



Most Trusted Learning Platform



→ Plastic Pollution

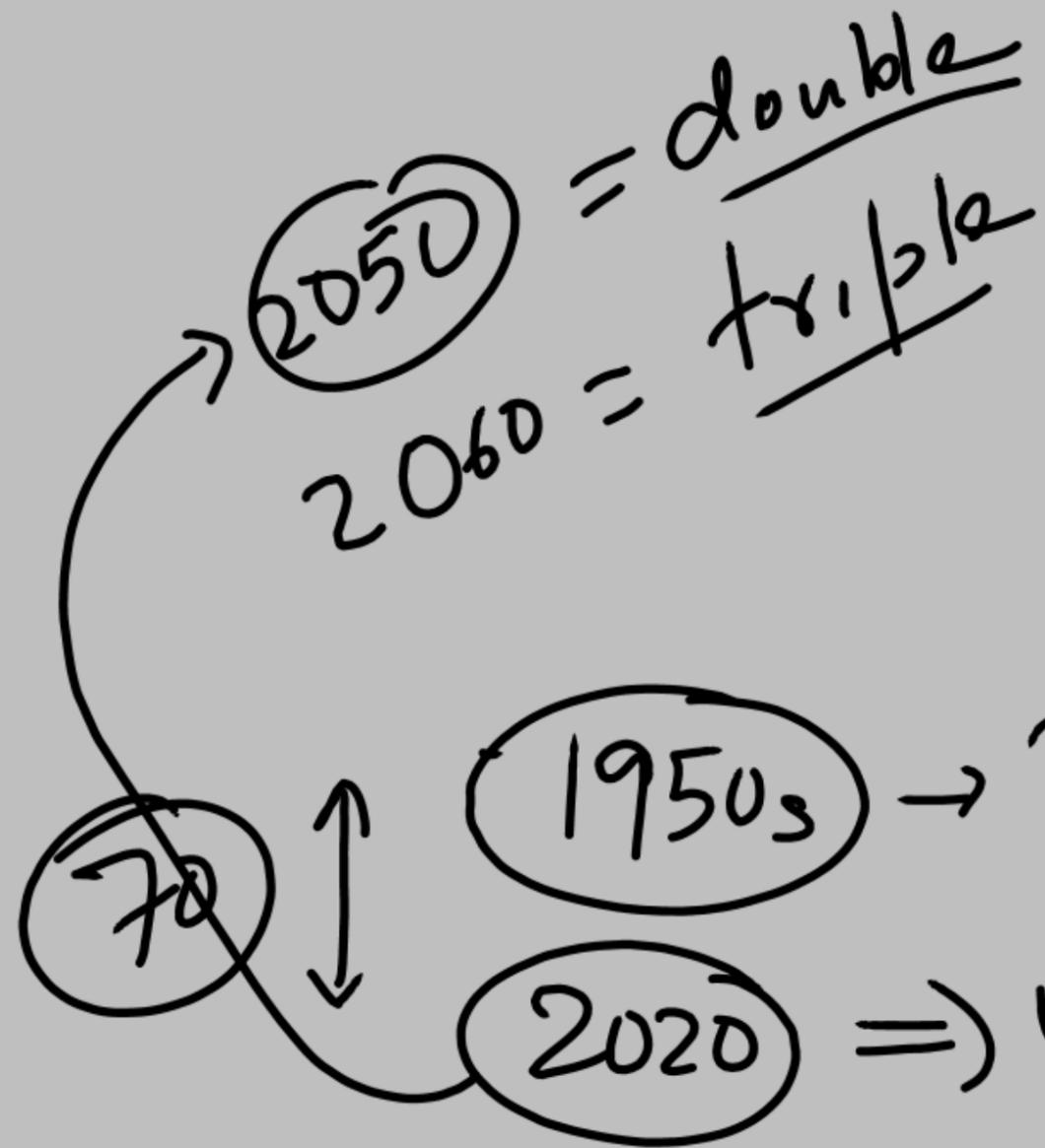


⇒ Climate clock ⇒ Chemical in news

⇒ Places in news ⇒ Nilgiri Tiger.

Plastic pollution

→ Facts



annual ⇒ 1940s
Production = 2mn tonnes

⇒ 450mn tonne annually

Plastic
↑↑↑

1940s
11nd world war
helmets, tents
gears, uniforms

⇒ 6 bn tonnes
of plastic waste
on earth

⇒

Why a concern??

20-500 years for
decomposition

⇒ less than 10% of plastic has
been recycled.

Great Pacific garbage patch

Challenges due to plastic

70% of surface water is polluted

Challenge

Marine pollution:
Aquatic pollution

Rivers

majority of plastic in India is single use plastic
↳ cups, plates, straw
polythene bags, ear phones
etc.

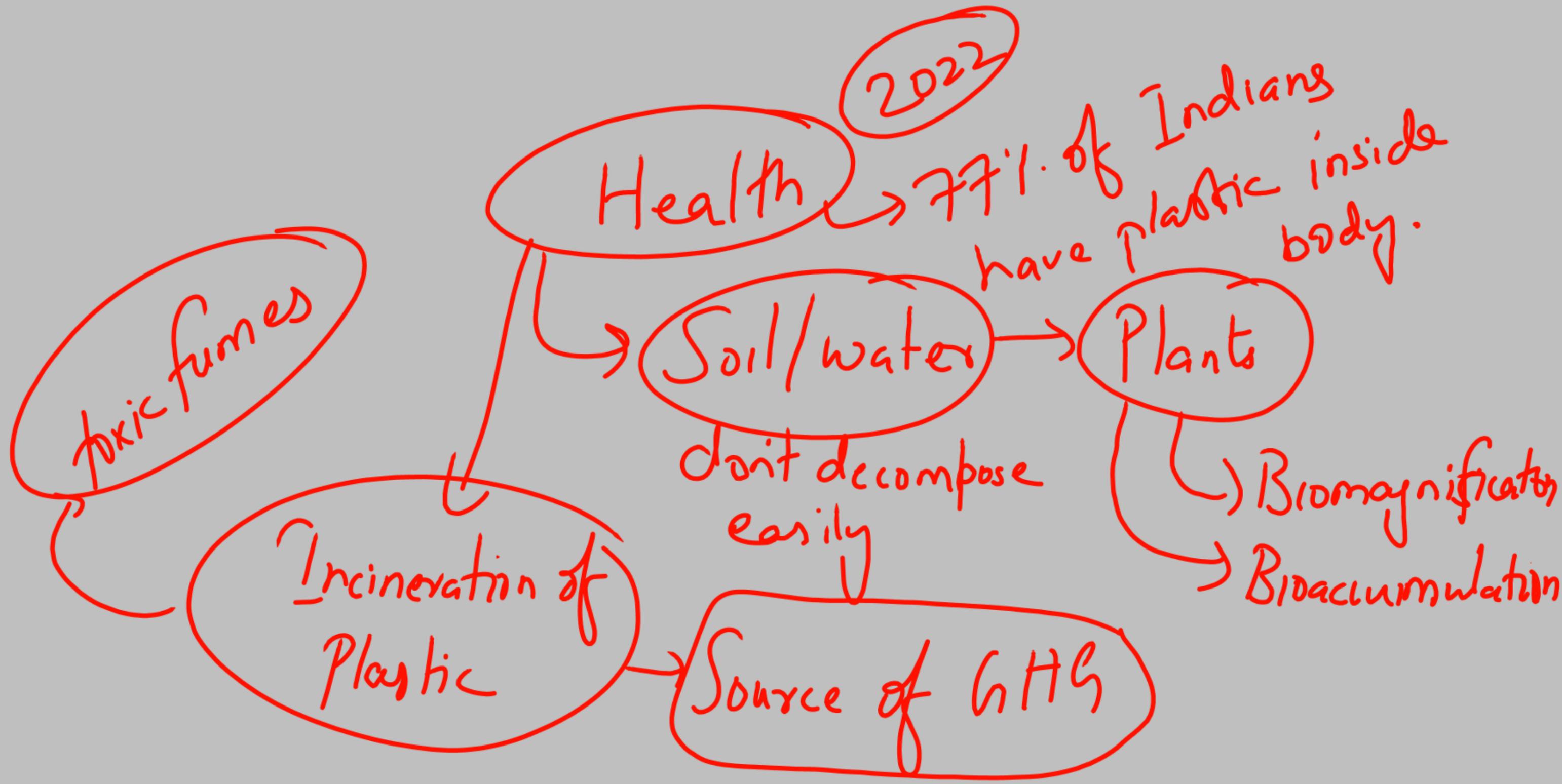
⇒ Contain toxic substances/chemicals

Oceans

Microbeads

⇒ small plastic particles

⇒ food chain entry



2022

Health

77% of Indians have plastic inside body.

Soil/water

Plants

don't decompose easily

Biomagnification
Bioaccumulation

Incineration of Plastic

Source of GHG

toxic fumes

Global warming

OECD

3.4% of

global emissions of
GHG comes from
plastic

90% of
emission is due to
production of plastic

Biodiversity

Economic impact

↓
Plastic pollution

Tourism

→ negatively impacted

↓ livelihood → Challenges will arise.

→ Marine biodiversity impacted most

→ Toxic substances will also impact terrestrial ecosystem/biodiversity.

Urban disaster

↳ Urban flood

↳ (logging of drains by
plastic

Plastic
Silent killer

→ durable

⇒ versatile

⇒ Cheaper production at
mass level

Why So much
Factors plastic??

Negligence

→ most of plastic is
non-recyclable

⇒ Improper disposal of
waste material

⇒ lack of strict regulations
and enforcement.

Man
made
disaster

↓
Time-taking
bomb

→ minimum thickness to be 120 microns

National levels

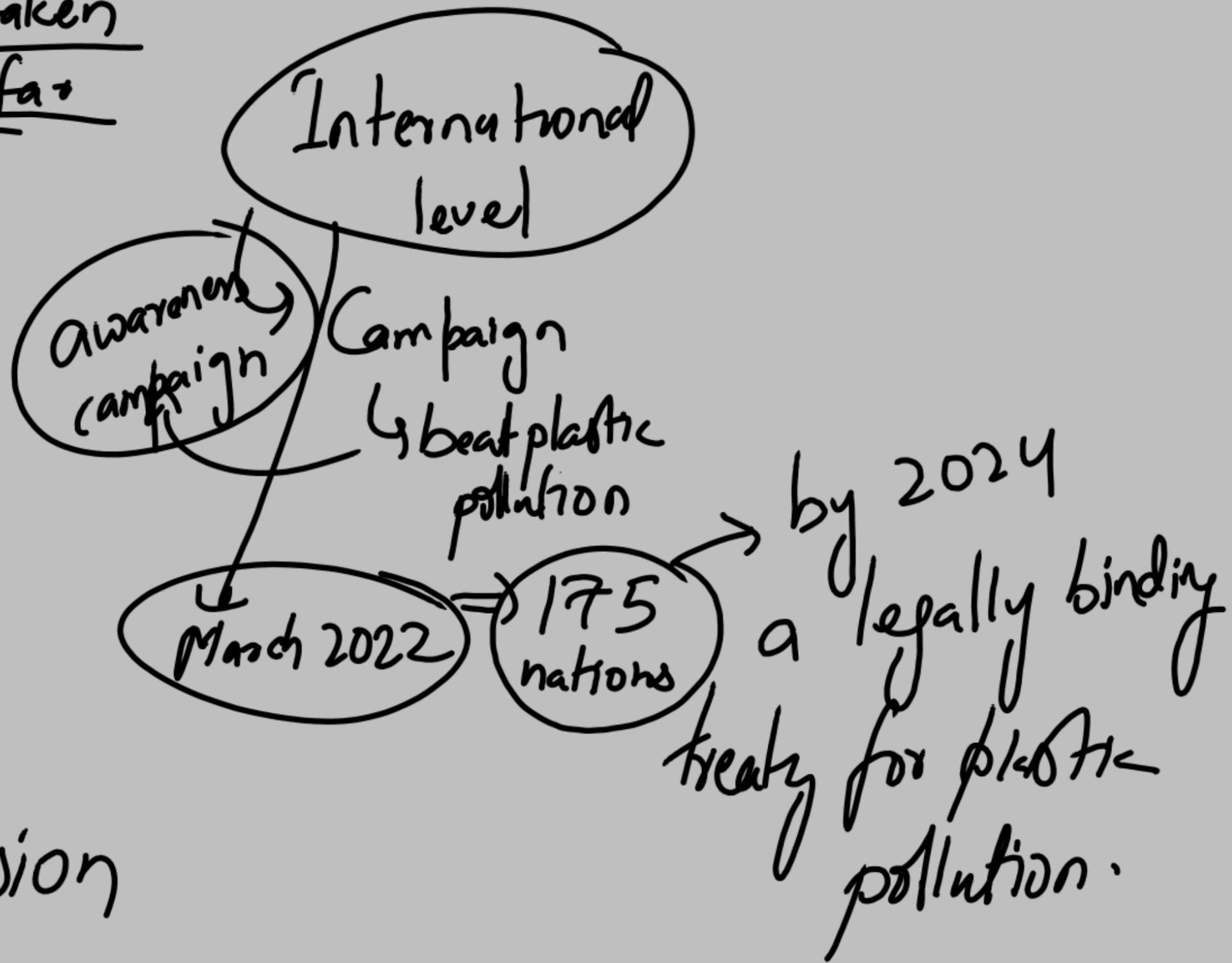
Steps taken
So far

→ Single use plastic has been banned - 1 Jan 2022

⇒ Plastic waste Rules → Notified by govt from time to time

- ↳ Extended producer responsibility.

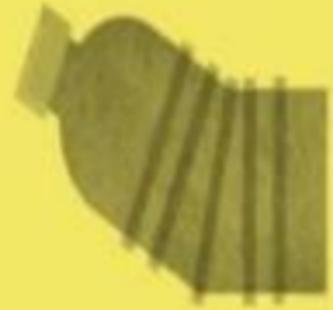
→ Swachh Bharat mission



The plastic is not a silent killer,
rather the world is silent about plastic.
Comment. What steps have been taken so
far for elimination/reduction of plastic
waste? (250 words).

❖ The Plastic Dilemma

- 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, the production is slated to double by 2050, and triple by 2060.
- Plastic takes anywhere from 20 to 500 years to decompose
- Less than 10% of total plastic generated so far has been recycled
- In the present times, nearly 6 billion tonnes of plastic pollute the planet.
- About 400 million tonnes of plastic waste is generated annually, a figure expected to jump by 62% between 2024 and 2050



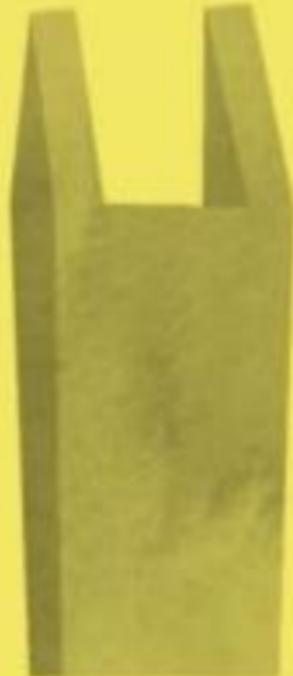
Polyethylene terephthalate (PET)

Water bottles, dispensing containers, biscuit trays



High-density polyethylene (HDPE)

Shampoo bottles, milk bottles, freezer bags, ice cream containers



Low-density polyethylene (LDPE)

Bags, trays, containers, food packaging film



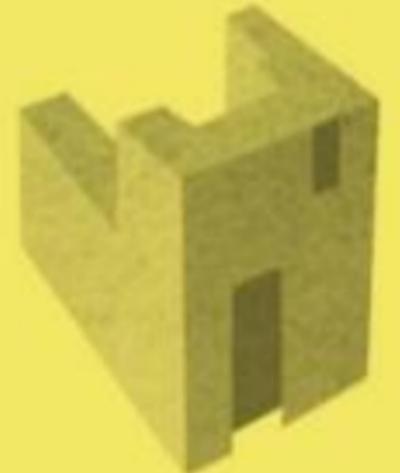
Polypropylene (PP)

Potato chip bags, microwave dishes, ice cream tubs, bottle caps, single-use face masks



Polystyrene (PS)

Cutlery, plates, cups



Expanded polystyrene (EPS)

Protective packaging, hot drink cups

❖ The Plastic Dilemma

- **Challenges of Plastic Pollution**
- **Global Warming:** According to a report by the Organisation for Economic Co-operation and Development (OECD), in 2019, plastics generated 1.8 billion tonnes of GHG emissions — 3.4% of global emissions. Roughly 90% of these emissions come from plastic production, which uses fossil fuels as raw material. **Environmental Impact:**
- **Ocean Pollution:** India's extensive coastline makes it vulnerable to plastic pollution in oceans. For instance, the beaches of Mumbai often accumulate large amounts of plastic waste, harming marine life.
- **River Contamination:** Rivers like the Ganges and Yamuna are heavily polluted with plastic waste, affecting aquatic ecosystems and threatening the health of river-dependent communities

❖ **The Plastic Dilemma**

- **Nearly 70% surface water in India is contaminated.**
- **Health Impact:**
- **Air Pollution:** Improper disposal of plastic waste leads to open burning, releasing toxic fumes and contributing to air pollution. Cities like Delhi face severe air quality issues partly due to such practices.
- **Water Contamination:** Plastic waste leaching into water sources contaminates drinking water, leading to health problems. For example, in rural areas, plastic waste dumped near water bodies can contaminate groundwater, affecting local communities.

❖ The Plastic Dilemma

- **Economic Impact:**
- **Tourism:** Plastic pollution affects India's tourism industry, especially in popular destinations like Goa or Kerala, where littered beaches deter tourists and impact local businesses.
- **Agriculture:** Improper disposal of plastic waste harms agricultural lands, affecting soil fertility and crop productivity. Farmers often face challenges due to plastic pollution in rural areas.
- **Wildlife Impact:**
- **Endangered Species:** Plastic pollution poses a threat to wildlife, including endangered species like the Indian pangolin or Bengal tiger. For instance, plastic ingestion or entanglement can be fatal for marine animals and birds along India's coasts.

❖ **The Plastic Dilemma**

- **Waste Management Challenges:**
- **Urban Areas:** Rapid urbanization leads to increased plastic consumption and waste generation, straining waste management systems. Cities like Bengaluru struggle with managing plastic waste due to inadequate infrastructure.
- **Informal Recycling:** While India has a vibrant informal recycling sector, it also faces challenges like inefficient recycling practices and health hazards for workers in recycling hubs like Dharavi in Mumbai.

❖ The Plastic Dilemma

- **Steps taken to Curb Plastic pollution**
- **Ban on single-use plastics:** On July 1, 2022, India banned the manufacturing, sale, distribution, and use of single-use plastics. This includes lightweight plastic bags, plastic sticks for balloons, plastic flags, and candy sticks. Single-use plastics account for 43% of plastic waste in India.
- **Plastic Waste Management Amendment Rules:** In 2021, the government notified rules to phase out single-use plastic items by July 1, 2022. The thickness of plastic carry bags was also increased from 50 to 75 microns in September 2021, and to 120 microns in December 2022

❖ The Plastic Dilemma

- **#beatplasticPollution:** The initiative was launched on World Environment day to generate awareness about fighting plastic pollution.
- In March 2022, 175 nations agreed to make the first legally-binding treaty on plastic pollution by the end of 2024

❖ VVPAT – Voter Verifiable paper audit trail

- Voter Verifiable Paper Audit Trail (VVPAT) is an independent system attached with the Electronic Voting Machines that allows the voters to verify that their votes are cast as intended.
- When a vote is cast, a slip is printed containing the serial number, name and symbol of the candidate and remains exposed through a transparent window for 7 seconds.
- Thereafter, this printed slip automatically gets cut and falls in the sealed drop box of the VVPAT.
- VVPATs with EVMs were used for first time in a bye-election from 51-Noksen (ST) Assembly Constituency of Nagaland.

Candidate

7 seconds

Q WHAT IS VVPAT?

A. Voter Verifiable Paper Audit Trail (VVPAT) helps voters to physically confirm the choice they have made. It consists of:

- A printer that gives a record of voters' selection
- A display unit that shows any error

Q HOW IT WORKS?

A. The printed VVPAT slip is displayed for 7 seconds before it is automatically cut and delivered to a sealed ballot compartment

Q WHAT THE VVPAT SLIP CONTAINS?

A.

- A candidate serial number
- Name of the candidate
- Corresponding symbol.

VVPAT paper roll is designed for printing **1,500** ballot slips for each election

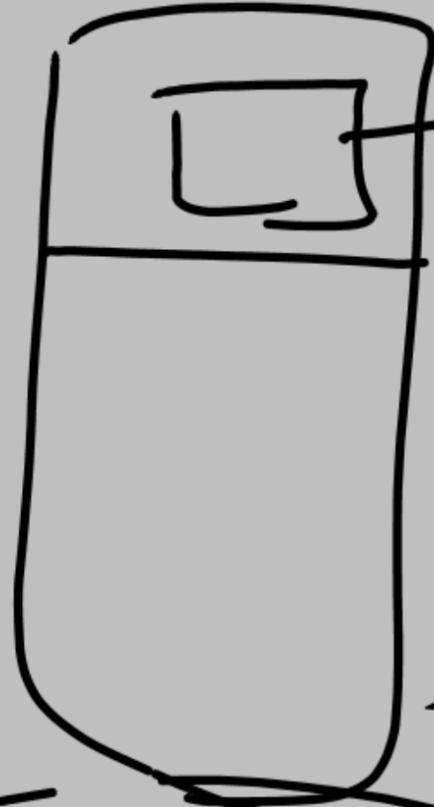
TOI FOR MORE INFOGRAPHICS DOWNLOAD THE TIMES OF INDIA APP

99.1. accuracy

1000

A = 600
B = 400

A	(X)
B	Y
C	Z
D	K
E	P
F	R



Receipt

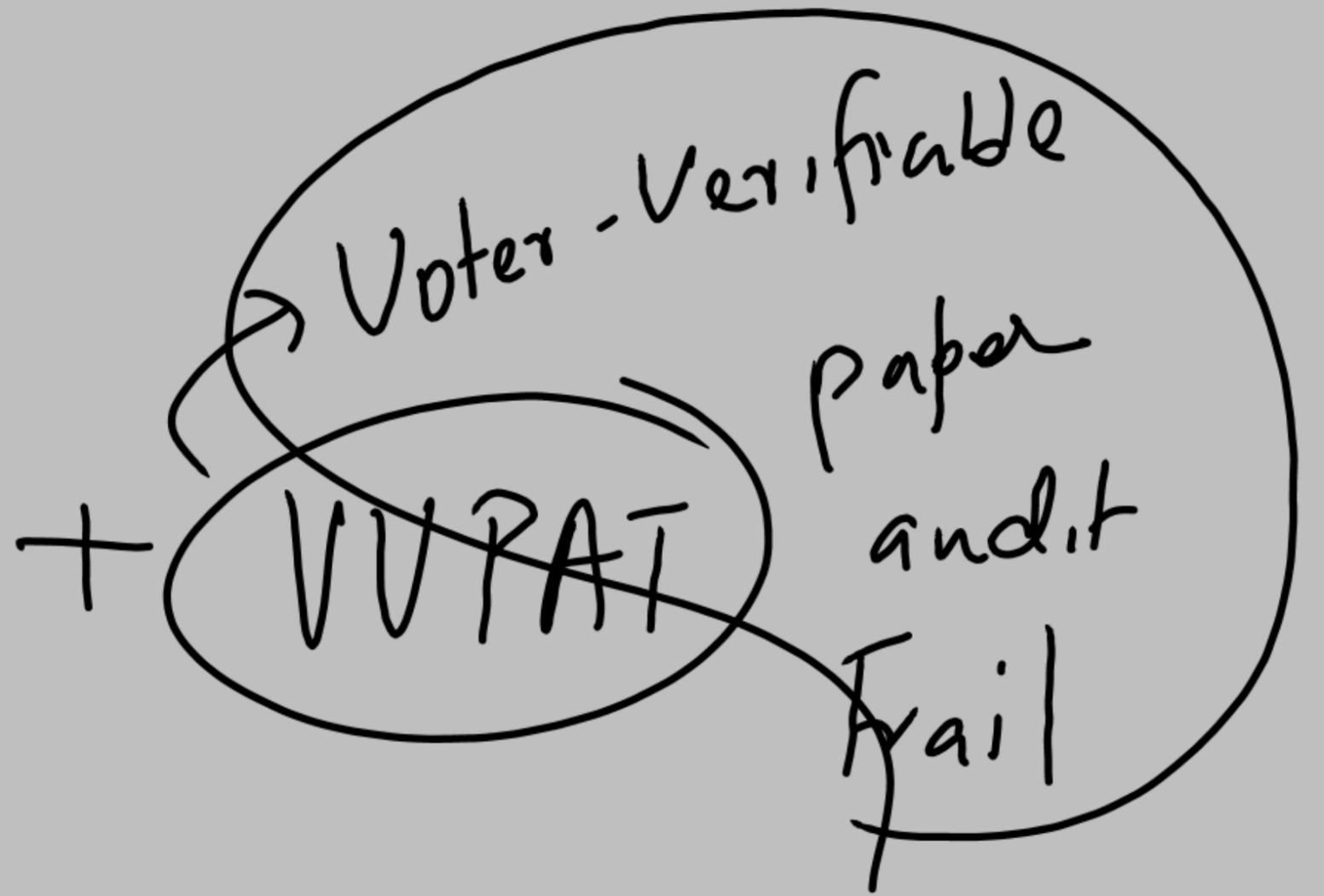
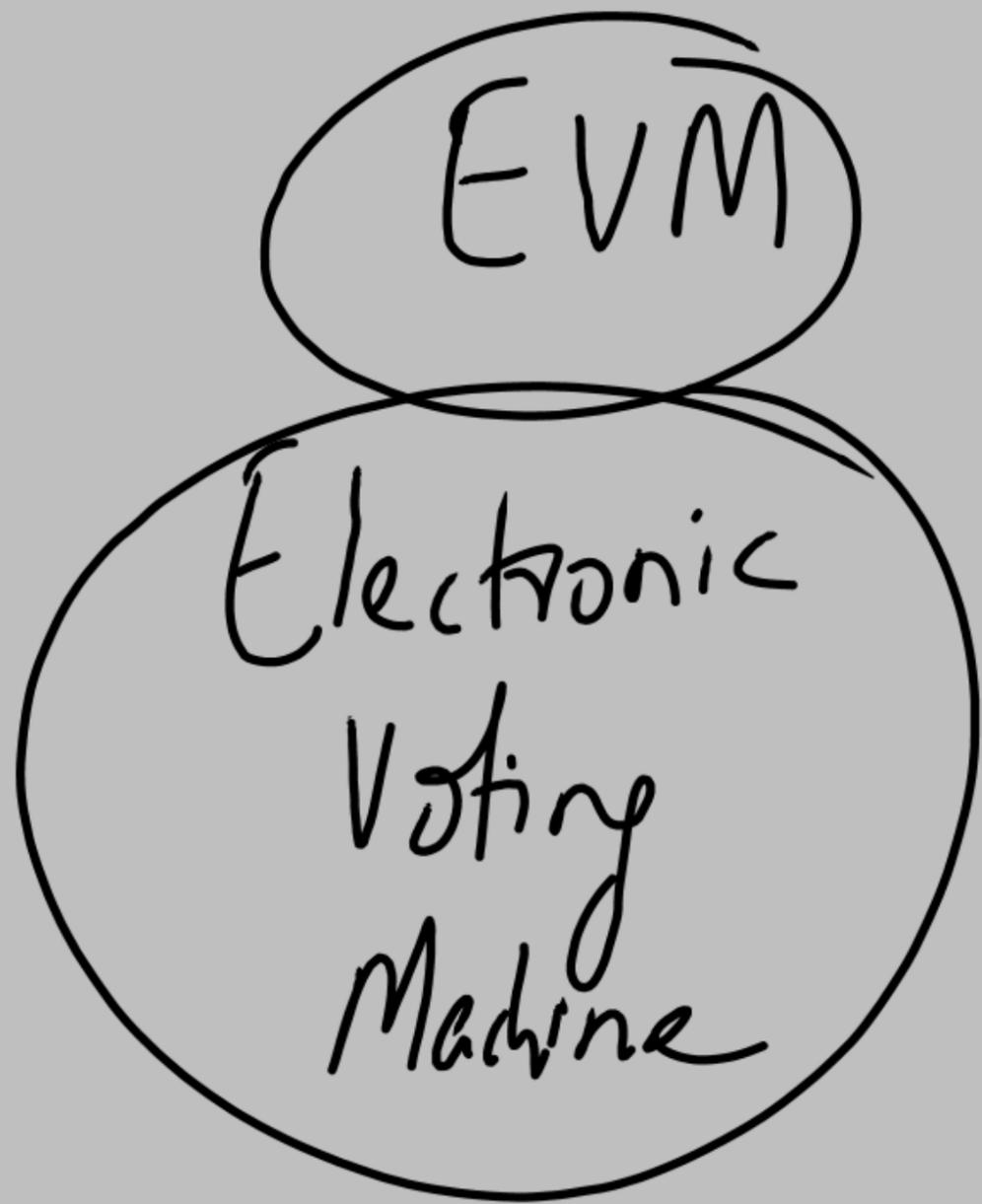
- Name
- Serial no
- Symbol

1000 R

600 (A)

400 (B)

5 of VVPAT are used for matching.



❖ VVPAT – Voter Verifiable paper audit trail

- Supreme Court Judgement
- Voting will continue to take place using EVMs, with 100% of the machines attached to a VVPAT unit.
- As per the existing provisions, VVPAT slips of five randomly selected Assembly constituencies or segments would be counted to verify with the count of the EVMs
- SC has enabled candidates to seek verification of the EVMs — again a first. Candidates coming second or third can ask for a verification of the burnt memory semicontrollers in 5% of EVMs per Assembly segment of each Parliamentary constituency.

5 VVPAT

Why does indelible ink leave a stain on your finger?

The main constituent of indelible ink is **silver nitrate**.

Silver nitrate is **caustic to skin**. When applied, it reacts with the skin and nails and leaves a semi-permanent mark

The mark is **resistant** to chemical and mechanical manipulations and lasts for days.

It **fades** when new cells replace the old ones. On fingernails it lasts till the nail grows out.

Did you know?

The indelible ink dries in less than 40 seconds. Besides silver nitrate, this water-based ink also contains some dyes, and a solvent like alcohol (to allow its faster drying).



alcohol

dye

Indelible ink

dry fast

→ Silver nitrate ✓

→ Reacts with

Skin ⇒ Permanent

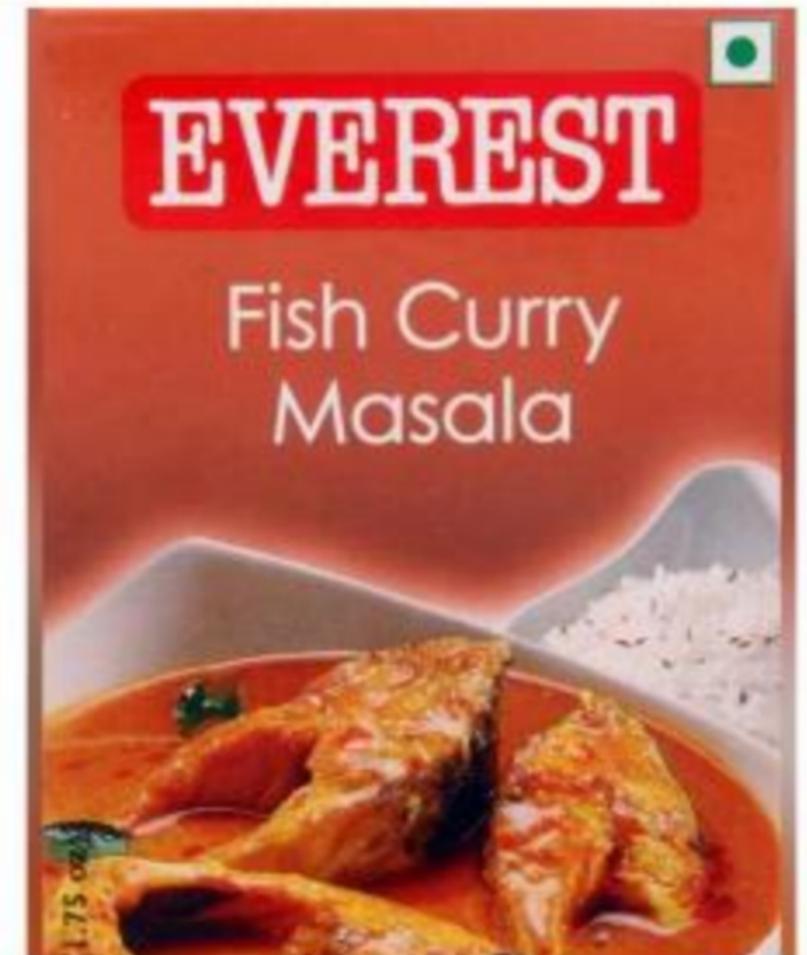
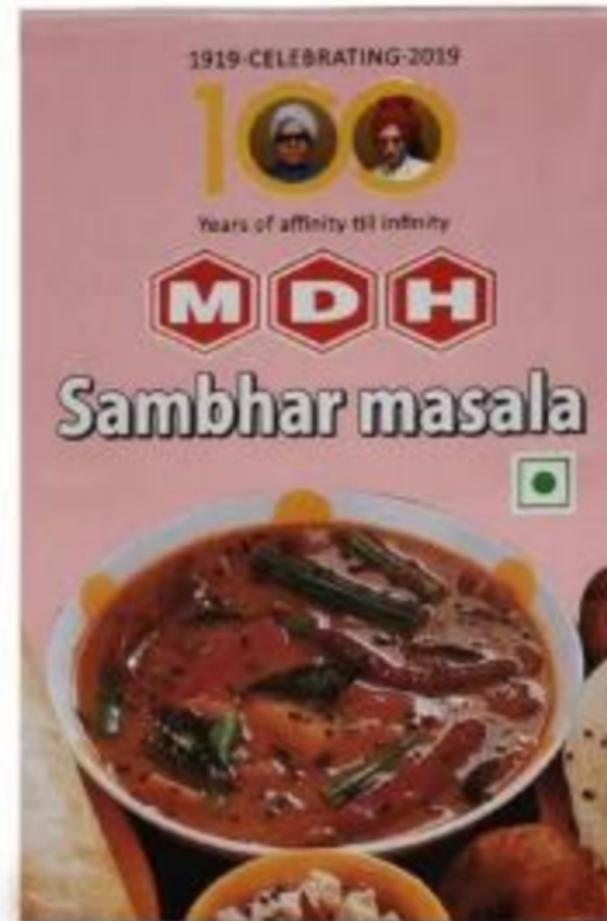
⇒ Skin cell become dead and replaced by new then ink disappear.

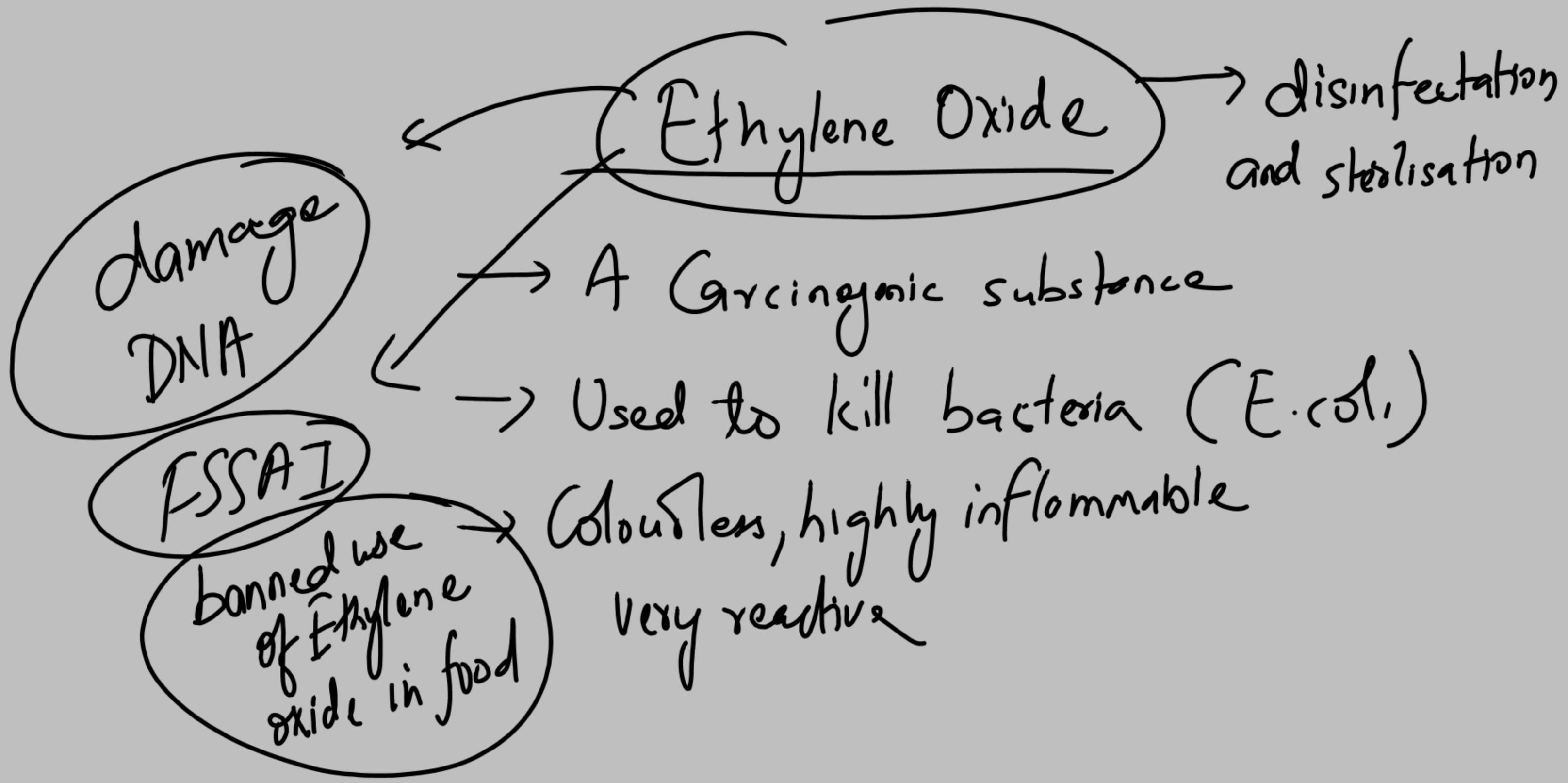
❖ Ethylene oxide in MDH

- **Context:** Recently, authorities in Hong Kong and Singapore withdrew four spice mixes from two of India's top manufacturers, MDH and Everest, after finding high levels of the carcinogen ethylene oxide in them.

Ethylene oxide

→ Carcinogenic





Ethylene Oxide

→ disinfection and sterilisation

→ A Carcinogenic substance

→ Used to kill bacteria (E.coli)

→ Colourless, highly inflammable
very reactive

damage DNA

FSSAI

→ banned use of Ethylene oxide in food

❖ Ethylene oxide in MDH

- Ethylene oxide is a pesticide that has been classified as a Group 1 carcinogen by the International Agency for Research on Cancer, meaning there is sufficient evidence from human studies that it can cause cancer
- It is used by the spice industry as a fumigant to reduce microbial contamination, such as E. coli and Salmonella.
- It is a colourless, highly flammable and very reactive gas that kills bacteria, viruses and fungi. It is an industrial chemical.
- Ethylene oxide can damage DNA during sterilisation procedures.

❖ Ethylene oxide in MDH

- FSSAI doesn't allow its use in any food product
- Ethylene oxide was banned by the European Union (EU) in 2011 for fumigation of food and animal feed during transport and storage.
- The use of ethylene oxide is now only permitted in disinfection and sterilisation of medical devices.

❖ Climate Clock



Earth Day Celebrations

23 April 2024 | 2.30 PM



Activation of India's biggest Climate Clock

at
CSIR Headquarters, Anusandhan Bhawan, New Delhi



❖ Climate Clock

- **Council of Scientific & Industrial Research (CSIR), as a part of the Earth Day Celebrations, installed and activated India's biggest Climate Clock on the CSIR Headquarters Building in Rafi Marg, New Delhi**
- **The event signifies CSIR's aim to spread awareness about climate change and its ill effects.**
- **We are in a Climate Emergency, but there is still time to avert disaster if we take bold, immediate action at the speed and scale necessary – beyond what politicians have deemed politically possible.**
- **The next ~7 years is humanity's best window to enact bold, transformational changes in our global economy to avoid raising global temperature above 1.5°C, a point of no return that science tells us is likely to make the worst climate impacts inevitable.**

❖ Climate Clock

- The project is centered on a simple tool: a clock that counts down the critical time window to reach zero emissions (our “Deadline”), while tracking our progress on key solution pathways (“Lifelines”).
- The Deadline and Lifeline on the Climate Clock tell us what we need to do, by when. They are arguably the most important numbers in the world.
- The climate clock shows the time and how much time is left to reach the global temperature increase by 1.5°C on the basis of real-time data and if the temperature increases then its consequence will be irreversible.

❖ Climate Clock

0

Deadline

Global

Lifeline

Regenerative agriculture

DEADLINE TIME LEFT TO LIMIT GLOBAL WARMING TO 1.5°C

5 YRS 086 DAYS 11:20:31

LIFELINE REGENERATIVE AGRICULTURE

1,302,905 HECTARES

CLIMATE CRISIS IMPACTS CITIZENS' RIGHT TO LIFE | NEW YORK IS SUING THE WORLD'S BIGGEST MEAT COMPANY FOR GREENWASHING | BIDEN AI #ActInTime

DEADLINE TIME LEFT TO LIMIT GLOBAL WARMING TO 1.5°C

5 YRS 086 DAYS 11:20:10

LIFELINE LOSS & DAMAGE OWED BY G20 NATIONS

\$33.87503513 TRILLION

RATION MOVES TO MAKE CONSERVATION AN EQUAL TO INDUSTRY ON US LANDS | AMAZON INDIGENOUS DEFORESTATION SEES GREATEST PLUNGE SINCE 2018 #ActInTime

DEADLINE TIME LEFT TO LIMIT GLOBAL WARMING TO 1.5°C

5 YRS 086 DAYS 11:19:53

LIFELINE DIVESTED FROM FOSSIL FUELS

\$17.09 TRILLION

ST PLUNGE SINCE 2018 IN BRAZIL | BIDEN ADMINISTRATION MOVES TO RESTRICT OIL & GAS LEASES ON 13M ACRES IN ALASKA | US CREATES CLIM #ActInTime

DEADLINE TIME LEFT TO LIMIT GLOBAL WARMING TO 1.5°C

5 YRS 086 DAYS 11:19:28

LIFELINE WORLD'S ENERGY FROM RENEWABLES

14.185530032%

MERCE & MANUFACTURING EMISSIONS | BRAZIL'S PRESIDENT LAUNCHES PROGRAM TO REDUCE DEFORESTATION & FOREST FIRES | BIDEN AWARDS \$830 #ActInTime

CSIR

→ Council for

Scientific and Industrial

Research.

India's largest & biggest

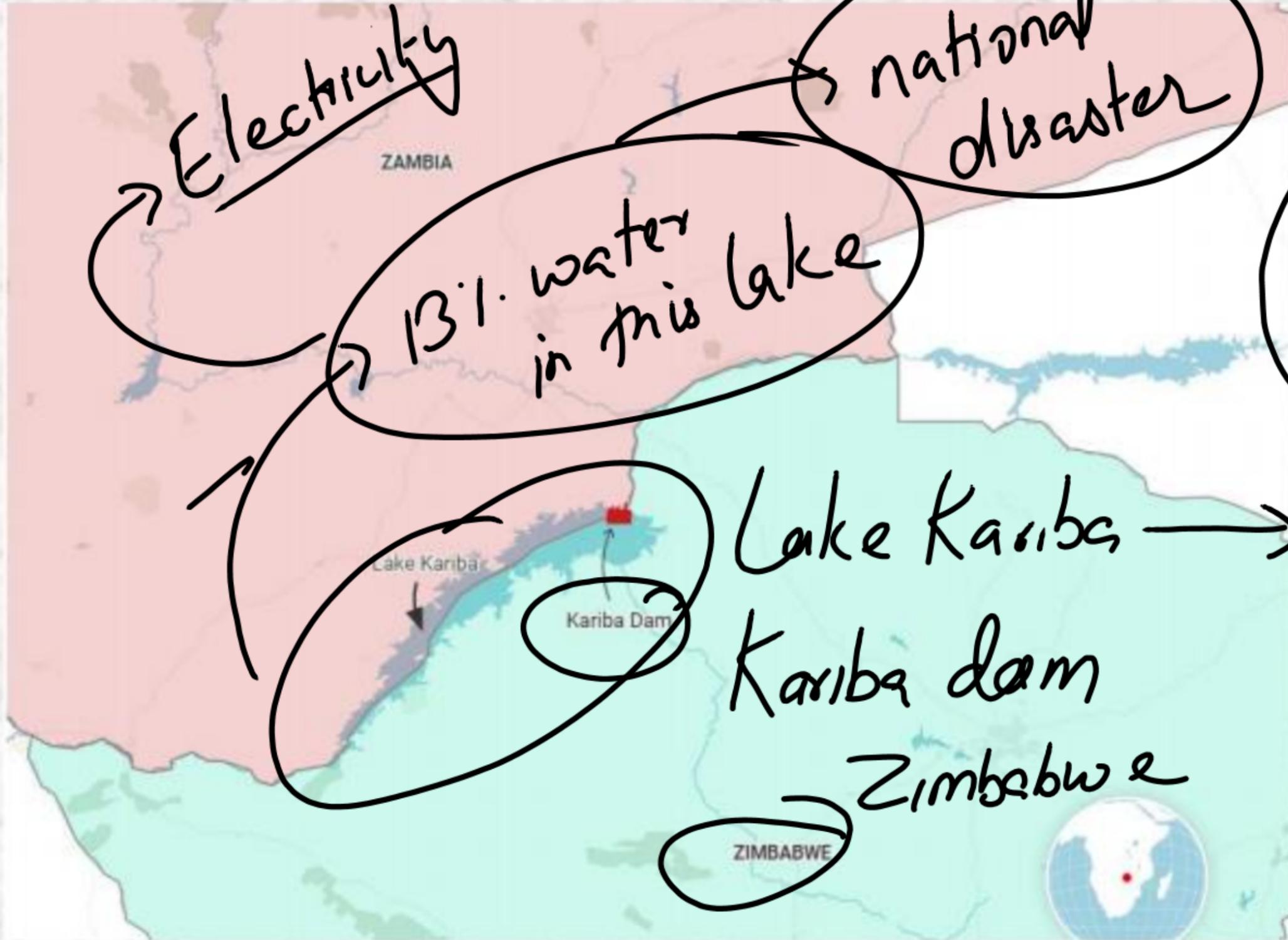
Climate clock

⇒ Aim: Spread awareness

❖ Places in News: Lake Kariba

- Water levels at Lake Kariba in Zimbabwe have dropped dramatically because of the latest El Nino drought. The country's president, Emmerson Mnangagwa, has declared a national disaster.
- The 280 kilometre-long, human-made Lake Kariba is part of the Kariba Dam, which was built between 1955 and 1959 in the Zambezi River basin between Zambia and Zimbabwe.
- The dam provides hydroelectric power to the Kariba north power station on the Zambian side and Kariba south power station on the Zimbabwean side.
- These provide most of the electricity for the two nations
- By April 8, 2024, the Zambezi River Authority, which owns and manages Lake Kariba, announced that water in the lake had dropped to just 13.52 per cent of its capacity.





national disaster

131. water in this lake

Zambezi river

Lake Kariba
Kariba dam

Artificial lake / Reservoir

Zimbabwe

Electricity



Victoria falls

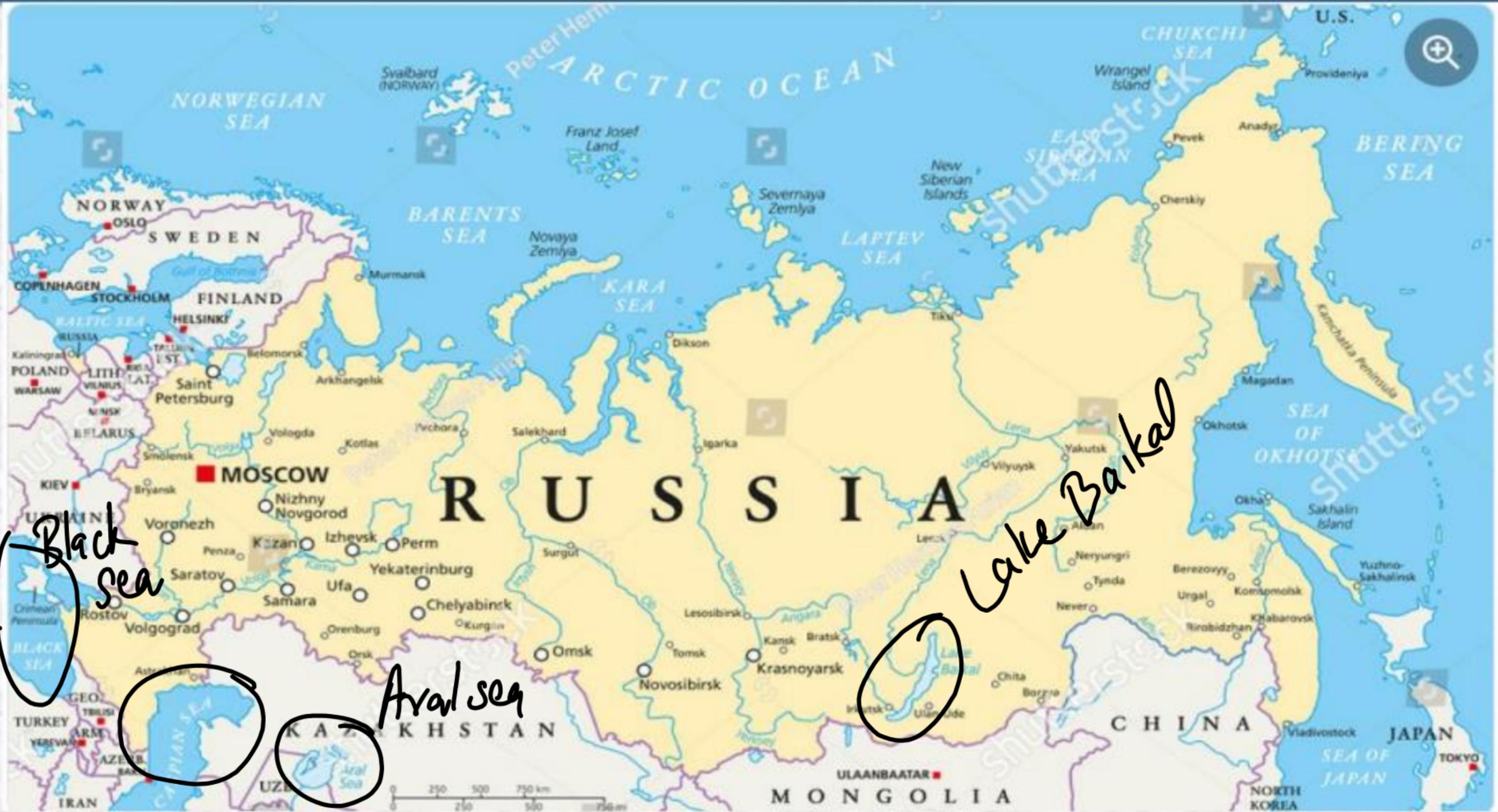
❖ Places in News: Lake Kariba

Which of the following has/have shrunk immensely/dried up in the recent past due to human activities ? UPSC 2018

1. Aral Sea ✓
2. Black Sea
3. Lake Baikal

Select the correct answer using the code given below :

- a) 1 only ✓
- b) 2 and 3
- c) 2 only
- d) 1 and 3



❖ Species in News: Nilgiri Tahr

- Context: Tamil Nadu is all set to estimate the population of its State animal.
- State animal of Tamil Nadu
- Endemic to Western Ghats- Kerala & Tamil Nadu
- Nilgiri tahrs prefer montane grasslands, with steep and rocky terrains at an altitude between 300 and 2,600 metres above sea level
- Eravikulam National Park in Anamalai hills, Kerala, is home to the largest population of the Nilgiri tahr, with more than 700 individuals.
- **It is locally known as Varaiaadu**

Kerala
TN



→ Tamil Nadu - Project Nilgiri Tahr.
Varaigadu
↳ locally.

❖ Species in News: Nilgiri Tahr

- Adult males of Nilgiri Tahr species develop a light grey area or "saddle" on their backs and are hence called "Saddlebacks"
- Mukurthi National Park was created to protect its keystone species, the Nilgiri Tahr.
- Conservation Status:
- IUCN: Endangered
- WPA: Schedule I
- As per a Worldwide Fund for Nature Report 2015, there are 3,122 Tahrs in the wild.

Patch of hair
White on back
Saddleback



Male Nilgiri Tahr

En
Sch-I



KHAN GLOBAL STUDIES

Most Trusted Learning Platform

THANKS FOR WATCHING

