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Algal Bloom

A new study finds that elephants died 4 years ago in Botswana from drinking water poisoned by an explosion of toxic algae populations in the water pans due to the effects of climate change.

Algae

- Algae are ***microscopic organisms*** that live in aquatic environments and use photosynthesis to produce energy from sunlight, just like plants.
- Algae can be found in ***all types of natural waters***, including salt water, fresh water, and brackish water (a mix of salt and fresh water).
- **Influencing factors -** A few types of algae produce toxins. In these algae, toxin production can be stimulated by environmental factors such as light, temperature, salinity, pH, and nutrient levels.

Algal bloom

- An algal bloom is a rapid increase in the density of algae in a body of water, such as a lake, river, or bay.
- They are caused by diverse organisms, including toxic and noxious phytoplankton, cyanobacteria, benthic algae, and macroalgae.
- Algal blooms occur when environmental conditions allow explosive growth of phytoplankton a bloom that can change the color of ocean water.
- Responsible environmental factors include
    - Bright sunlight
    - High nutrient levels
    - Calm waters (low wind and circulation)
    - Limited number of grazers or predators
- Other environmental factors can be temperature and salinity, which influence HABs differently but may help in determining the sources of blooms.
- Each type of algae has its own preferences of environmental factors; that is, the recipe changes depending on the species.
- Generally, there are 3 kinds of algal blooms - red, brown and green.

Red tides	Green tides	Brown Tides

Red tides are caused by phytoplankton that have a reddish pigment called ***peridinin.*** Most dinoflagellates, such as *Alexandrium catenella*, have this pigment. As a result, when there is a bloom of this dinoflagellate, the ocean will generally turn red. It is common on both the east and west coasts of the U.S. as well as Florida and the Gulf of Mexico.	Green tides can be caused by ***Phaeocystis***, which is a unicellular, photosynthetic algae found throughout the world. Green tides can also be caused by macroalgae such as *Enteromorpha spp.* and *Codium isthmocladum*, which have caused serious damage to many coastal regions. When in bloom, macroalgae often outcompete seagrass and coral reefs.	Brown tides are caused by the ***pelagophytes*** (another type of microalgae) such as *Aureococcus anophagefferens*. *Aureococcusis* a spherical, ***non-motile species*** that has caused noticeable damage to the coastal ecosystems in which it occurs. Brown tides are commonly seen in the northeast and mid-Atlantic U.S. estuaries.

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2. National Ocean Service | Algal Blooms

Madhav National Park

National Tiger Conservation Authority (NTCA) has granted in-principle approval for the designation of Madhav National Park in Shivpuri district as a Tiger Reserve.

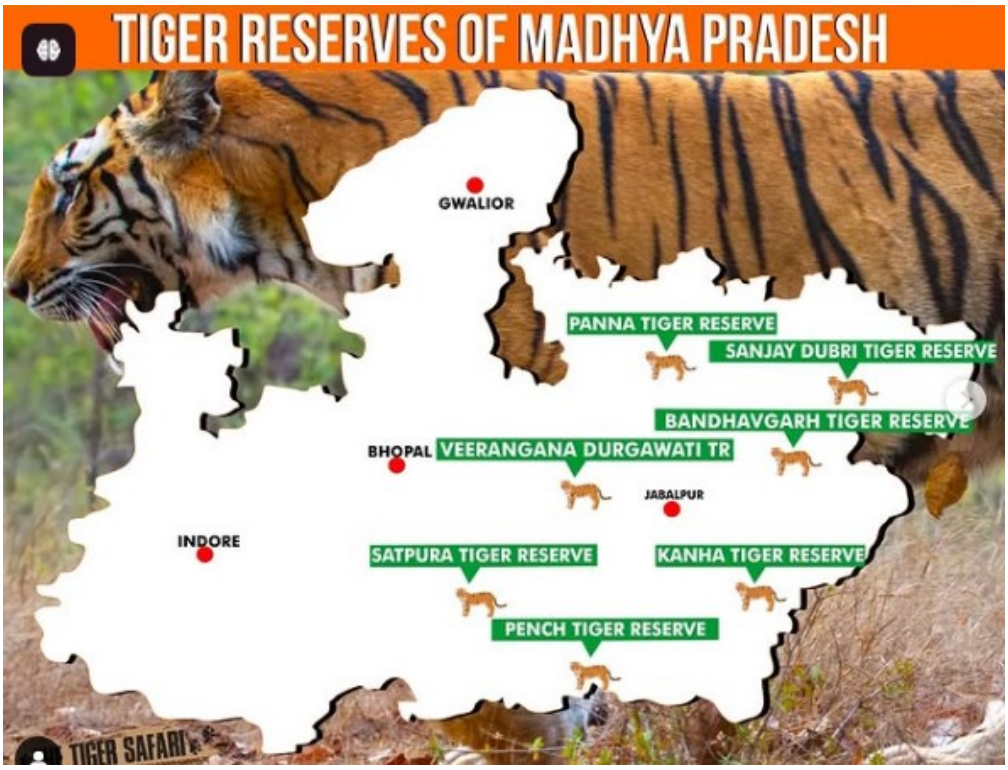
- Madhav National Park will be the ***9th tiger reserve*** in Madhya Pradesh.
- It is one of the oldest national parks of Madhya Pradesh notified in ***1956.***
- It is a part of the upper Vindhyan hills.
- **Lakes -** Sakhya Sagar and Madhav Sagar are the 2 lakes in the southern part of the park.
- ***Marsh Crocodiles*** are in abundance in Sakhya Sagar lake.
- **Highest point -** George Castle, built by Jivaji Rao Scindia of the Gwalior Royal family.
- **Forest type** - Northern tropical dry deciduous mixed forests as well as Dry Thorn Forests typical of North – Western Madhya Pradesh.
- Champion and Seth system of classification, they are classified under the category 5B/C2.

Champion and Seth's system of classification systematically categorizes forest types in India into 6 major categories based on factors such as climate, physiognomy, species composition, phenology, and topography.

- **Trees -** Important species in the park are Kardhai, Salai, Dhaora and Khair.
- The understory comprises almost entirely of Ber, Makor and Karonda. The jamun and mahua are found along the nullahs.
- **Animals -** The forest is home to antelopes like Nilgai, Chinkara and Chowsinga and Deer including Chital, Sambar and Barking Deer.
- Animals like the Leopard, Wolf, Jackal, Fox, Wild Dog, Wild Pig, Porcupine, Python etc are also sighted in the park.

- Madhav National Park has made significant strides in tiger conservation.
- After a successful breeding program, the park welcomed tiger cubs in September 2024, marking a historic moment in its restoration efforts.

- Madhya Pradesh government ***yet to notify*** Ratapani wildlife sanctuary will be ***8th tiger reserve*** despite awaiting government notification.
- NTCA had accorded in-principle approval for declaring Ratapani wildlife sanctuary as a tiger reserve way back in August, 2008.
- **Other tiger reserves in Madhya Pradesh -** Kanha, Satpura, Bandhavgarh, Pench, Sanjay Dubri, Panna and Veerangana Durgavati.



- **Tiger population in states -** According to National Tiger Conservation Authority and Wildlife Institute of India, ***Madhya Pradesh*** has 785 tigers, the highest in the country.
- The state is followed by Karnataka (563) and Uttarakhand (560).

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1. Times of India | Madhav the 9th tiger reserve in Madhya Pradesh
2. Madhav Nationalpark | Introduction

Centre for Processing Accelerated Corporate Exit (C-PACE)

The central government announced that corporate exits are now processed in 70-90 days under Centre for Processing Accelerated Corporate Exit (C-PACE).

- C-PACE is a system to streamline and centralize the ***process of removing companies*** from the MCA Register.
- **Established on** - March 17, 2023.
- **Established by -** The Ministry of Corporate Affairs (MCA).
- **Supervision -** The Director General of Corporate Affairs (DGCoA) oversees the functioning of C-PACE.
- **Features -** It was established to facilitate and speed up the voluntary winding up of these companies to less than 6 months with process re-engineering.

- The central government recently announced that corporate exits are now processed in ***70-90 days*** under Centre for Processing Accelerated Corporate Exit (C-PACE).
- It facilitated the 'Ease of Doing Business' with an idea to eliminate the necessity for physical interactions with stakeholders.
- It established for providing hassle-free filing, timely and process-bound striking off companies.
- C-PACE operates under the Registrar of Companies (RoC) which is a part of the MCA.
    - **Under** – Sub-section (1) of section 396, Registrar of Companies (RoC).

According to the data given in the Parliament, 13,560 companies were struck off under section 248(2) of the Companies Act, 2013 through C-PACE in FY24.

- **Updation -** The Ministry of Corporate Affairs had empowered the C-PACE for processing of eForms related to striking off Limited Liability Partnerships (LLPs) as well.

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1. Business Standard| C-PACE
2. Taxguru| C-PACE

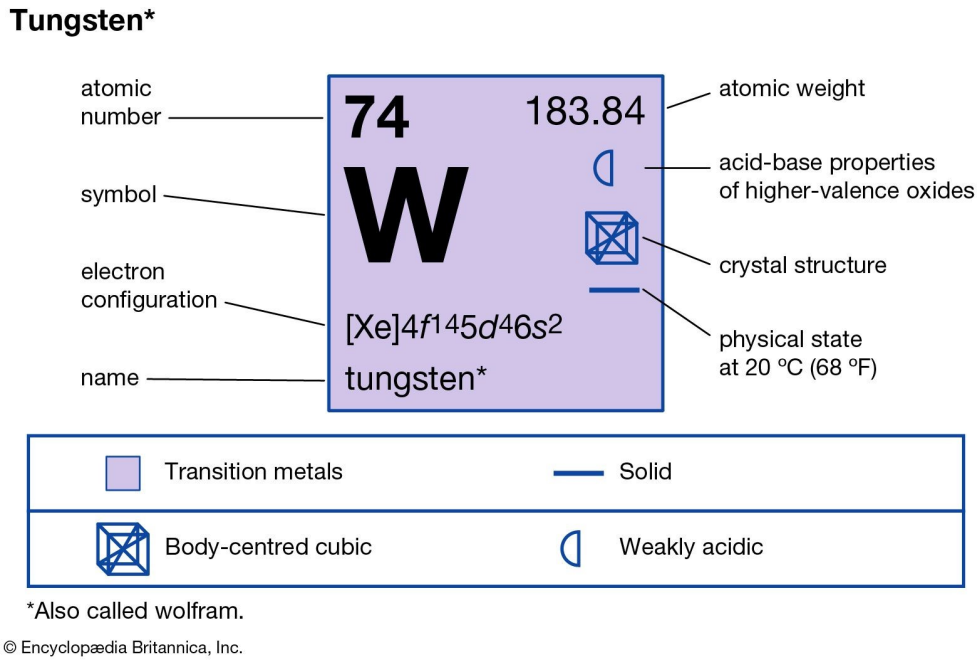
Tungsten

Recently, the Tamil Nadu Chief Minister has requested Prime Minister to cancel the tungsten mining rights granted to a private company in Madurai.

- Tungsten (W) is a rare, refractory metal found naturally on Earth.
- It is a ***chemical element,*** and an ***exceptionally strong metal*** of Group 6 (VIb) of the periodic table.
- **Discovered on –** 1783.
- **Discovered by** – Mineralogists Juan and Fausto Elhuyar.
- Pure tungsten is a ***silver-white metal*** and when made into a fine powder can be combustible and can spontaneously ignite.
- Natural tungsten contains 5 stable isotopes and 21 other unstable isotopes.
- Tungsten is used in many different ways because it is very strong and durable.
- Its strength comes when it is made into compounds, though Pure tungsten is very soft.
- **Occurrence** - The amount of tungsten in Earth's crust is estimated to be 1.5 parts per million.
- Most tungsten resources are found in China, South Korea, Bolivia, Great Britain, Russia and Portugal, as well as in California and Colorado.
- China is the dominant producer of tungsten.

In 2016, China produced over 80% of total tungsten mined, and it contained nearly 2/3rd of the world's reserves.

- It *doesn't occur as a free metal*.
- The element naturally occurs in the minerals scheelite, wolframite, huebnertie and ferberite.
- It is harvested from the minerals by reducing tungsten oxide with hydrogen or carbon.



- **Properties -** It has ***the highest melting point of all metals***.
- At temperatures over 1650°C has the highest tensile strength.
- The metal oxidizes in air must be protected at elevated temperatures.
- It is very resistant to corrosion and has the highest melting point and highest tensile strength of any element.
- It is alloyed with other metals to strengthen them.
- **Uses** - It is used in
    - Electric lamps,
    - Electron and television tubes,
    - Metal evaporation work,
    - Automobile distributors,
    - X-ray targets,
    - Windings and heating elements,
    - Numerous spacecraft and
    - High-temperature applications.
- **Compounds –** The most important tungsten compound is ***Tungsten Carbide (WC).***
- It is relatively inert and noted for its hardness.
- It is used in combination with other metals to impart wear-resistance to cast iron and the cutting edges of saws and drills.

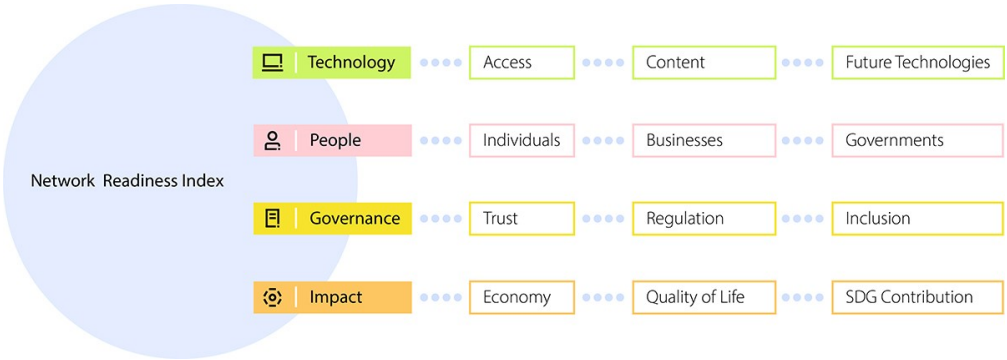
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2. Periodic Table| Tungsten
3. Britannica| Tungsten

Network Readiness Index (NRI) 2024

Recently, the Portulans Institute released a report of Network Readiness Index (NRI) 2024 which showed that India has raised 11 places to enter into top 50 nations.

- **NRI** – It is one of the leading global indices on the application and impact of Information and Communication Technologies (ICTs) in economies across the world.
- **Aim** - To measures the propensity for countries to exploit the opportunities offered by information and communications technology.
- **Launched in** – 2002.
- **Published by - *World Economic Forum*** in collaboration with European Institute of Business Administration (INSEAD) ***annually.***
- **NRI 2024** – It evaluates the network readiness of 133 economies that collectively account for *95% of global Gross Domestic Product (GDP).*
- It is anchored in the 3 core principles outlined by the NRI Technical Advisory Group in 2019.
- It assessing the performance based on *4 main pillars* and each pillar is further divided into 3 sub-pillars.



- **Released by** - Portulans Institute and Saïd Business School at the University of Oxford.
- **Global Performers** - For the 3rd consecutive year, the United States, Singapore , and Finland leads the world in NRI.

Top Countries	NRI Ranking
United States	1
Singapore	2
Finland	3
Sweden	4
Republic of Korea	5
Netherlands	6
Switzerland	7
United Kingdom	8
Germany	9
Denmark	10

- Each of the top 10 countries secures a position within the top 25 across the 4 main pillars.
- China, ranking 17th overall demonstrates impressive capabilities in various domains.

Singapore and the Republic of Korea are the only countries from Asia.

- In terms of income distribution within the rankings,
  - High-income economies - 52
  - Upper-middle-income economies – 36
  - Lower-middle-income economies – 32
  - Low-income economies - 13

- **Low Ranking Countries** – It particularly affecting African nations like Uganda (118th), Malawi (119th), and Chad (130th).
- **India's ranking** – India ***ranked at 49th position globally***, from 60th position in the 2023 report.
- It also *increased its score from 49.93 in 2023 to 53.63 in 2024*.
- It reflects its dual nature as a technology powerhouse and developing economy.
- **India's Performance** – Its achievements in several key areas which includes,
    - **1st Rank –** Artificial Intelligence (AI) Scientific Publications**,** AI Talent Concentration and ICT Services Exports.
    - **2nd Rank -** FTTH (Fiber to the Home) / Building Internet Subscriptions, Mobile Broadband Internet Traffic within the Country, International Internet Bandwidth.
    - **3rd Rank -** Domestic Market Scale.
    - **4th Rank -** Annual Investment in Telecommunication Services.

India has also ranked 2nd among lower-middle-income countries.

World Economic Forum
• It is the International Organization for Public-Private Cooperation. • **Founded in** – 24 January 1971. • **Headquarters -** Cologny, Switzerland. • **Principles -** Legitimacy, accountability, transparency and concerted action. • It provides a global, impartial and not-for-profit platform for meaningful connection between stakeholders.

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