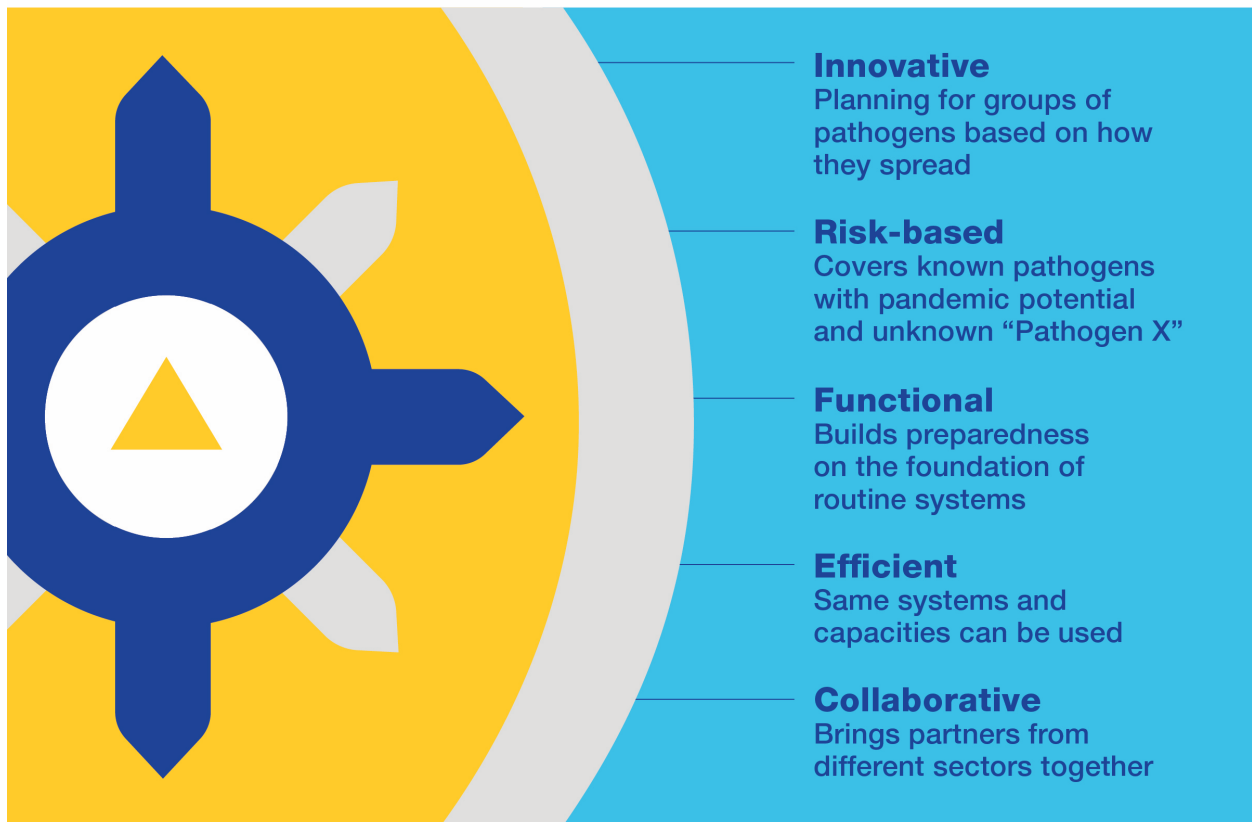
Source: Hindu



5.Preparedness and Resilience for Emerging Threats initiative (PRET)

Topic: Environment and Ecology

The Preparedness and Resilience to Emerging Threats (PRET) initiative helps countries prepare for disease pandemics by being:



In News: To better prepare for the next pandemic, or even better, to prevent it, WHO is launching an initiative PRET to help countries ensure they have the systems and capacities in



place to speed up every aspect of their management of emerging threats, from response and recovery.

More on the Topic:

- PRET operates under the aegis of the International Health Regulations (IHR), which is a critical international legal instrument for managing public health emergencies.
- The aim is to strengthen existing systems and capacities, and to fill gaps. This approach avoids siloes, promotes coherence and efficiency, and helps streamline actions at the time of a pandemic.
- PRET is launching first with a focus on respiratory pathogens.

Source: Business Standard

6. Olkiluoto 3 Nuclear Reactor

Topic: Science and Technology



In News: Finland's much-delayed and costly new nuclear reactor, Europe's most powerful by production capacity, has completed a test phase lasting over a year and started regular output.

More on the Topic:

- The Olkiluoto 3 reactor, which has 1,600-megawatt capacity.

- It will help Finland to achieve **its carbon neutrality targets and increase energy security** at a time when European countries have cut oil, gas and other power supplies from Russia, Finland's neighbour.
- Primarily due to **safety concerns, nuclear power remains a controversial issue in Europe.**
- The launch of the Finnish reactor coincides with Germany's move to shut down its last remaining three nuclear plants recently.

Source: Indian Express


7. Magnetoresistance

Topic: Science and Technology

GRAPHENE: THE CARBON-BASED 'WONDER MATERIAL'

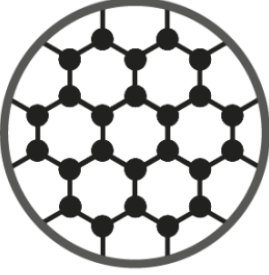
Since its discovery in 2003, graphene has been a hot topic in chemistry and materials science research. It's been linked with water purification, electronics, and biomedical applications. However, how close are we really to using graphene in our day-to-day lives? This graphic looks at its properties, uses, and future.

WHAT IS GRAPHENE?




- SINGLE LAYER OF CARBON ATOMS
- HONEYCOMB-LIKE STRUCTURE
- GRAPHITE IS LAYERS OF GRAPHENE
- ISOLATED IN 2003 IN MANCHESTER

Graphene is a single layer of graphite, the carbon-based material found in pencil leads. Graphite has been known for centuries, but graphene was only isolated in 2003, by shearing layers off of graphite using sellotape. It's a single atom-thick layer of carbon atoms, that are arranged in a flat, hexagonal lattice structure.




POTENTIAL USES OF GRAPHENE




TOUCH SCREENS IN DEVICES

Graphene's transparency and conductivity means that it can be used in displays and touchscreens. However, currently these are more expensive to produce than the currently used material, indium tin oxide.




WATER FILTRATION SYSTEMS

Graphene allows water to pass through it, but not other liquids and gases, so it can be used in water purification. Researchers are working on a device that could be capable of filtering salt from sea water.




IN ELECTRONIC DEVICES

Graphene has been touted as silicon's successor, and has been used to make very fast transistors. However, its conductivity cannot be 'switched off' as silicon's can. Other 2D materials seem more promising.



MEDICAL SENSORS & DRUG DELIVERY


Several biomedical applications are being explored for graphene, including drug delivery, cancer therapy, and its use as a sensor. However, its toxicity profile must be investigated before any clinical uses.




ENERGY STORAGE & COMPOSITES

Graphene-based energy storage devices are possible. It can also substitute for graphite in normal batteries, improving efficiency. Additionally, it can be added to materials to make them stronger and more lightweight.


THE PROPERTIES OF GRAPHENE




HIGH ELECTRICAL CONDUCTIVITY




200X STRONGER THAN STEEL



THIN AND LIGHTWEIGHT



HIGH THERMAL CONDUCTIVITY



VERY HIGH TRANSPARENCY

Graphene's 'wonder material' reputation stems from its superlative properties. It is a million times thinner than a piece of paper, yet stronger than diamond, and 200 times stronger than steel, due to the strong carbon-carbon bonds. It's also a flexible material, and conducts heat and electricity better than copper. Being only one atom thick, almost 98% of visible light passes through graphene, making it transparent.

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In News: Magneto resistance has been identified in graphene.

More on the Topic:

- The resistance of some of the metal and the semiconductor material varies in the presence of the magnetic field, this effect is called the magnetoresistance.



- The element which has these effects is known as the magnetoresistor. In other words, the magneto resistor **is a type of resistor whose resistance varies with the magnetic field.**
- The magnetoresistor is used for determining the presence of a magnetic field their strength and the direction of the force.
- It is made of the **indium antimonide or indium arsenide semiconductor material.**

Source: Business Standard
