

All-Inclusive Current Affairs for Prelims 2022

Environment Class-9

Correction

- ❑ List of UN Specialized agencies given on page-105 is wrong.
 - ❑ It was picked from <https://www.un.org/en/about-us/specialized-agencies>
 - ❑ But the page mentions organizations having liaison office at UN HQ.
- ❑ The correct list is as under (source: <https://www.un.org/en/about-us/un-system>) **(total 15)**

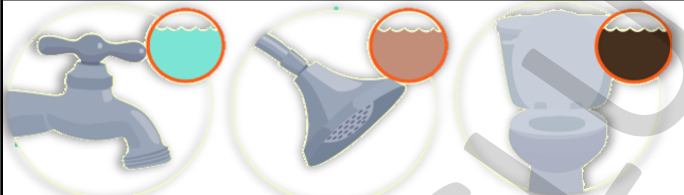


ICAO: International Civil Aviation Organization
IMO: International Maritime Organization
UNESCO: UN Educational, Scientific and Cultural Organization
UNWTO: World Tourism Organization
UPU: Universal Postal Union

ITU: International Telecommunication Union
WIPO: World Intellectual Property Organization
WMO: World Meteorological Organization
UNIDO: UN Industrial Development Organization
IFAD: International Fund for Agricultural Development
FAO: Food and Agriculture Organization

Black Water

Water Sensitive City



Clean water

Grey water
Used water **without** toxic chemicals or excrement

Black water
Contaminated water **with** toxic chemicals or excrement

A Water Sensitive City is



Liveable + Resilient + Sustainable + Productive

Making water sensitive cities in Ganga basin

- by National Mission for Clean Ganga
- Focus on water body, efficiency, treatment...

Miscellaneous:

- ❑ **Jal Jeevan Mission:** piped water to each rural household by **2024** (local bodies can decide water pricing)
- ❑ **Atal Bhujal Yojana:** Central sector scheme for **groundwater** management
- ❑ **Meghalaya:** first state to have a water **policy**
- ❑ **Telangana:** Mission **Bhagiratha** for safe drinking water to every household
- ❑ **Puri:** first Indian city to give 24-hour **drink-from-tap** facility
- ❑ **Dublin principles 1992:** are about **sustainable** use of water

BOD & COD

BOD: Biological/Biochemical Oxygen Demand
COD: Chemical Oxygen Demand

BOD: Oxygen needed by microbes to decompose organic matter
COD: Oxygen needed by reactions to oxidize organic matter
 COD is more than BOD

Extra info:

Warm water has less dissolved air
Cold water has more dissolved air

Polluted water has:

- ✓ Less dissolved oxygen
- ✓ More oxygen demand

I read I forget, I see I remember | See explanation of this PDF on **YouTube** www.youtube.com/c/allinclusiveias

Marine Pollution



← Harmful algal blooms:

(Not all algae are harmful)

- HABs occur when algae grow out of control and produces **toxic** or harmful effects, like **oxygen depletion**
- Can occur in **fresh, marine, brackish** water
- aka **Red tide** (but colour can be red, green, brown)



← Sea Snot:

- Grey / Green sludge
- Due to pollution, eutrophication, global warming
- Recently reported in Sea of Marmara

← Sea of Marmara:

- inland sea located entirely within Turkey
- Bosphorus strait separates Turkey's European and Asian part

Oil Spill

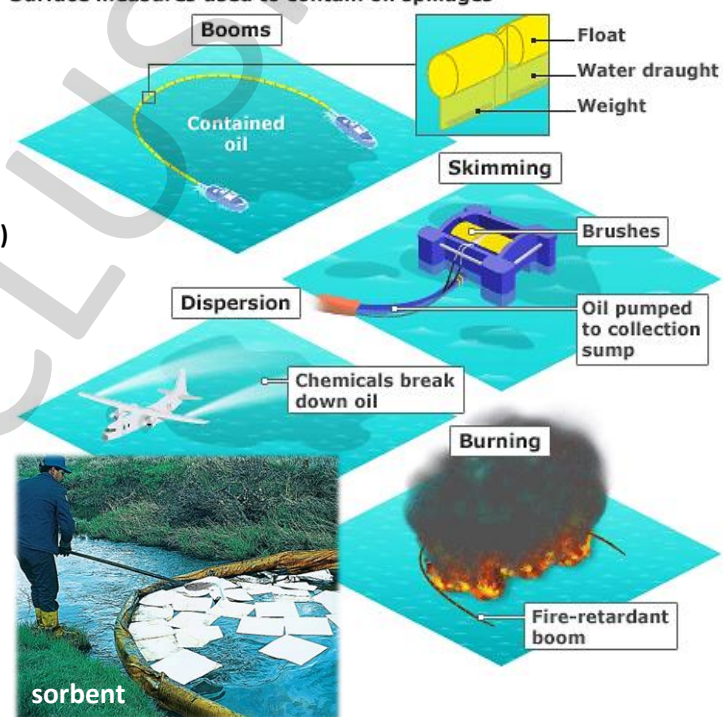
- Causes & impact of oil spill (obvious)
- Bioremediation:**
 - Oilzapper (by TERI)
 - Oilivorous-S (by TERI & Indian Oil)

National Oil Spill Disaster Contingency

Plan:

- In operation since **1996**
- It comes under **NDMA (MHA)**
- Every coastal state must have crisis management group
- Indian Coast Guard** (Min. of Defence) is the designated national authority for oil spill response in Indian waters.

Surface measures used to contain oil spillages



Tarballs due to oil spill in sea

Some major oil spills

2020	Norilsk spill	Russia
2010	Deepwater Horizon spill	USA, Gulf of Mexico
2004	Taylor spill	USA, Gulf of Mexico
1992	Fergana Valley spill	Uzbekistan
1991	Gulf war spill	Persian gulf
1911	Lakeview Gusher spill	USA

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Groundwater Pollution

Arsenic Pollution

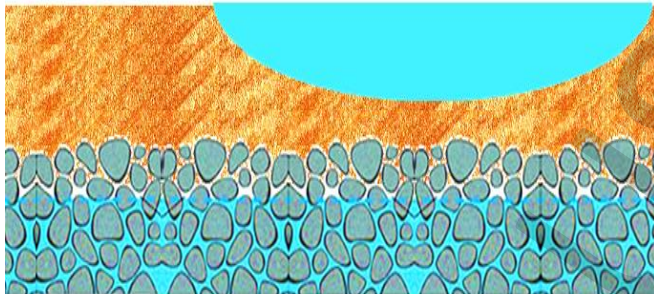
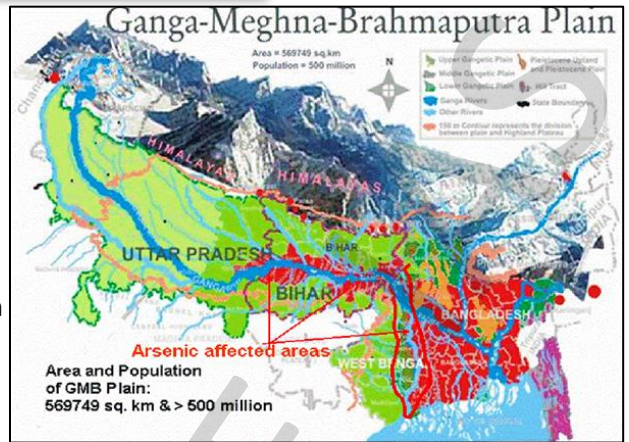
- ❑ Affects 21 states
- ❑ Worst affected areas: Ganga-Brahmaputra-Meghna river basin
- ❑ BIS limit: 0.01 milligram/liter

Health problems:

- Cancer; blackfoot disease
- Biomagnification, as it has entered food chain

Sources of Arsenic pollution:

- ❑ Natural:
 - ❑ weathering of rocks → silt brought by rivers → leaching to groundwater
- ❑ Anthropogenic:
 - ❑ over-exploitation of groundwater; use of chemical fertilizers;
 - ❑ forest fires & burning of coal → ash deposition on soil and water bodies → leaching to groundwater



Solution:

- a) Prevent fall in groundwater level.
- b) Clean coal technologies; fly ash control
- c) Treatment technologies like ion-exchange membrane.

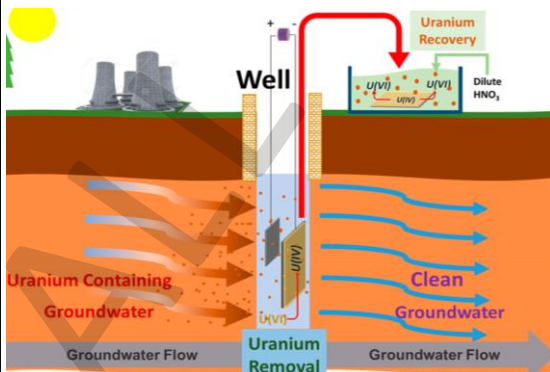
Groundwater contamination by Uranium

- WHO limit 30 microgram/liter
- No BIS standards for uranium
- Affected: at least 79 districts of 16 states

News:

- 2020 : 10 districts of Bihar
- 2019 : Uranium Corporation of India Ltd mining polluted ground water in Tummalapalle, Andhra Pradesh. *(tailings and raffinates are radioactive wastes)*

Negative health effects? Various



- ✓ Uranium is **naturally** present in earth's crust.
- ✓ Sediments brought by Himalayan **rivers**
- ✓ **Declining water table** provides oxidation condition.
- ✓ **Bicarbonate** and **nitrate** pollution enhance solubility.

Technological solutions:

- ✓ redox and flushing technologies

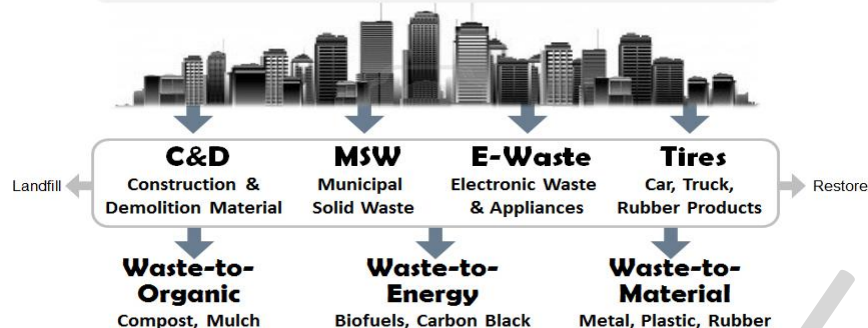
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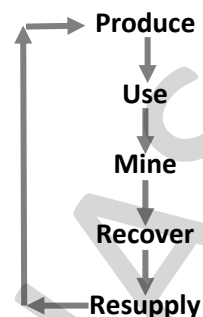
Urban Mining

(recovering rare metals from e-waste)

Urban Mining Process: Reclamation of valuable raw materials and metals from urban waste streams.



Urban Mining Goal: Monetize urban waste streams in order to produce revenue, businesses and jobs.



Right to Repair:

- Adopted by EU in 2019
- Companies have to make appliances longer-lasting, and supply spare parts for up to 10 years.



Plastic Pollution

Nurdles:

- tiny plastic pellets floating in oceans
- attracts microbes/toxins, transports them
- Major sources of microplastics in oceans: paints, nurdles, tyres, personal care products, textiles, etc.

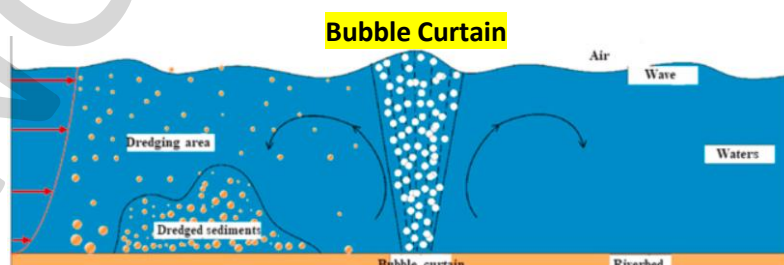
Air Curtain



Bubble Curtain technology: (aka pneumatic barrier)

Creates bubbles in water. Multiple applications:

- stop plastic from entering water bodies
- reduce propagation of shock waves
- prevent salt intrusion



Plastics Pact: (not by UN etc)

- Business lead initiative to convert linear plastics system into a circular plastics economy
- First Plastics Pact was launched in U.K. in 2018
- Now launched in India by CII & WWF (India 1st in Asia)

Plastic Waste Management Program:

- 2018-2024
- by UNDP with some private companies
- to manage plastic waste for circular economy



Ideonella sakaiensis:

bacteria that can eat plastic

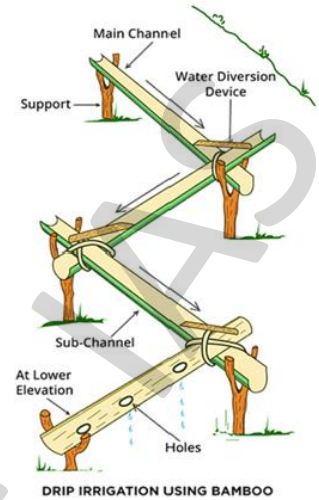
Uronema africanum Borge:

- type of algae/plant found in many places
- It can digest/biodegrade plastics

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Bamboo



Bamboo Oasis on Lands in Drought

- by Khadi and Village Industries Commission (KVIC)
- to create bamboo-based green patches in dry areas
- Bamboo can grow in highly degraded areas, grows very fast, hence used in land restoration

What is Bamboo?

- Outside** forest area is **GRASS**
- Inside** forest area:
 - **TREE** according to Indian Forest Act, 1927
- Inside** forest area:
 - **MFP** according to Forest Rights Act, 2006

Gregarious flowering in bamboo

- All bamboo of same species flower at same time
- Bamboo dies after flowering

Benefits of Bamboo: (many)

1. **carbon sequestration.**
2. Restore **soil fertility.**
3. **Food, construction, furniture, drip irrigation, etc.**

Cane and Bamboo Technology Centre

Under Ministry of DoNER (Dev of NE region)
To promote scientific dev of bamboo sector

55. Consider the following statements :

1. As per recent amendment to the Indian Forest Act, 1927, forest dwellers have the right to fell the bamboos grown on forest areas.
2. As per the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, bamboo is a minor forest produce.
3. The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 allows ownership of minor forest produce to forest dwellers.

- Prelims 2019

Cassava (Tapioca)

- Highly **drought-tolerant**
- Major staple food in developing world
- 3rd largest source of **carbohydrates** in tropics (after rice and maize)
- Many uses (mark all correct)



- **Native to South America**
- Introduced in South India in 1800s
- Tamil Nadu and Kerala are major producers in India
- **Nigeria** largest producer
- **Thailand** is largest exporter



Pterocarpus santalinus: (IUCN: Endangered)

- Red sanders, Yerra Chandanam, Chen chandanam, Rakta Chandana, saunderswood, red sandalwood
- Endemic to southern Eastern Ghats (**Andhra Pradesh**)
- Valued for the rich red colour of its wood (**not aromatic**)
- Not to be confused with aromatic Santalum sandalwood

Prelims 2016

With reference to '**Red Sanders**', sometimes seen in the news, consider the following statements:

- It is a tree species found in a part of South India.
- It is one of the most important trees in the tropical rain forest areas of South India.

Which of the statements given above is/are correct?

- (a) 1 only** (b) 2 only (c) Both 1 and 2 (d) Neither 1 nor 2

- Farmer can grow it, but requires permits to fell/transport/export the wood
- Included in CITES Appendix-II (not necessarily threatened with extinction, but trade must be controlled)

Red Sanders

Used for? Furniture, instruments, medicines...

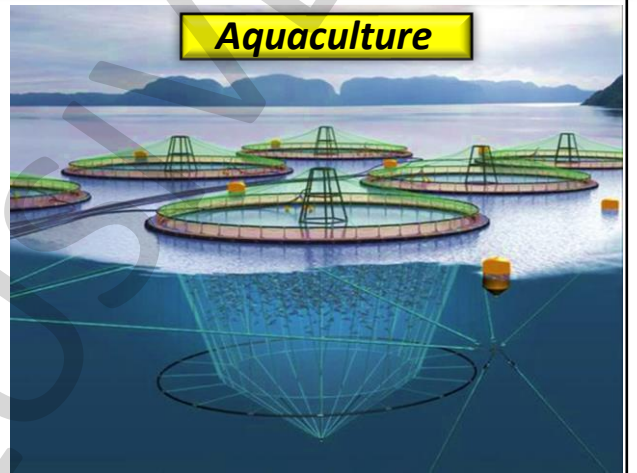
Seshachalam hills (BR):

7 peaks represents 7 hoods of Adisesha



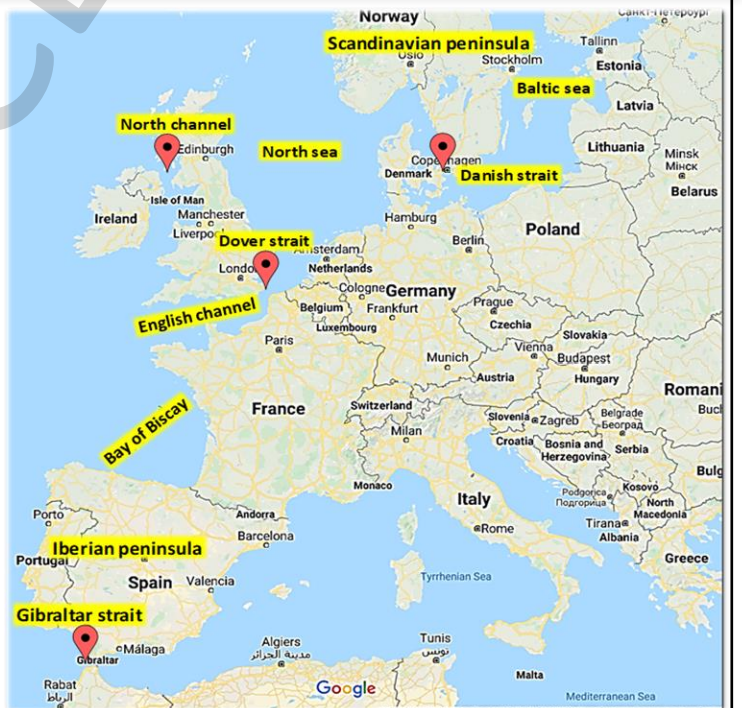
- Fishing:** catching fishes from wild
- Pisciculture:** cultivation of fishes
- Mariculture / Marine farming:** cultivation in sea water
- Aquaculture/Aquafarming:** cultivation of aquatic organisms
- Sea cage / Open cage culture:** cultivation in net with free flow of water

Aquaculture



NEED Dam (proposed)

Northern European Enclosure Dam



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Biodiversity

CBD CoP-15 (at Kunming, China)

- ❑ 1st meeting: 2021; 2nd meeting Oct 2022
- ❑ Main focus of CBD CoP-15 will be to evolve a post-2020 Global Biodiversity Framework

5th Global Biodiversity Outlook report (by UN-CBD)

- None of the 20 ABTs under SPB 2011-20 could be fully met by the world.
- Proposes adoption of new 30x30 plan: Bring at least 30% land and 30% marine areas under protection by 2030.

High Ambition Coalition (HAC) for Nature and People

- ❑ Launched in 2019 by Britain, France, and Costa Rica (country in Central America)
- ❑ It aims to protect at least 30% of world's land and ocean by 2030 (**30x30 target**)
- ❑ India is first from BRICS to join it.

Biological Diversity Act, 2002:

- Enacted to meet obligations under CBD
- Creates statutory bodies at national, state, local level (NBA, SBB, BMC)
- Creates biodiversity funds at national and state level (NBF, SBF)
- Secures benefit sharing with local people.
- Empowers state govt. to notify Biodiversity Heritage sites.
- Violation of the act can attract up to **5 years imprisonment**.

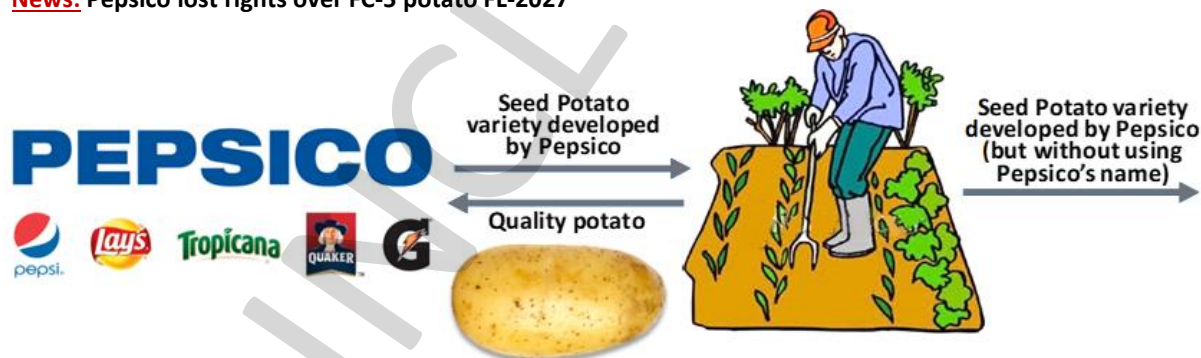
Biodiversity Management Committee

- ❑ 2.4 lakh BMC and 94,000 PBR
- ❑ Prepares People's Biodiversity Register
- ❑ PBR documents availability and traditional knowledge related to biological resources

Maharashtra is the first state to release its own Wildlife Action plan (2021-30)

PPVFR Act 2001

News: Pepsico lost rights over FC-5 potato FL-2027



Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001:

Enacted to give effect to TRIPS agreement. Rights under the Act:

- ❑ **Breeder's rights:**
 - Right to produce, sell, import, export the protected variety.
- ❑ **Researcher's rights:**
 - Can use any registered variety for research (even to develop a new variety)
- ❑ **Farmer's rights:**
 - Farmer who develops new variety can get it registered as a breeder
 - Allows farmer to save, use, sow, resow, exchange, share or **sell farm-saved seeds** except the brand name.
 - Farmers can claim **compensation** if registered variety fails to perform
 - Farmers need not pay **fees** at any tribunal or court (money from National Gene Fund)

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WPA 1972

- For wild animals, birds, plants, environmental security of India
- Central govt** can declare any area as **NP** or **WS**
- State govt** can declare any area as **NP** or **WS** or **Conservation** reserve or **Community** reserve (see page-24)
- Chief Wildlife Warden** (by State govt) can permit hunting/killing of any wild animal if it has become dangerous or is suffering beyond recovery (particular animal only)

Six schedules of WPA, 1972:

- Schedule 1 & 2:**
 - protected, highest penalty
 - e.g. Tiger, flying squirrel, cobra, mongoose
- Schedule 3 & 4:**
 - protected, lower penalty
 - e.g. Nilgai, Sambhar, wild pigs
- Schedule 5:**
 - vermins**, can be hunted
 - Central govt.** notifies (but can't notify animals of Schedule-1 or Part-2 of Schedule-2)
 - Currently only mice, rat, common crow, flying fox (fruit eating bats)
- Schedule 6:**
 - prohibited **plants**
 - Pitcher plant, Ladies slipper orchids, Red Vanda, Blue Vanda, Beddomes' cycad, Kuth

Animal Trophy



Taxidermy: preserving an animal's body

Pitcher plant



91. In India, if a species of tortoise is declared protected under Schedule I of the Wildlife (Protection) Act, 1972, what does it imply ?

- (a) It enjoys the same level of protection as the tiger.
- (b) It no longer exists in the wild, a few individuals are under captive protection; and now it is impossible to prevent its extinction.
- (c) It is endemic to a particular region of India.
- (d) Both (b) and (c) stated above are correct in this context. **Prelims 2017**

WPA establishes: (also see page-35)

National Board for Wildlife: Chair PM
State Board for Wildlife: Chair CM
Central Zoo Authority: Chair MoEFCC
National Tiger Conservation Authority: Chair MoEFCC
Wildlife Crime Control Bureau: HQ Delhi

Prevention of Cruelty to Animals Act, 1960

- "animal" means any living creature other than a human being
- Penalty:
 - 1st offence ₹ 10-50
 - Repeat offence ₹ 25-100
- #NoMore50 was in news
- Animal Welfare Board of India est in 1962; HQ Ballabgarh in Haryana (earlier Chennai)

35. According to the Wildlife (Protection) Act, 1972, which of the following animals **cannot** be hunted by any person except under some provisions provided by law ?

- 1. Gharial
 - 2. Indian wild ass
 - 3. Wild buffalo
- Select the correct answer using the code given below :
- (a) 1 only
 - (b) 2 and 3 only
 - (c) 1 and 3 only
 - (d) 1, 2 and 3 **Prelims 2017**

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IUCN

IUCN Green Status of Species

- ❑ Measures impact of conservation action
- ❑ It will be integrated with Red List to show both extinction risk and recovery progress.

Some recently declared Critically Endangered



Satara gecko - CR
Endemic to Western Ghats



Lesser Florican - CR
Smallest in the bustard family
Endemic to Indian Subcontinent

Explained: Why 'black tigers' sound a warning

They are found only in Simlipal. A study finds out what gives them their darker stripe pattern—how this is the result of inbreeding within Simlipal's small and isolated tiger population.



Negative effects of Habitat Fragmentation:

- Less movement of animals in search of **food**.
- Less movement of animals during natural disaster (like **drought**).
- More **man** animals conflict, more road **accidents**
- More **pollution** in habitats.
- Division of large population into small **unviable unit**, due to less genetic diversity.
- Less ability to cope with increased **competition or threat**.

Cheetah

See page- 30,32

African is bigger than Asian:
Lion, Elephant, Cheetah, etc.

Asiatic Cheetah is CR
African Cheetah is Vulnerable



Action Plan for Introduction of Cheetah in India:

- **50** to be reintroduced in NPs over **5 years**
- From **Southern Africa**
- First release site will be **Kuno NP**

Why Kuno NP?

- Suitable **habitat**
- Adequate **prey** base
- No **human** settlements (complete relocation of villages)

Why from Southern Africa?

- Asiatic (Iran) are CR (so sourcing will be problem)
- African cheetahs are ancestral to all other lineages

Kuno National Park (in northern MP)

- 1981 WS, 2018 NP; 748 sq. km.
 - part of Sheopur-Shivpuri **deciduous open forest**
- Some animals: (don't learn the following names)
- Leopard, sloth bear, dhole, jackal, hyena, Bengal fox
 - Chital, Sambar, Chinkara, Blackbuck, wild boar
 - Mugger crocodile, Gharial, Bengal monitor

Cheetah:

- Independent India's **only extinct large mammal**
- Lives in grasslands, scrubs, **semi-arid** environments
- Usually does not attack humans and large livestock
- Keystone species (high impact in its ecosystem)

Other recommended sites:

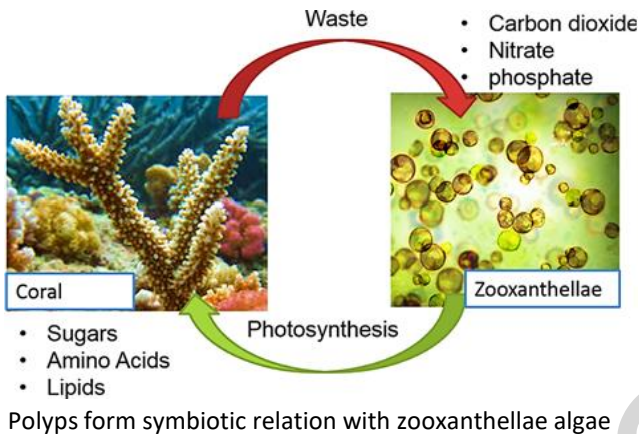
- ❑ Nauradehi WS → MP
- ❑ Gandhi Sagar WS (Bhainsrorgarh WS) → MP
- ❑ Shahgarh bulge → Jaisalmer, Rajasthan
- ❑ Mukundara TR → Rajasthan

Corals

- Coral is a group of thousands of **polyps**.
- Polyp is an invertebrate (no backbone) marine **animal**

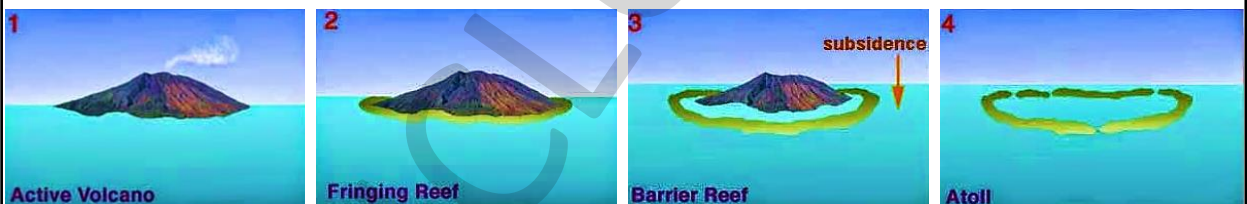
How are coral reefs formed?

- **Polyps excrete** calcium carbonate exoskeleton
- **Polyps die**, limestone exoskeleton remains
- **New Polyps** colonize limestone exoskeleton
- Process repeats
- Coral reef is built of layers of skeletons covered ultimately by living polyps.



What is coral bleaching?

- Polyps are **colorless**. Color we see is of **zooxanthellae algae** on polyps.
- When **stressed** by temperature change or pollution, corals **evict algae**.
- This causes coral bleaching. It can kill the colony if the stress is not mitigated.



Global distribution: (Covers < 1% of ocean)

- mostly in tropical waters
- 1/3rd in Australia, Indonesia, Philippines
- Great Barrier Reef: 2,600 km long, Queensland, Australia (world's largest coral reef system)

Why are coral reefs not found on all coasts?

Corals need specific environment conditions:

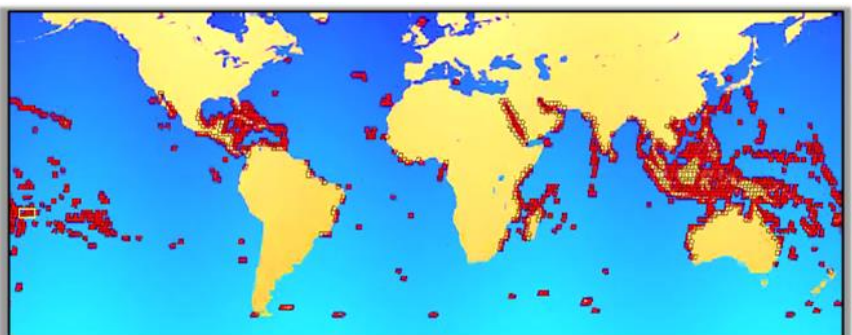
- Water temperature about **20°C**
- **Shallow water** (need sunlight, but not exposed)
- Water should be **salty** and **free from sediments**

Coral reefs are generally absent on western coasts. Why?

Western coasts have cold currents and upwellings that bring cold water.

Coral reefs in India:

- Lakshadweep (Atolls)
- A&N islands (Fringe)
- Gulf of Kutch (Fringe)
- Gulf of Mannar (Fringe)
- Sundarbans? No (mud!!!)



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Biodiversity:

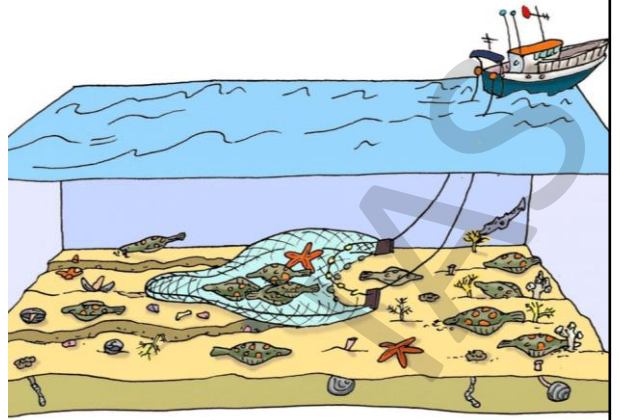
- More than tropical **rainforest**
- Home to **25%** of marine life

Importance:

- **Food security:** home for fishes
- **Carbon sink:** made of calcium carbonate
- **Barrier:** against waves & storms

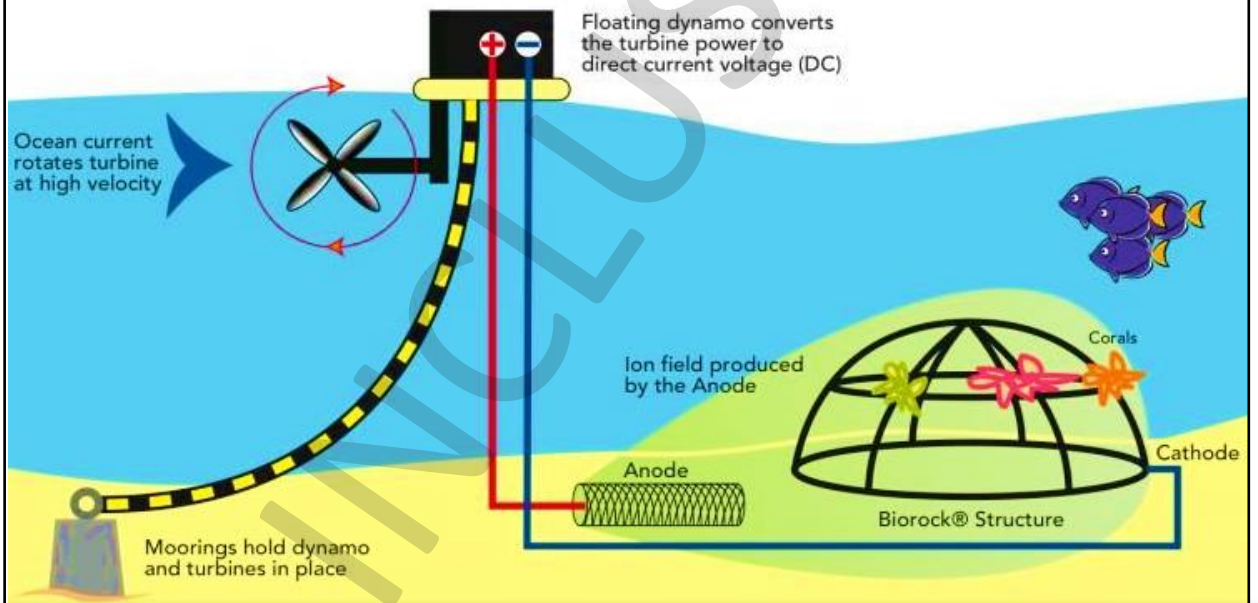
Threats faced by coral reefs:

- **Global warming:** high temperature
- **Fishing methods:** bottom-trawling →
- **Pollution:** depletes oxygen; makes water muddy
- **Ocean acidification:** carbonic acid dissolves **calcium carbonate**



Bio-rock technology:

- ZSI is using it for coral restoration in **Gulf of Kutch**
- **Steel** structures are **submerged** to sea bed near shore.
- Small **current** is continuously passed through it.
- **Minerals** from sea water get **deposited** on steel.
- This accumulation of **calcium carbonate** is called Bio-rock.



Some places in news



- Greenland:** world's largest island
- located between Arctic & Atlantic oceans
 - part of Kingdom of Denmark (Denmark, Greenland, Faroe islands)

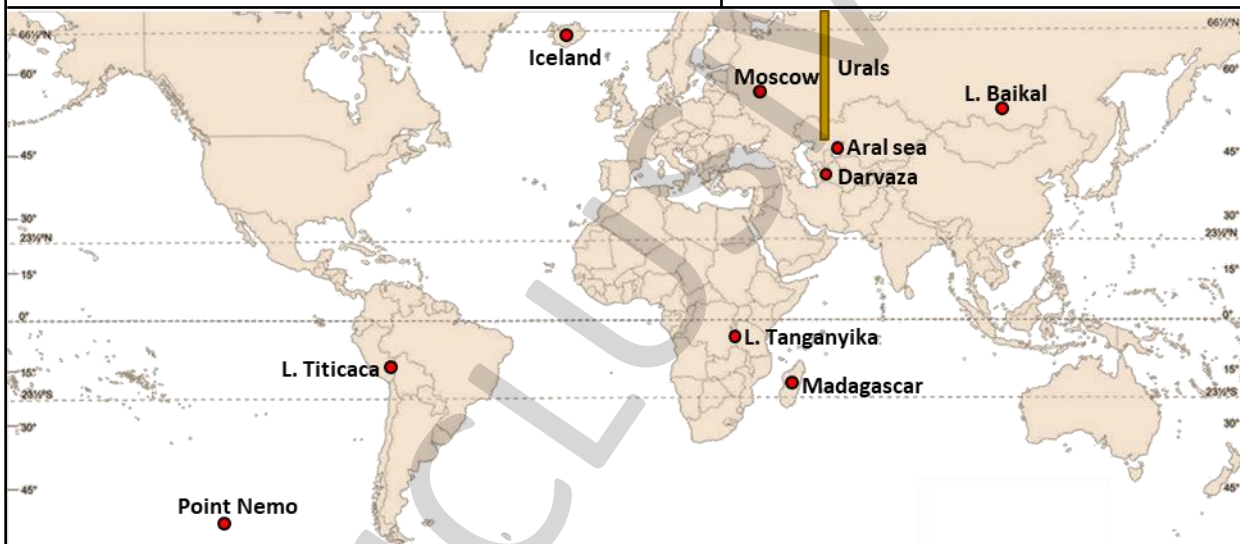
- Darvaza** Turkmenistan
- natural gas field collapsed into a cavern
 - burning since 1971

- Iceland**
- It is the only part of Mid-Atlantic Ridge that rises above sea level
 - Not member of EU

- Lake Baikal:** Russia
- World's **deepest** lake; world's **oldest** lake
 - World's **largest** freshwater lake by volume
 - > 20% of world's fresh surface water
 - UNESCO World Heritage site

- Ural mountain range:**
- forms natural **divide** between Europe and Asia
 - "Treasure box" of mineral resources for Russia
 - Almost 80% Russians live west of Urals
 - Moscow** is in west of Urals

- Aral sea:**
- between Kazakhstan and Uzbekistan
 - 1960s:** rivers that fed it were diverted to Soviet irrigation projects
 - 2010s:** just 10% remains



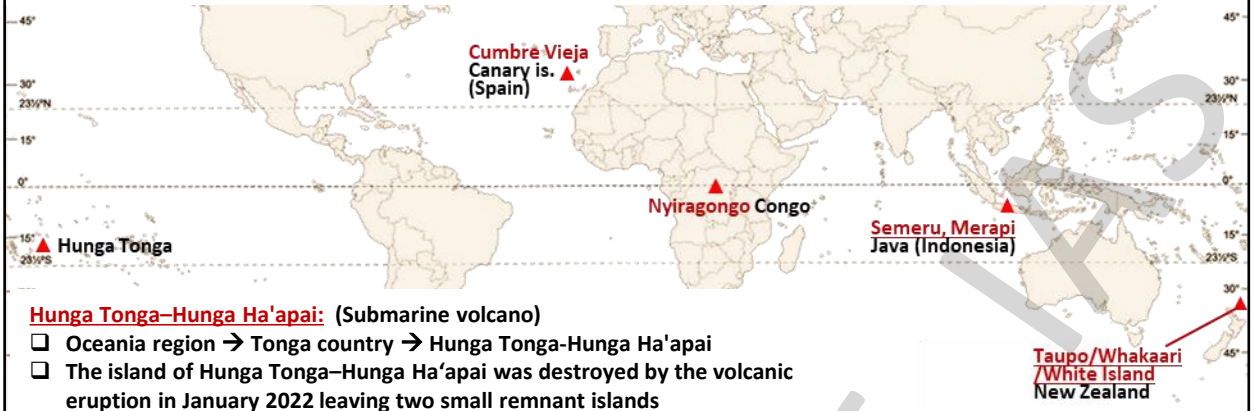
- Lake Titicaca:**
- Freshwater lake in **Andes** on Bolivia - Peru border
 - Often called as "highest navigable lake" in world

- Lake Tanganyika:**
- Everything on 2nd place after Baikal
 - World's longest freshwater lake
 - Tanzania, Congo, Burundi, Zambia

- Point Nemo:** (Nemo means No One in Latin)
(Ocean pole of inaccessibility / Spacecraft cemetery)
- point in ocean that is **farthest from land**
 - about **2,700 km** from nearest land
 - ISS is more closer to it! (400 km)

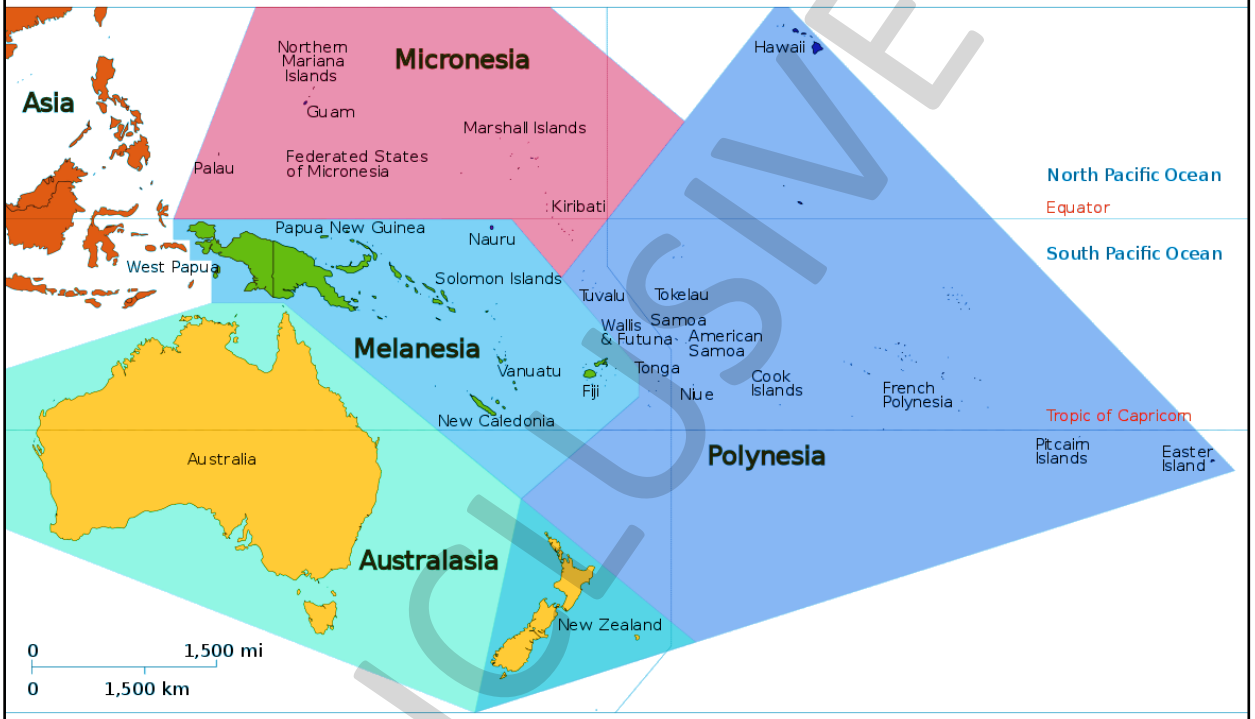
- Madagascar:**
- Former French colony (1960 independence)
 - World's **2nd largest** island country (#1 Indonesia)
 - Mozambique current (**warm**) is on west
 - Split from Indian subcontinent **9 crore** years ago
 - It is a biodiversity **hotspot**

Some active volcanoes in news

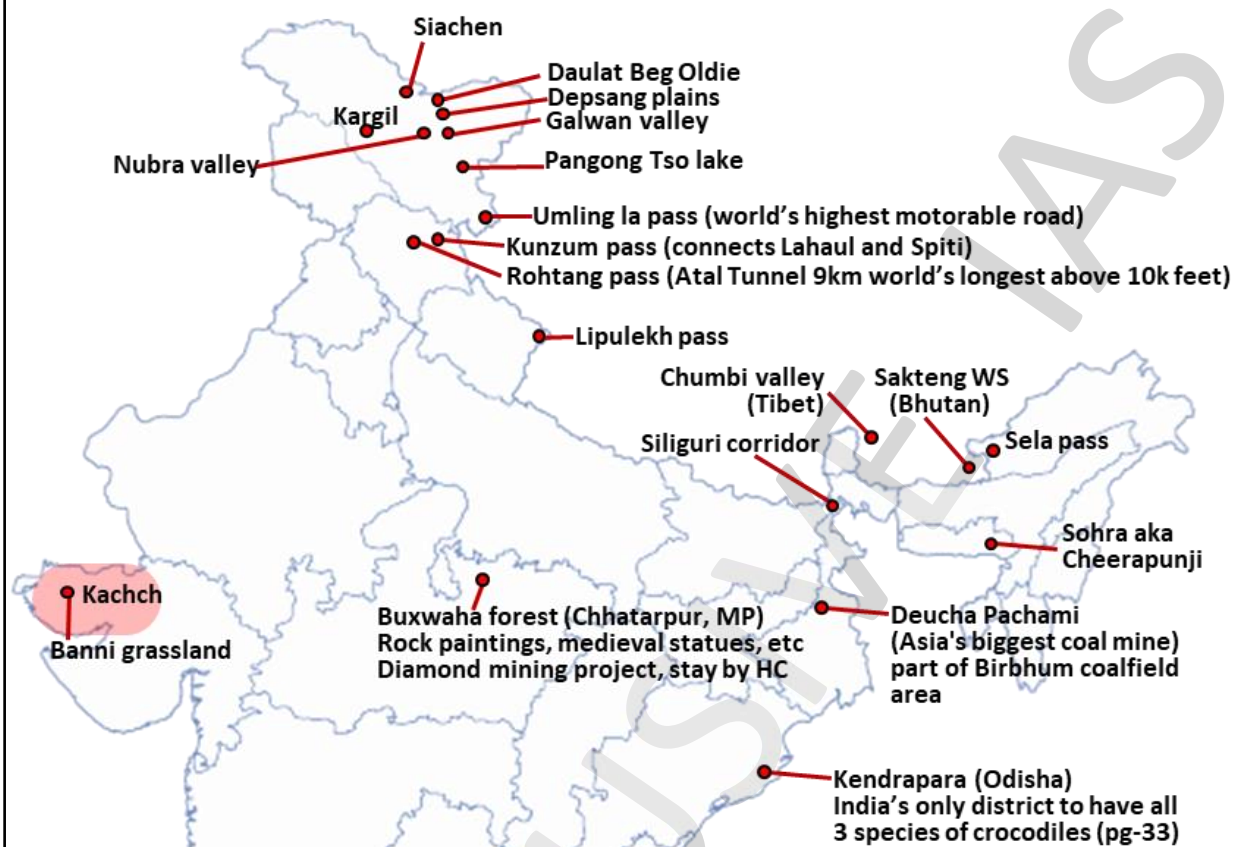


Hunga Tonga–Hunga Ha’apai: (Submarine volcano)

- Oceania region → Tonga country → Hunga Tonga-Hunga Ha’apai
- The island of Hunga Tonga–Hunga Ha’apai was destroyed by the volcanic eruption in January 2022 leaving two small remnant islands

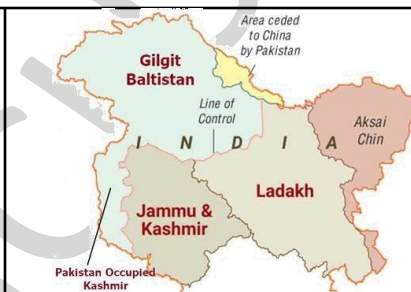


Some places in news



Banni grassland (in Kachch)

- Asia's largest grassland
- Maldhari Tribes
- Chir Batti lights (Ghost lights)
- Gando baval (*P. juliflora*)
- Kharai camels (can swim, eats mangroves)
- Wild Ass (pg-100)



Prelims 2020

- Siachen Glacier is situated to
- (a) East of Aksai Chin
 - (b) East of Leh
 - (c) North of Gilgit
 - (d) North of Nubra Valley

Halari donkey White, Saurashtra area



Prosopis juliflora →

- Native to South America
- Invasive species in Asia/Africa
- Vilayati kikar
- Seemai karuvel
- Ballaari Jaali

Some aspirant states of India

