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Success is born of action...

Topic 1. INFRASTRUCTURE FOR RESILIENT ISLAND STATES

Importance for Prelims: Economy



IRIS and CDRI work to strengthen critical infrastructure against climate change

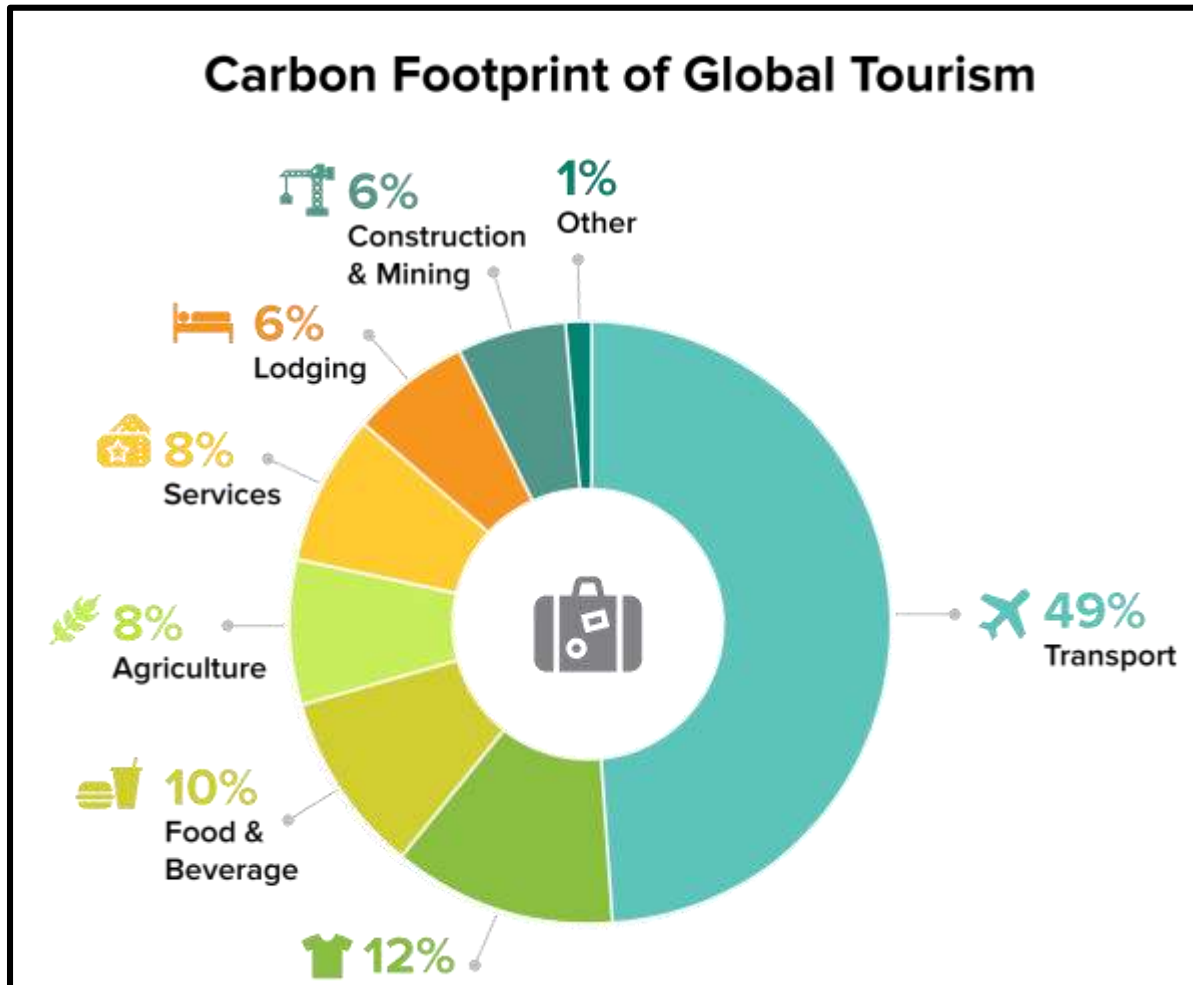
- 2 Prime Minister Narendra Modi along with his United Kingdom counterpart Boris Johnson and some different world leaders can launch a brand new programme to secure and strengthen essential infrastructure in tiny island states against disasters induced by climate change.
- Named IRIS or Infrastructure for Resilient Island States, this programme is that the 1st major work of the Coalition for Disaster Resilient Infrastructure that India had initiated in 2019.
- CDRI – Climate-proofing infrastructure The Coalition for Disaster Resilient Infrastructure (CDRI) may be a multi-stakeholder international partnership of national governments, United Nations agencies and programmes, multilateral development banks and financing mechanisms, the personal sector, and information establishments.
- The Prime Minister of India launched CDRI during his speech at the United Nations Climate Action Summit on twenty third Sep 2019.

- The CDRI Secretariat is predicated in New Delhi, India. The Coalition for Disaster Resilient Infrastructure (CDRI) is all regarding climateproofing critical infrastructure in member countries.
- As of now, twenty six countries together with the U.S, Germany, UK, Australia, Brazil, Bangladesh, Islamic State of Afghanistan, Nepal, Bhutan, Sri Lanka and Japan are members of the coalition.
- The coalition is supposed to function a ‘knowledge centre’ wherever member countries will share and learn best practices with respect to disaster-proofing infrastructure comes.
- The coalition won't create any new infrastructure however, instead, can work towards creating existing and upcoming infrastructure in member countries a lot of strong and resilient in order that they will withstand climate disasters like floods, heat waves, cyclones, forest fires, rains and different such events.
- According to CDRI estimates, each dollar invested with in making infrastructure a lot of resilient in low and middle-income countries will potentially save over four greenbacks in losses suffered once a disaster strikes.
- The aim of CDRI is to minimise damages and disruptions caused by disasters.
- The CDRI is that the second international climate initiative that India has launched.
- The 1st was the International solar Alliance (ISA) launched at the 2015 Paris global climate change conference.
- While the star alliance would result in mitigation of greenhouse gases through large-scale switch from fossil fuels to solar power, simultaneously addressing problems with energy access and energy security, CDRI is aimed towards the adaptation goal.

- IRIS or Infrastructure for Resilient Island States Infrastructure for Resilient Island States (IRIS) is an operationalisation of the CDRI initiative.
- According to the CDRI, many small island states have lost as much as nine per cent of their GDP in single disasters within the last few years.
- The main work would involve mobilising and leading monetary resources towards building resilient infrastructure in these countries, retrofitting existing infrastructure, development of early warning systems, and development and sharing of best practices.

Topic 2. ART INDUSTRY REDUCING ITS CARBON FOOTPRINT

Importance for Prelims: Environment



While several exhibitions within the past are dedicated to nature and also the need to arrest environmental degradation, art establishments currently are looking inward, analysing if the crisis begins at home.

- “Waste Age: What will style Do” exhibition – appearance at the global waste crisis and presents possible solutions through the utilization of reclaimed and natural material.

What is the exhibition?

- Timed round the UN’s COP26 conference which will take place from October thirty one to November 12, the on-going exhibition comprises

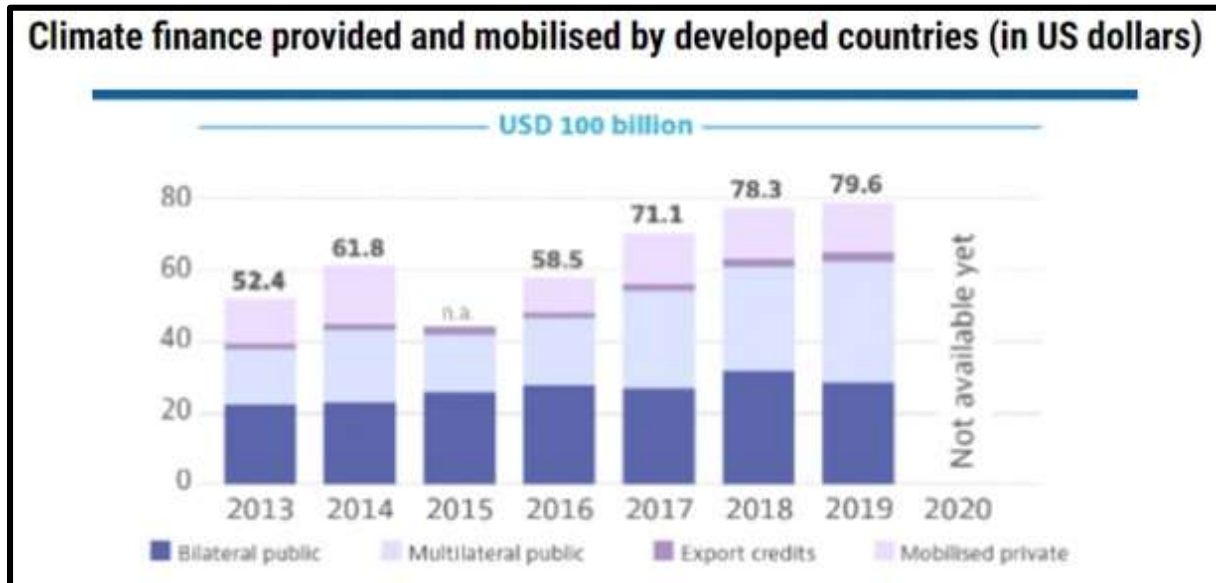
more than three hundred objects and features works of designers who are rethinking our relationship with everyday things, from the method we dress to what we eat and how we live.

What is an environmental audit?

- According to the University of London web site, environmental auditing began within the United States within the early Nineteen Seventies.
- The United States Environmental Protection Agency defines environmental audit as “a systematic, documented, periodic, and objective review of facility operations and practices related to meeting environmental requirements”.
- Gallery Climate Coalition (GCC) – the group’s aim is to influence the art trade to reduce its carbon footprint.
- The Carbon Calculator, accessible to its members freed from charge, is designed for the art world and permits users to identify the first reasons for the carbon footprint and take needed action.
- The indicators include factors like travel and transport arrangements, packaging and printing details

Topic 3. CLIMATE FINANCE DELIVERY PLAN

Importance for Prelims: Environment



Expectations from CoP26: Climate finance needs to be scaled up with focus on adaptation, says LDC Group.

- Least developed countries (LDC) are the least responsible for global climate change however bear most of its force.
- They represent over one billion people in Africa, the Asia Pacific and therefore the Caribbean.
- LDCs are now leading the manner for decisive climate action, according to the United Nations Development Programme.
- About eighty three per cent of the LDCs have submitted their increased NDCs as of oct. 12, 2021.
- At least \$93 billion per year are needed by all forty six LDCs for implementing their post-2020 climate action plans. But, it's been a decade and also the developed nations failed to deliver on climate finance.
- In 2009, at the Conference of the Parties (COP) of the UN Framework Convention on global climate change (UNFCCC) in Copenhagen (COP15), developed country Parties committed, within the context of

meaningful mitigation actions and transparency on implementation, to a goal of mobilising together US\$100 billion a year by 2020 to deal with the wants of developing countries.

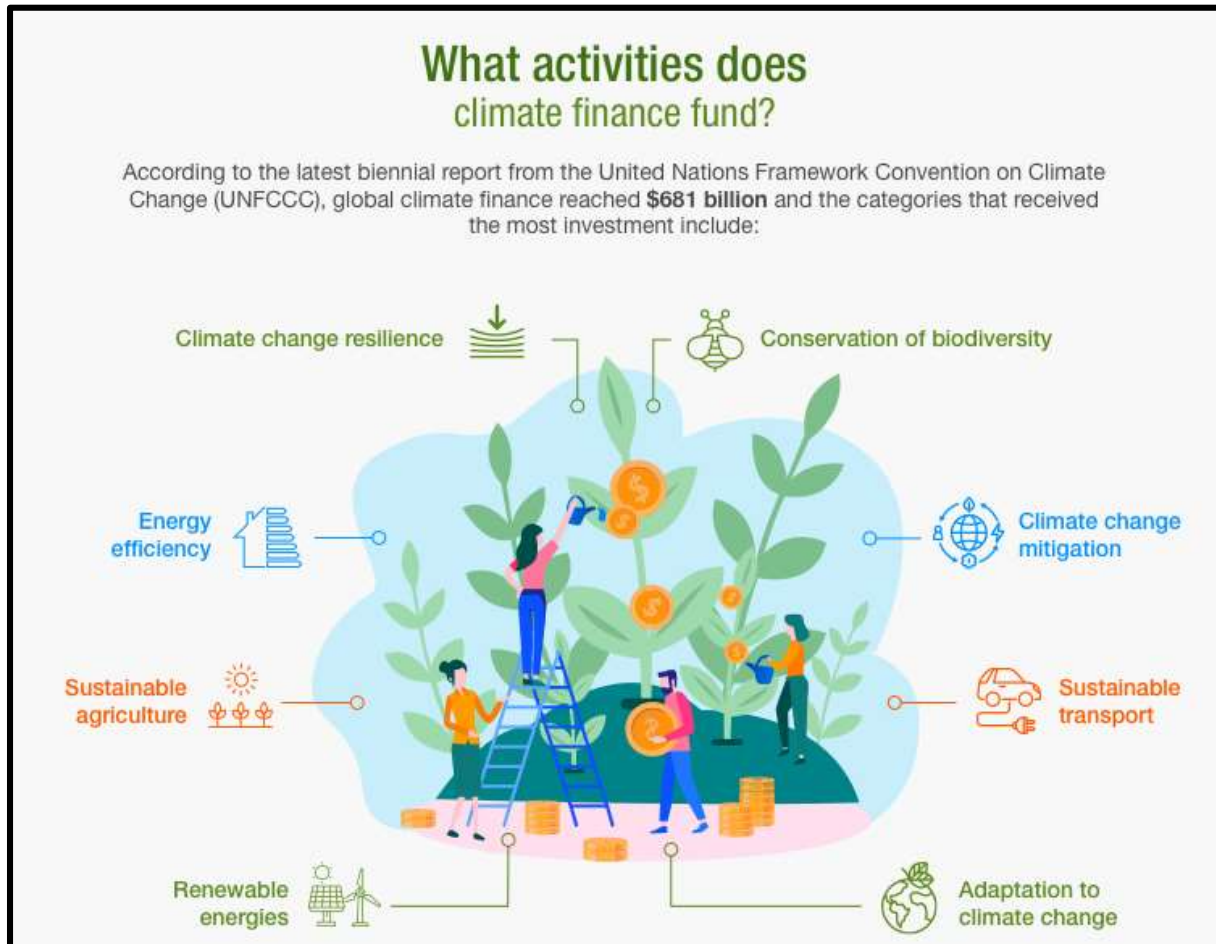
- The climate finance goal was then formally recognized by the UNFCCC Conference of the Parties at COP16 in Cancun city.
- At COP21 in Paris, Parties extended the US\$100 billion goal through 2025. Developed countries may be ready to deliver on the agreed goal of mobilising \$100 billion per annum in climate finance to support developing countries, said Organisation for Economic Co-operation and Development (OECD) in its report Climate Finance Provided and Mobilised by Developed Countries: aggregate Trends free Sept fifteen, 2021. Developed countries can create significant progress towards the \$100 billion goal in 2022 and supply confidence that it'll be met in 2023, consistent with OECD.
- The developed countries can mobilise quite \$100 billion per year thereafter through to 2025.
- At COP twenty six, discussions can begin on a new quantified climate finance goal.
- This time, new goal for climate finance should be supported the actual wants of our countries and also the scale of action that's required to leapfrog to low-carbon technologies.
- The LDC cluster has appreciated assurances under the new Climate Finance Delivery set up however raised doubts since the developed group did not deliver on its guarantees within the last decade.
- Loss and harm from climate change The Loss and damage (L&D) discourse, initiated virtually 3 decades ago by tiny Island States worried concerning ocean level rise, has given voice to concerns for climate change-related impacts which will be irreversible and beyond physical

and social adaptation limits.

- The discourse has become institutionalised in international climate policy through the Warszawa Mechanism on Loss and Damages adopted in 2013 and was given firm thought within the Paris Agreement in 2015.
- The term loss and damage is used among the United Nations Framework Convention on global climate change (UNFCCC) method to refer to the harms caused by anthropogenic climate change.
- The UNFCCC has outlined loss and damage to incorporate harms resulting from sudden-onset events (climate disasters, like cyclones) also as slow-onset processes (such as ocean level rise).
- ‘Damage’ is the negative impacts that can be repaired or restored (such as windstorm damage to the roof of a building, or damage to a coastal mangrove forest from coastal surges which affect villages).
- While, ‘Loss’ is that the negative impacts that can't be repaired or restored (such as loss of geological freshwater sources associated with glacial melt or desertification, or loss of culture or heritage related to potential population redistribution off away areas that become less habitable because of climate change).
- Thimphu call for Ambition and Action Ministers and Heads of Delegation of the least Developed Country (LDC) Parties to the UN Framework Convention on global climate change (UNFCCC), met in Thimphu, Bhutan, and nearly on eleven Oct 2021 in preparation for the United Nations global climate change Conference (COP26, CMA3, CMP16) happening in Glasgow, October-November 2021.
- They emphasized that global climate change needs urgent and immediate action that's each ambitious and equitable to support the interests of the poorest and most vulnerable countries and peoples

Topic 4. CLIMATE FINANCE

Importance for Prelims: Environment



COP 26 in Glasgow

- Climate finance refers to native, national or international financing—drawn from public, personal and various sources of financing—that seeks to support mitigation and adaptation actions that may address global climate change.
- The Convention, the Kyoto Protocol and also the Paris Agreement call for monetary assistance from Parties with a lot of financial resources to those who are less endowed and a lot of vulnerable.
- In accordance with the principle of “common however differentiated responsibility and individual capabilities” started out within the Convention, developed country Parties are to provide monetary resources

to help developing country Parties in implementing the objectives of the UNFCCC.

- The Paris Agreement reaffirms the obligations of developed countries, whereas for the primary time conjointly encouraging voluntary contributions by alternative Parties.

What is the financial mechanism?

- What are the other funds? To facilitate the availability of climate finance, the Convention established a financial mechanism to produce monetary resources to developing country Parties.
- The monetary mechanism conjointly serves the Kyoto Protocol and therefore the Paris Agreement.
- The Convention states that the operation of the financial mechanism is entrusted to 1 or a lot of existing international entities.
- The world environment Facility(GEF) has served as an operating entity of the money mechanism since the Convention's entry into force in 1994.
- At COP sixteen, in 2010, Parties established the green Climate Fund (GCF) and in 2011 conjointly designated it as an operative entity of the money mechanism.
- The money mechanism is accountable to the COP, that decides on its policies, programme priorities and eligibility criteria for funding. additionally to providing guidance to the GEF and also the GCF, Parties have established 2 special funds—the Special global climate change Fund (SCCF) and also the Least Developed Countries Fund (LDCF), each managed by the GEF—and the adaptation Fund (AF) established under the Kyoto Protocol in 2001.
- At the Paris global climate change Conference in 2015, the Parties agreed that the operative entities of the money mechanism – GCD and GEF –

also because the SCCF and therefore the LDCF shall serve the Paris Agreement.

- At COP sixteen in 2010, Parties decided to determine the standing committee on Finance (SCF) to help the COP in exercise its functions in relation to the money mechanism of the Convention.
- The UNFCCC web site includes a climate finance information portal with useful explanations, graphics and figures for better understanding the climate finance method and as a gateway to info on activities funded in developing countries to implement climate action.

Topic 5. WMO STATE OF THE GLOBAL CLIMATE 2021 REPORT

Importance for Prelims: Environment

The last seven years are on track to be the warmest on record, according to the provisional WMO State of the Global Climate 2021 report

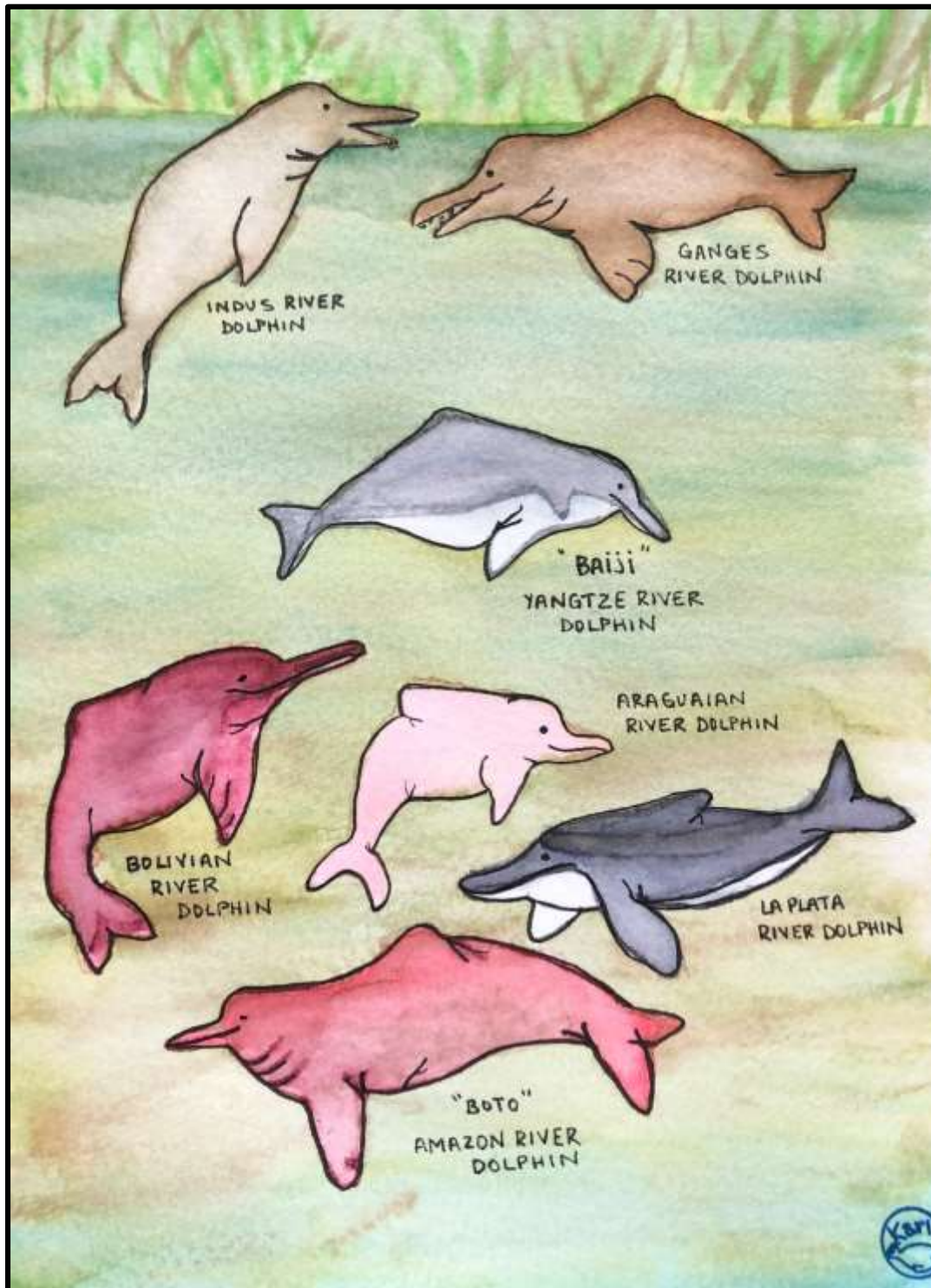
- The novel coronavirus disease (COVID-19) pandemic couldn't deter the world from emitting greenhouse gases. And now, record atmospheric greenhouse emission concentrations in 2021 have propelled the earth into chartless territory, consistent with the globe meteorologic Organization (WMO).
- The last seven years are on track to be the warmest on record, consistent with the provisionary World Meteorological Organization State of the global Climate 2021 report.
- Other facts of report – greenhouse emission concentrations reached new highs in 2020
- The international mean temperature for 2021 (based on information from January-September) was concerning 1.09°C higher than the 1850-1900 average 2015-2021 are going to be the warmest years on record
- The higher 2,000-metre of the ocean continuing to heat in 2019, reaching a new record high.
- A preliminary analysis supported seven world international sets advised that 2020 surpassed the record The ocean absorbed around twenty three per cent of the annual emissions of anthropogenic CO₂ to the atmosphere so, has become additional acidic.
- Open ocean surface pH declined globally over the last forty years; it's now the lowest it's been in a minimum of 26,000 years
- As the pH of the ocean decreases, its capability to soak up CO₂ from the atmosphere conjointly declines.
- The mean international mean ocean level rise was 2.1 millimeters a year

between 1993 and 2002 and 4.4 millimetre a year between 2013 and 2021, a rise by a factor of 2 between the periods This was mostly thanks to an accelerated loss of ice mass from glaciers and ice sheets

- On August fourteen, the rain was discovered for many hours at Summit Station, the highest purpose on the Greenland Ice Sheet (3,216 m).
- Air temperatures remained on top of freezing for regarding 9 hours. there's no previous report of rainfall at Summit.
- California reached 54.4°C on July nine, equalling the same 2020 worth because the highest recorded within the world since at least the 1930s Conflict, extreme weather events and economic shocks have increased in frequency and intensity within the last ten years.
- The combined effects of those perils, more exacerbated by the COVID-19 pandemic, have led to an increase in hunger.

Topic 6. INDUS RIVER DOLPHIN

Importance for Prelims: Environment



Punjab does a deep dive for Indus dolphins

- Scientific Name: *Platanista minor*. Indus River dolphins are believed to have originated within the ancient Tethys ocean.

- When the ocean dried up roughly fifty million years ago, the dolphins were forced to adapt to its only remaining habitat—rivers.
- Today, they'll only be found within the lower elements of the Indus|river} in Pakistan and in River Beas, a tributary of the Indus River in Punjab, India.
- They have custom-made to life within the muddy watercourse and are functionally blind.
- They rely on echolocation to navigate, communicate and hunt prey as well as prawns, catfish, and carp.
- It has been named because the national mammal of Pakistan, and therefore the state aquatic animal of Punjab, India.
- IUCN status: Endangered.
- They live for a minimum of for thirty years and grow over two metres long. Currently, Indus and Ganges river|river} dolphins are classified as 2 subspecies under South Asian River dolphins(Platanistagangetica).
- Gangetic dolphin Gangetic river dolphin is primarily found within the Ganges and Brahmaputra Rivers and their tributaries in India, Bangladesh, and Nepal.
- Habitat: they like deep waters in and round the confluence of rivers. They conjointly act as an indicator of the health of the freshwater ecosystem as they'll only live in freshwater.
- The Gangetic dolphin is India's national aquatic animal.

IUCN Status: vulnerable

CITES: Appendix I (It means that we cannot transfer any tissue or sample to foreign countries while not obtaining CITES permission from the Competent

Authority of government of India) wildlife (Protection), Act 1972: Schedule

1. Vikramshila Gangetic Dolphin Sanctuary (VGDS) in Bihar is India's individual sanctuary for the Gangetic dolphin.

Topic 7. INDIA'S 5-POINT ROAD MAP MADE DURING COP-26

Importance for Prelims: Environment

INDIA'S 5-POINT ROADMAP UNVEILED

1 TAKE NON-FOSSIL
energy capacity to
500 GW by 2030

2 NET ZERO BY 2070:
India rejected calls to
announce a target so
this is a give. Net zero
means all man-made
GHG emissions must be
removed from
atmosphere through
absorption in processes
like photosynthesis or
physical removal

3 MEET 50% OF ENERGY
requirements from
renewables by 2030

4 REDUCE TOTAL
projected carbon
emissions by 1 bn tonnes
from now to 2030

5 REDUCE ECONOMY'S
carbon intensity to
less than 45% by 2030

India's 5-point road map made during COP-26

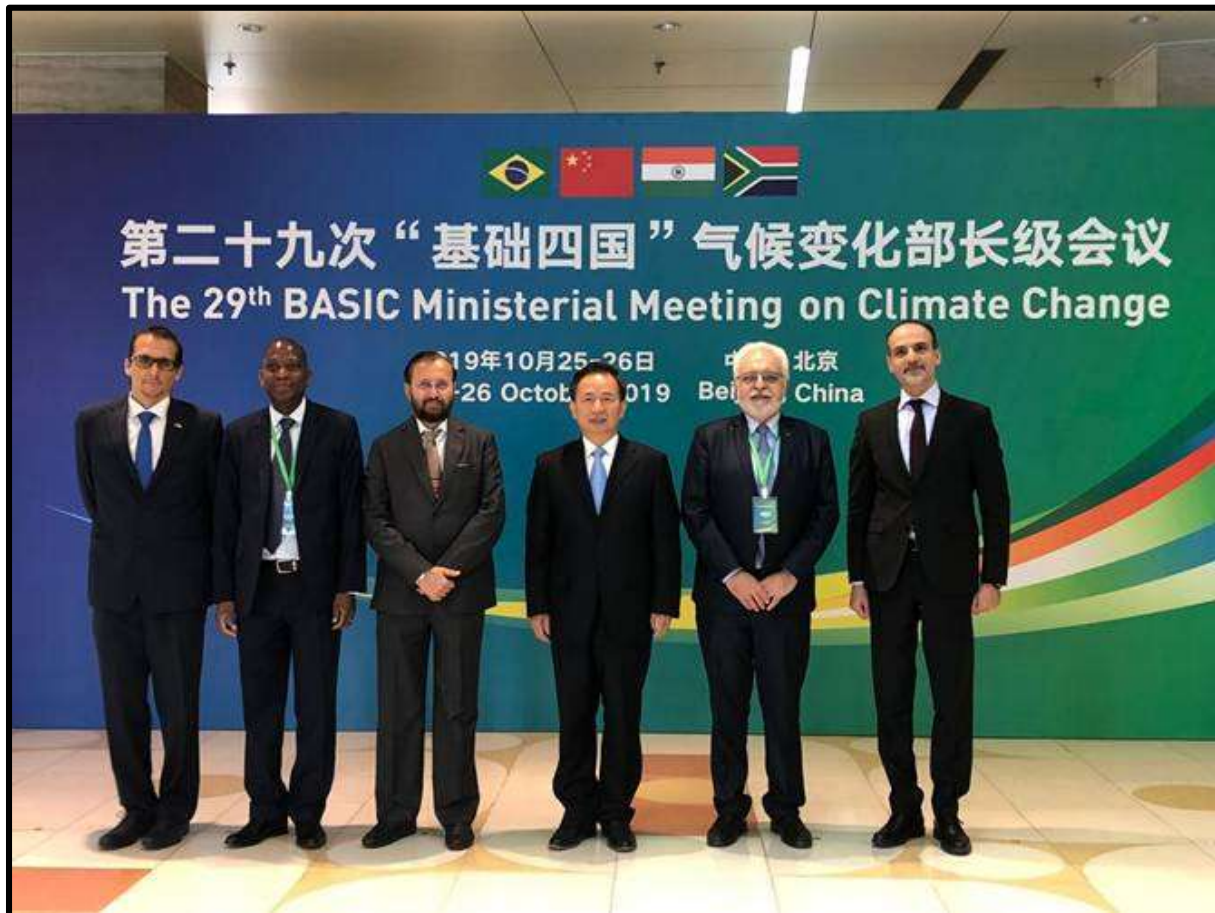
- Prime Minister Narendra Modi proposed a five-fold strategy for India to play its half in serving to the globe get closer to 1.5 degrees Celsius on the primary day of the world climate meet in glasgow.
- The prime minister euphemistically termed his scheme as 'Panchamrita' which means the 'five ambrosia'.

- ‘Panchamrita’ may be a traditional technique of blending 5 natural foods — milk, ghee, curd, honey and sugar.
- These are used in Hindu and Jain worship rituals.
- It is also used as a technique in Ayurveda.
- 1-billion-tonne emissions cut the foremost substantive new commitment, relates to the 1-billion-tonne reduction in its total projected emissions from now till 2030.
- This is that the 1st time that Republic of India has taken any climate target in terms of its absolute emissions.
- Though it’s not an immediate emission reduction target, something that only developed countries are expected to require, the reduction marks a significant step towards bending India’s emissions trajectory.
- According to the globe Resources Institute, India’s total greenhouse emission emissions were regarding 3.3 billion tonnes in 2018.
- It’s projected to rise on top of four billion tonnes per annum by 2030.
- That would mean between currently and 2030, India can be emitting anyplace between thirty five to forty billion tonnes at the present rates of growth. Cutting one billion tonnes would, therefore, represent a discount of 2.5 to three per cent in its absolute emissions within the business-as-usual scheme within the next 9 years.
- internet-Zero Target – Net Zero may be a state during which a country’s total emissions are offset by absorptions of CO₂ from the atmosphere, like that done by trees and forests, and physical removal of CO₂ through futuristic technologies.
- More than seventy countries have promised to become internet Zero by the center of the century, and this can be being thought of vital for meeting the Paris Agreement goal of keeping world temperatures among two degrees Celsius from pre-industrial times.

- Earlier targets by India – In its climate action set up submitted under the Paris Agreement, India had promised to reduce its emissions intensity, or emissions per unit of gross domestic product, by thirty three to thirty five per cent by the year 2030 compared to 2005 levels.
- New target – India has committed to reduce carbon intensity to less than forty five per cent by 2030.
- Two years past, Modi, speaking at a climate meeting on the sidelines of the United Nations General Assembly in new york, said India would take up its put in capability of renewable energy to 450 GW by 2030.
- New target – installed capability of renewable energy to five hundred GW by 2030.
- The increase in proportion of renewable energy sources in India's electricity generation to fifty per cent may be a natural corollary of this.
- As of currently, India was already targeting forty per cent electricity production through non-fossil fuel sources by 2030.

Topic 8. BASIC COUNTRIES

Importance for Prelims:IR



COP26: India, Brazil, China, S Africademand \$100-b climate finance support

- The BASIC countries — a grouping of Brazil, South Africa, india and China.
- The BASIC cluster was shaped because the results of an agreement signed by the four countries on Nov twenty eight, 2009.
- The signatory nations, all recently industrialized, committed to act conjointly at the Copenhagen climate summit in 2009, as well as a potential united walk-out if their common minimum position wasn't met by the developed nations.
- The BASIC countries established one in all the parties within the Copenhagen Accord reached with the US-led grouping; the Accord, was,

however, not lawfully binding.

- These nations have a broadly common position on reducing greenhouse emission emissions and raising the huge funds that are required to fight global climate change.
- The BASIC cluster wields considerable heft purely due to the size of the economies and populations of the member countries.
- China, India, and Brazil are the world's second, fifth, and ninth-largest economies.
- Brazil, South Africa, India and China put together has one-third of the world's geographic area and nearly forty per cent of the world's population.
- BASIC is one among many teams of nations operating together to fight global climate change and carry out negotiations within the UNFCCC.
- These major developing economies are important polluters however bear diminished responsibility for the CO₂ that has been pumped-up into the atmosphere since 1850 and even have low per capita emissions due to their important populations.
- These countries have therefore for several years sought to rebuff pressure from developed countries to require on firmer emission reductions.
- Paris Rulebook While the Paris Agreement laid out the framework for international action, the Rulebook will set this Agreement in motion by laying out the tools and processes to enable it is implemented fairly and properly.
- Countries had agreed to develop and finalise the Paris Rulebook at COP24 in Poland in 2018.

Topic 9. MOUNT TRISHUL

Importance for Prelims: Geography

Missing Naval officer's wife wants search operations to continue on Mount Trishul

- Trisul may be a group of 3 Himalayan Mountain peaks of western Kumaun, with the highest (Trisul I) reaching 7120m.
- The 3 peaks are named Trisul I, Trisul II, and Trisul III. The 3 peaks resemble a trident – in Hindi/Sanskrit, Trishula, trident, is that the weapon of Shiva.
- The Trishul group forms the southwest corner of the ring of peaks enclosure the nanda devi Sanctuary.

Topic 10. INTERNATIONAL FUND FOR AGRICULTURAL DEVELOPMENT (IFAD)

Importance for Prelims: Environment



Local knowledge refined with tech & funds can help climate adaptation in AsiaPacific: IFAD

- The International Fund for Agricultural Development (IFAD) aims to channelise \$500 million in climate finance that will help 10 million vulnerable people in the AsiaPacific region become resilient to climate change, the organisation announced.
- The Asia-Pacific region is home to two-thirds of the world's poorest people.
- The region has the largest number of poor in the world, with about 560 million (55 per cent of the global total) living below the \$1.25 (Rs 93.5)-a-day poverty line.
- Of these, seventy six per cent live in rural areas.
- IFAD is a global financial institution and a specialised UN agency based mostly in Rome, the UN's food and agriculture hub.
- It works to address financial condition and hunger in rural areas of

developing countries.

- It is that the only multilateral development organization that focuses only on rural economies and food security.
- IFAD works wherever economic condition and hunger are deepest: within the most remote regions of developing countries and fragile things, wherever few development agencies venture.
- IFAD has 177 member states and works in partnership with the Organization of the petroleum exporting Countries (OPEC) and members of the Organisation for Economic Co-operation and Development (OECD).
- Enhanced Adaptation for smallholder Agricultural Programme (ASAP+) the adaptation for smallholder Agriculture Programme is that the International Fund for Agricultural Development's (IFAD) main programme for channelling climate and environmental finance to husbandman farmers.
- The Enhanced Adaptation for Smallholder Agriculture Programme (ASAP+) is a 100 per cent climate financing mechanism and is envisioned to be the largest fund dedicated to channeling climate finance to small-scale producers.
- IFAD is the permanent trustee.
- The governments of Qatar, Austria, Ireland and Germany are initial contributors to ASAP+.

Topic 11. 'BIRD OF THE YEAR' AWARD IN NEW ZEALAND

Importance for Prelims: Environment

'Bird of the Year' award has created controversy in New Zealand

- Pekapeka-tou-roa, a native New Zealand bat, has won the country's annual Bird of The Year award, hosted by Forest and Bird, an freelance conservation organisation.
- The title, awarded to a native mammal rather than a bird, has rung up controversy in the country.
- Pekapeka-tou-roa or New Zealand's long-tailed bat is one in all the 2 living species endemic or native to New Zealand.
- They are present throughout the mainland and may even be found on some offshore islands within the country.
- The species may be a small-sized bat with a long tail, that is that the sole distinction between long-tailed bats and New Zealand's different land mammal, the short-tailed bat.
- Long-tailed bats fly at dusk exploiting echo sounding calls to hunt moths, mosquitoes and insects. IUCN standing – Critically vulnerable

Topic 12.GLOBAL METHANE PLEDGE

Importance for Prelims: Environment

The Global Methane Pledge was launched at the ongoing UN COP26 climate conference in Glasgow

- The world methane Pledge was launched at the on-going United Nations COP26 climate conference in Glasgow.
- So far, over ninety countries have signed this pledge, that is an attempt led cooperatively by the US and therefore the European Union.
- Methane is that the second-most abundant greenhouse emission within the atmosphere, when CO₂, and, therefore, pledges associated with cutting down its emissions are significant.
- The pledge was 1st declared in Sept by the United States and EU, and is basically an agreement to reduce world methane emissions.
- One of the central aims of this agreement is to chop down methane emissions by up to thirty per cent from 2020 levels by the year 2030.
- Among the signatories is Brazil — one among the 5 biggest emitters of methane, that is generated in cows' digestive systems, in disposal area waste and in oil and gas production.
- Three others —China, Russia and India — haven't signed up.
- Australia has said it'll not back the pledge. In keeping with the most recent Intergovernmental Panel on climate change report, methane accounts for regarding half the 1.0 degrees Celsius internet rise in international average temperature since the pre-industrial era.
- **About methane** – in keeping with the United Nations, twenty five per cent of the warming that the globe is experiencing these days is due to methane, a greenhouse emission, that is additionally a component of natural gas.
- Because it's a greenhouse emission, its presence within the atmosphere

will increase Earth's temperature.

- There are numerous sources of methane as well as human and natural sources. Human sources of methane embrace landfills, oil and natural gas systems, agricultural activities, coal mining, wastewater treatment, and certain industrial processes
- The oil and gas sectors are among the biggest contributors to human sources of methane.
- NASA notes that human sources (also mentioned as anthropogenic sources) of methane are responsible for sixty per cent of world methane emissions.
- These emissions come primarily from the burning of fossil fuels, decomposition in landfills and therefore the agriculture sector.
- Coalbed methane (CBM), like shale gas, is extracted from what are referred to as unconventional gas reservoirs — wherever gas is extracted directly from the rock that's the supply of the gas (shale just in case) of shale gas and coal in case of CBM).
- The methane is held underground among the coal and is extracted by drilling into the coal seam and removing the groundwater.
- The resulting drop by pressure causes the methane to be discharged from the coal.
- According to the International Energy Agency (IEA), whereas methane has a a lot of shorter atmospheric lifespan (12 years as compared to centuries for CO₂), it's a far more potent greenhouse emission simply because it absorbs more energy whereas it's within the atmosphere.
- Methane may be a powerful waste material and features a warming potential that's eighty times larger than carbon dioxide, regarding twenty years after it's been discharged into the atmosphere.
- The IEA has also said that quite over per cent of methane emissions will


be mitigated with the technology that exists these days, which up to forty per cent of this could be done at no extra prices.

Topic 13. RAINFED FARMING

Importance for Prelims: Agriculture

Rainfed Agriculture

- **Introduction:** Rainfed agriculture hinges the food and livelihood security of a large number of people worldwide (Rockström *et al.*, 2010).
- Communities in the arid and semi-arid zones of the world are faced with food deficits almost on an annual basis due to crop failure (Makurira, 2010).
- Water scarcity is the biggest threat to food self-sufficiency, which seems to exert even stronger influence on rainfed agriculture in future (de Fraiture *et al.*, 2007; Hoff *et al.*, 2009; Kijne *et al.*, 2009).
- The scarcity of water for food production particularly through agricultural droughts and dry spells will be a big challenge for water management (Savenije, 1998, Rockström, 2003).



Agro-ecology in dryland regions can bolster nutrition security

- The United Nations Environment Programme defines agro-ecology as “an ecological approach to agriculture, usually delineated as low-external-input farming.
- Other terms like regenerative agriculture or eco-agriculture also are used.
- Agro-ecology isn't just a set of agricultural practices, it focuses on ever-changing social relations, empowering farmers, adding worth regionally and privileging short value chains.
- It permits farmers to adapt to global climate change, sustainably use and conserve natural resources and biodiversity
- In easy words, agro-ecology celebrates crop diversity.
- It seeks low energy external inputs, agro-ecological services as enterprises, soil coated for a large period of your time through multiple cropping, niche crops and regional markets.
- The Prime Minister's call for utilize less fertilisers and pesticides “as an

excellent step for saving mother earth” on august 15, 2019 and repeating of his “Vocal for Local” plan, aptly captures the essence of agro-ecology and it conjointly meets twelve out of the seventeen United Nations property Development Goals.

- Rain-fed areas give nutrition security through millets, pulses and oilseeds.
- Productivity of most of the rain-fed crops is meagerly as compared to their irrigated cousins and therefore traits of resilience and improved productivity are screened for under rain-fed crop improvement programs.
- Most of the endemic and cultivatable land races of those regions are ephemerals.
- The word ‘ephemeral’ denotes all plants lasting a really short period of your time and they inhabit rain-fed areas.
- Introducing agro-ecology in rain-fed areas may so be a decent policy choice.

Topic 14. CARICOM COUNTRIES

Importance for Prelims: IR



Prime Minister Modi said India has made special arrangements for cooperation with the Pacific islands and Caricom countries in the wake of the threat of climate change.

- The Caribbean Community (CARICOM or CC) is an intergovernmental organisation of fifteen member states (14 nation-states and one dependency) throughout the Caribbean.
- CARICOM is that the oldest surviving integration movement within the developing world.
- Objective – promote economic integration and cooperation among its members, to ensure that the advantages of integration are equitably shared, and to coordinate foreign policy.
- The organisation was established in 1973.
- All CARICOM countries are classified as developing countries.

- They are all comparatively little in terms of population and size, and various in terms of geographics and population, culture and levels of economic and social development.
- CARICOM countries share similarities and challenges.
- The secretariat headquarters is in Georgetown, Guyana.
- CARICOM is an official UN Observer beneficiary.
- They are from the main ethnic teams of autochthonic Peoples, Africans, Indians, Europeans, Chinese, Portuguese and Javanese.
- The Community is multi-lingual; with English because the major language complemented by French and Dutch and variations of those, additionally as African and Asian expressions.
- CARICOM has fifteen members – Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, St Lucia, St. Vincent and also the Grenadines, Suriname, and Trinidad & Tobago.
- The chairmanship of the Community is revolved each six months among the member countries.
- The CARICOM Single Market and Economy are supposed to benefit the individuals of the region by providing a lot of and better opportunities to provide and sell product and services and to attract investment.
- All members have an equal say regardless of size or economic standing.

Topic 15. THIRD WORLD NETWORK

Importance for Prelims: IR

TWN

Third World Network

India appreciated the efforts of the Third World Network (TWN) for its support to Like Minded Developing Countries (LMDC), and expressed the need to ensure resources to TWN.

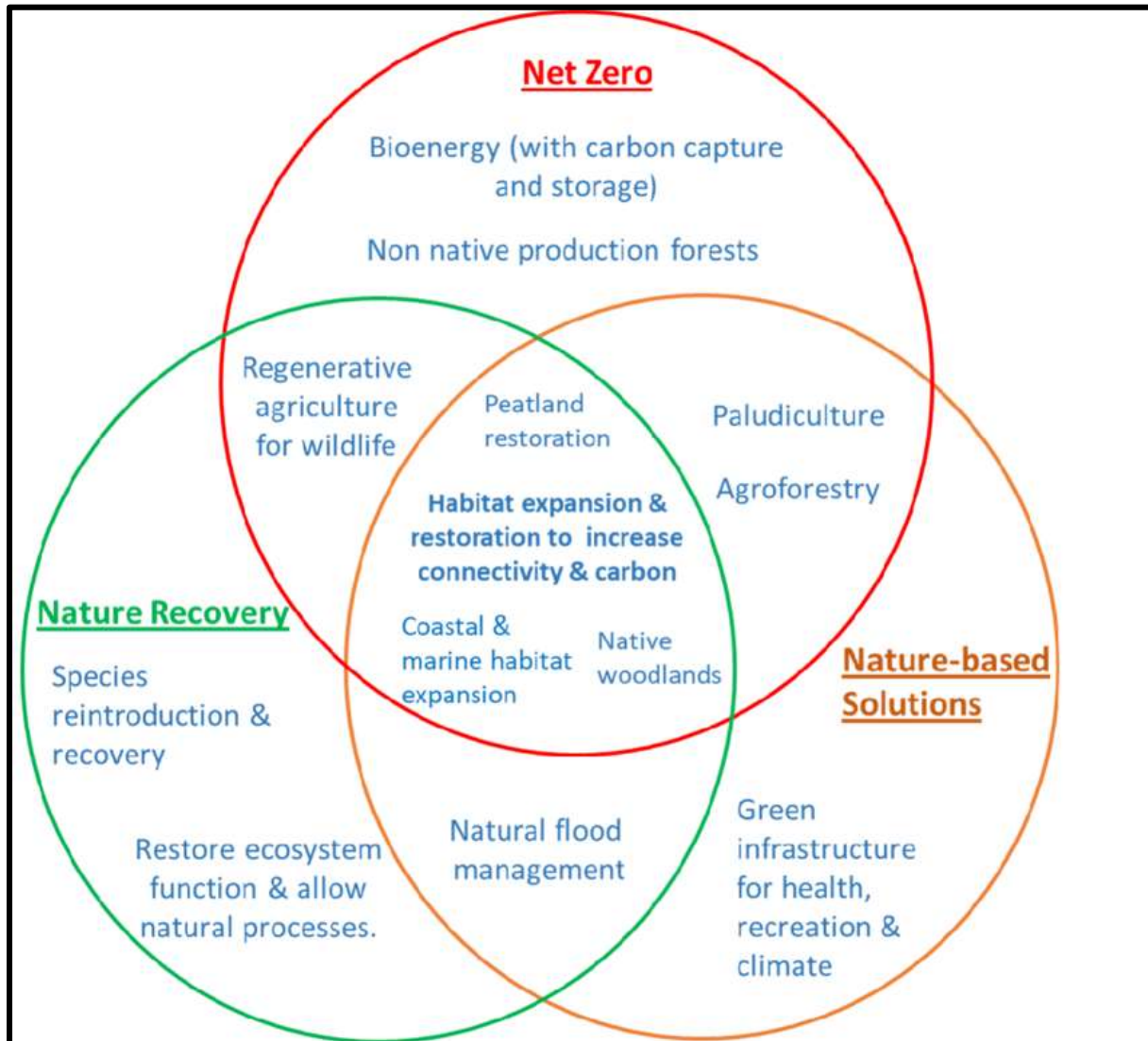
- Third World Network (TWN) is an independent non-profit international research and advocacy organisation concerned in problems relating to development, developing countries and North-South affairs.
- TWN was formed in Nov 1984 in Penang, Malaysia at the terminal session of a global Conference on “The Third World: Development or Crisis?”.
- Its mission is to bring about a larger articulation of the wants and rights of peoples within the South, a fair distribution of world resources, and forms of development that are ecologically proper and fulfil human desires.
- It provides a platform representing generally third world interests and views at international forums like United Nations agencies, conferences and processes, WTO, the World Bank and IMF.
- TWN Publications – third world resurgence – a monthly magazine on

development, ecology, economics, health, alternatives and South-North relations.

- Third World economics – a bi-monthly economics magazine focusing on the GATT/WTO, the globe Bank/IMF, etc.
- SUNS bulletin – the daily South-North Development bulletin published from Geneva, switzerland.

Topic 16. NATURE'S BASED SOLUTIONS FOR NET-ZERO

Importance for Prelims: Environment



World has jumped on the net-zero bandwagon

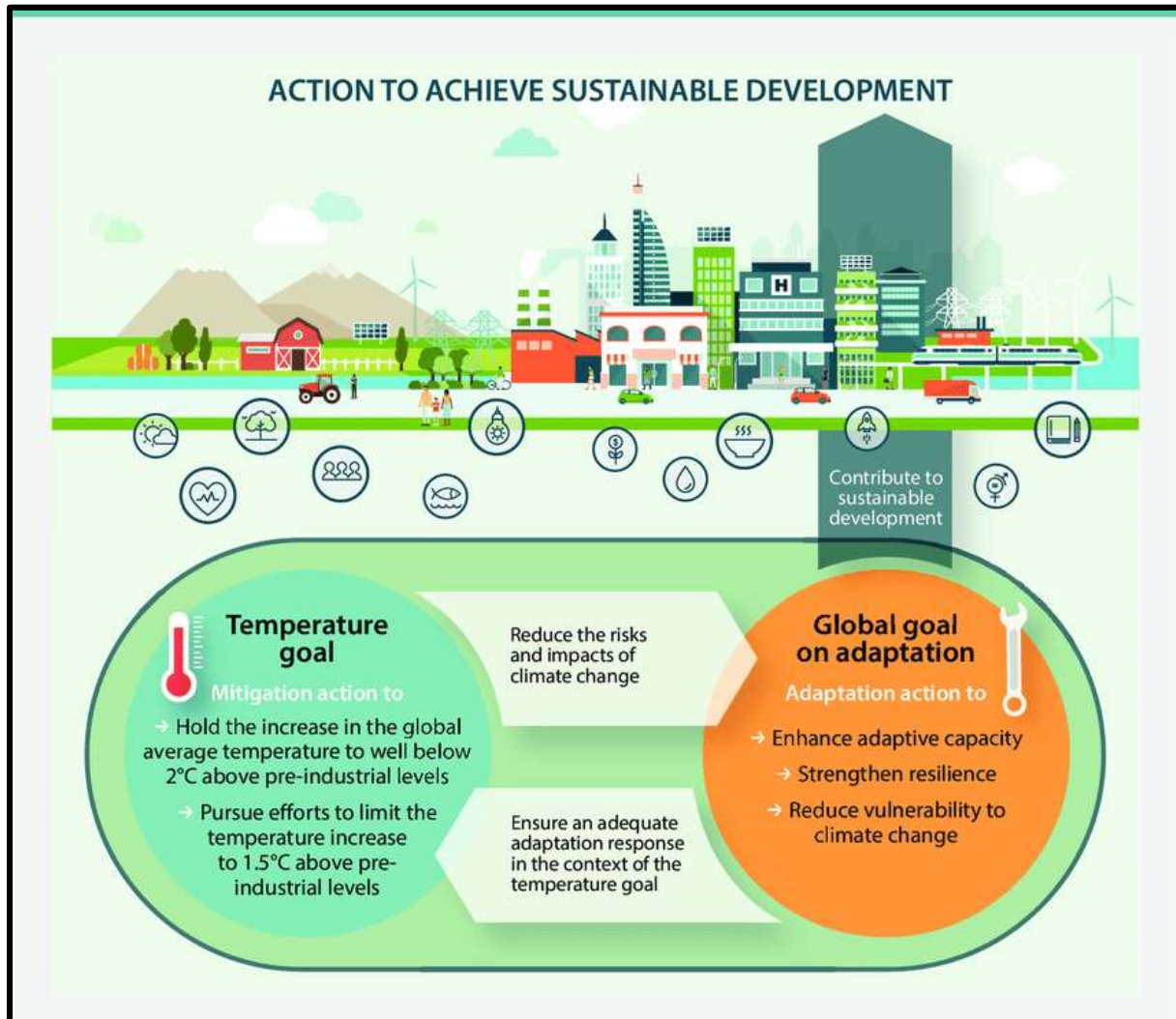
- In climate change negotiations, Reducing Emissions from Deforestation and Forest Degradation (REDD) and its addition on conservation of forests stocks (REDD+) was originally the framework to implement nature-based solutions.
- At the 2013 UN climate change conference (COP19), the Warsaw Framework for REDD+ was adopted.
- In 2015, Paris Agreement recognised this and enclosed it in Article 5;

parties reiterated their commitment to implement REDD+. currently with internet zero, the call to use forests as “sinks” is growing.

- In could 2021, the cluster of Seven countries (Canada, France, Germany, Italy, Japan, United Kingdom and US) pledged the goal of “conserving or protective a minimum of thirty per cent of world land and a minimum of thirty per cent of the world ocean by 2030”.
- World Economic Forum published in collaboration with McKinsey and Company a report, “Nature and internet Zero”.
- According to this, nature-based solutions give a “potential of [removing] close to seven GtCO₂ per annum, sufficient to deliver around one-third of the 2050 target [to cut emissions by fifty per cent over 2010 levels]” and this value is less than technological solutions.
- The bulk of this can come from “avoided emissions, deforestation, peatland restoration, re-forestation and cover crops”.
- Currently, land—forests, grasslands and alternative biomes—absorb concerning thirty per cent of carbon dioxide emissions from act.

Topic 17. ADAPTATION GOAL

Importance for Prelims: Environment



Given the frequency and severity of extreme weather events, the world needs to adapt to climate change

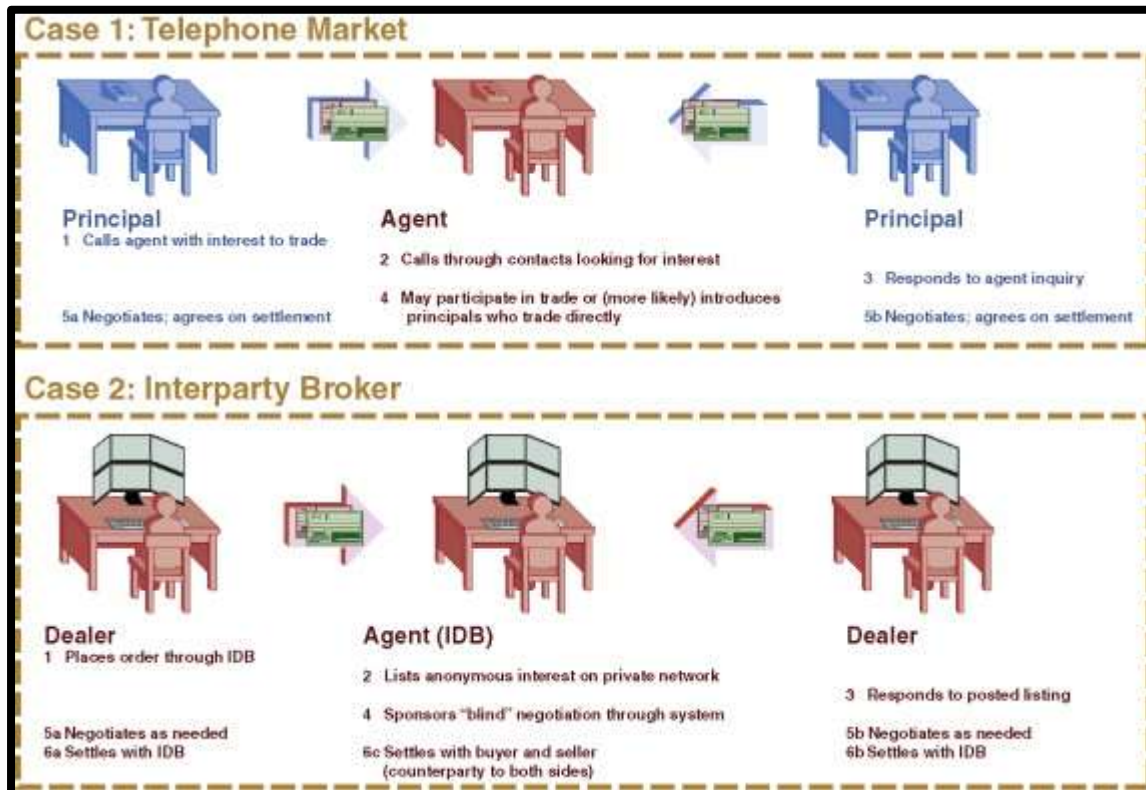
- Article seven of the Paris Agreement establishes a global Goal on Adaptation of “enhancing adaptative capability, strengthening resilience and reducing vulnerability to climate change”.
- The core components of the goal are interconnected and overlapping.
- Their progress will be assessed each 5 years under the Paris Agreement’s Article fourteen, international Stocktake.
- Under the world Goal on Adaptation, countries got to develop National

Adaptation Plans (NAPS), which might establish activities that require support.

- These are then recorded during a public register by the United Nations Framework Convention on climate change (UNFCCC).
- The truth is there's no clear definition of what the globe means that by “adaptation” and maybe there will ne'er be.
- The Adaptation Gap Report 2020, discharged by the united nations atmosphere Programme (unep) earlier this year, states that the adaptation finance gap isn't closing—not by a long shot.
- The Adaptation Fund, that was set up 2001, to fund projects in developing countries was supported with a share of the proceeds from the Clean Development Mechanism (CDM), established under the kyoto Protocol. With CDM currently dormant and defunct, the fund, although very little, continues to be operational under the Paris Agreement.
- It's a game of shells.

Topic 18. MARKET MECHANISMS

Importance for Prelims: Environment



The developed world hopes to invest in emissions reduction in Global South via markets for carbon credits

- Market is that the method the developed world hopes it'll be able to invest in emission reduction within the countries of world South and find credits in its carbon balance sheet.
- The Paris Agreement includes “market mechanism” because the tool to create this happen.
- The kyoto Protocol, the primary accord under the United Nations Framework Convention on climate change that came into force 2005, had established Clean Development Mechanism (CDM) for this carbon purchase.
- The Paris Agreement includes provision for 2 sorts of market instruments— Internationally Transferred Mitigation Outcomes (ITMO)

under Article 6.2 and sustainable Development Mechanism (SDM) under Article 6.4.

- Internationally Transferred Mitigation Outcomes (ITMO) under ITMO, the aim is to determine bilateral or mini-multilateral markets—similar to the EU Emissions mercantilism System.
- It is additionally regarding securing overall mitigation in international emissions. Internationally transferred mitigation outcomes (ITMOs) use a carbon dioxide equivalent [CO₂e] metric for a new set of market provisions or alternative greenhouse gas (GHG) mitigation outcomes that are outlined under Article 6 of the Paris Agreement.
- Under Article 6.2, ITMOs differ from previous offset schemes, as they count toward countries' nationwide Determined Contributions (NDCs), support overall mitigation in international emissions (for Article 6.4) and involve a lot of substantial government participation than under the Clean Development Mechanism of the Kyoto Protocol.
- Although the Paris Agreement rulebook isn't absolutely finalized, enough has been agreed for a few countries to begin participating and designing for ITMO transactions.

What is in Article 6.2 of the Paris Agreement?

- Article 6 of the Paris Agreement makes provisions for voluntary international cooperation between parties to attain NDC targets.
- Sub-section 6.2 calls for transparency and also the avoidance of double count once 2 parties have interaction within the international transfer of emission reductions well-known within the Agreement as Mitigation Outcomes.
- This sub-section implies that 2 parties will enter into an agreement whereby one party reduces carbon emissions and transfers those

reductions to the opposite party that counts it towards its NDC targets.

- It is assumed that the receiving party can give financial compensation to the transferring party.

How does Article 6.2 help a country achieve its NDC commitment?

- Transferred mitigation outcomes contribute to the NDC targets of the party that purchases the ITMO.
- The selling party must make a corresponding adjustment which means that it has to “un-count” these mitigation outcomes from the emission reductions that contribute to its NDC targets Sustainable Development Mechanism (SDM) Under SDM, the aim was to create a new international carbon market for the trade of emissions cuts, created by the public or private sector anywhere in the world, shaped on the previous CDM.
- Preventing double-counting is tougher under the Paris Agreement than under the kyoto Protocol.
- This is as a result of, unlike kyoto Protocol, all countries have taken on national targets (NDCS) under the Paris Agreement.
- Article vi of the Paris Agreement established the sustainable Development Mechanism (SDM) as a new carbon market instrument for the amount when 2020.
- Its purpose is inter alia to exchange the existing mechanisms under the kyoto Protocol, the CDM and JI with a more effective climate tool.
- The chapeau of Article six sets out the purpose of the article together with the SDM, specifically that its provisions are established to promote: i) higher ambition ii) sustainable development and iii) environmental integrity.
- The SDM can function during a radically modified world, wherever all

Parties have commitments to contribute to the common objectives of limiting global warming to 1.5 degrees, de-carbonization by the half of this century, and also the sustainable Development Goals arranged move into the United Nations 2030 Agenda.

- Notably, under the Paris Agreement, all Parties can host SDM projects on a voluntary basis.
- When elaborating the principles, modalities and procedures for this new mechanism, the experience with existing mechanisms, particularly the CDM are of utmost importance.
- The Paris Agreement specifically invites Parties to create on the expertise gained thus far from the Kyoto mechanisms.
- However, the SDM should not be a copy-paste exercise from the CDM.
- Rather, the SDM ought to be a replacement instrument that draws lessons from each the successes and mistakes of the CDM.

Topic 19.KASHMIR WEED

Importance for Prelims: Environment

A Kashmir spring is protected by a local festival

- Panzath Nag in south Kashmir’s Anantnag district supplies water for a trout fish place and drinking and irrigation to a number of villages downstream.
- Derived from ‘Paanch Hath’ — Kashmiri numeral for 5 hundred — the spring is said to possess been once a supply to as several smaller ones.
- Hundreds of men and kids from the villages go fishing within the spring once a year as a part of their tradition on Rohan posh, an area pageant. Rohan posh (flowering the souls) is that the traditional annual fruit blossom pageant specific to the region.
- The collective activity rids the spring of silt and weeds and restores its water level for the remainder of the year.
- The spring contains a mythological relevance; the cleansing tradition has been existing since time immemorial.
- The proliferation of weeds in kashmir valley could be a major challenge, having led to the deterioration of water bodies, particularly the world-famous dal Lake within the capital town of Srinagar, resulting in biodiversity loss and pollution.
- Panzath spring has a mythological relevance, finding a mention in NilamataPurana and Rajatarangini, the legendary chronicle of Kashmir by Kalhana, the 12th-century contested Kashmiri historian.
- He calls it naga of Pancahasta, a ‘pure’ spot wherever the watercourse Vitasta — popularly called Jhelum — was “brought to light a second time” by sage Kashyapa’s prayer when it had disappeared from concern of “defilement by the touch of sinful men.”

Topic 20. WORLD RESOURCES INSTITUTE (WRI) REPORT

Importance for Prelims: Environment



There has been a decline in climate finance during COVID-19: WRI report

- Climate finance being assigned by numerous developing countries for action on global climate change has shown a decrease before and through the novel coronavirus disease (COVID-19), a recent study done by international analysis non-profit organisation World Resources Institute (WRI) has shown.
- The study found that countries were forced to cut funding for several climate-related sectors to release cash for addressing pandemic-related expenditures and revenue losses.
- The study found that in various countries, budget cuts have targeted climate mitigation, instead of adaptation actions, whereas fossil fuel spending has enhanced.
- Between 2019 and 2020, the official development assistance (ODA) for projects with climate as a principal objective or a significant focus reduced by four percentage and eight percentage points severally.
- Climate finance is capital paid by wealthy countries (which are responsible for most of the historic emissions) to developing countries to assist them pay for emissions reduction measures and adaptation.
- Climate finance ought to be additionally to standard development aid.

Topic 21.G20'S COAL DECLARATION

Importance for Prelims: Environment



G20's coal declaration is cosmetic and too little, too late

- The G20 announcement to not invest in new coal across borders may be a direct effort to climate-legitimise Chinese President Xi Jinping's exact-similar announcement in Sep this year.
- This could have miniscule effects on emissions considering that the globe should bridge a large gap of twenty gigatonnes (Gt) of carbon dioxide (CO₂) emissions per annum to limit warming to 1.5 degrees celsius. G20 countries are accountable for over seventy five per cent of world greenhouse gas emissions.
- CO₂ emissions from the energy sector, primarily coal, are accountable for seventy eight per cent of greenhouse gases.
- Among the twenty countries, China, the leader in international coal consumption, accounted for fifty three per cent of the world's coal power

in 2020.

- China consumed over half all coal consumed round the world throughout the last decade and thus reduced the accessible carbon area for the future.
- India, another major coal client, has thirty seven GW of recent coal power plants under development and those of another twenty three GW within the pipeline.
- Development Finance institutions (DFI) Development Finance establishments (DFI) had started a slow transition towards renewable energy a decade past. Post the novel coronavirus disease (COVID-19) pandemic, DFIs have already channelising most of their investments into clean / inexperienced energy.
- This is particularly true for DFIs based mostly out of middle-income countries just like the Brazilian Development Bank, Asian and African Development Bank, China Development Bank, Exim Bank of China, etc.
- A third of all accessible development finance is provided by DFIs that support renewable energy and low-carbon energy development through monetary or technical help.
- As of nowadays, there are 3 DFIs that haven't committed to ending coal financing: the event Bank of latin america, the islamic Development Bank and therefore the New Development Bank. Dates once every Development Finance establishment committed to clean energy –

Topic 22.INDIGENOUS FOOD SYSTEM IN MEGHALAYA

Importance for Prelims: Environment

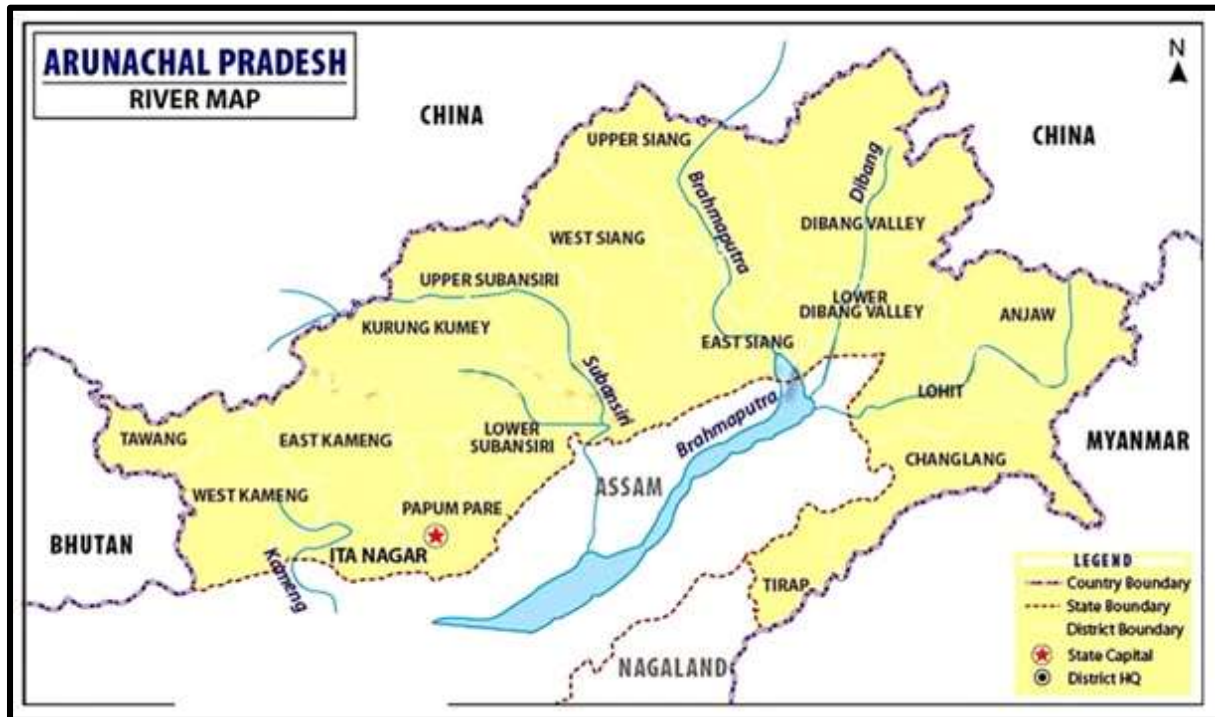
An indigenous community in Meghalaya offers lessons in climate resilience

- The UN's Food and Agricultural Organisation (FAO) report on autochthonal People's Food Systems co-published by Food and Agriculture Organization and also the Alliance of Bioversity International, and CIAT includes the profiles of eight autochthonal Peoples food systems from round the world, as well as Uttarakhand and Meghalaya in India.
- In Nongtraw (Meghalaya), a village only inhabited by the Khasi, various traditional food systems supported by jhum (shifting cultivation), home gardens, forest and water bodies, shying faraway from artificial chemicals in food production.
- It is predicated on community-led landscape management practices, regulated by native governance.
- Nongtraw lies on the mid-slope of a deep gorge within the Cherrapunji region, a extremely compound plateau on the southern margins of the Meghalaya plateau.
- Factors like the emergence of money crop production (broom grass), the impact of India's public distribution system on the native subsistence system and overreliance on market-based merchandise are weakening the food system's resilience.
- Much just like the Khasis in Nongtraw, the SauriaPaharias of Jharkhand, a very vulnerable tribal} group (PVTG), who practice Kurwa farming (a style of shifting agriculture in forests, in conjunction with farming in agricultural lands) have switched to growing rice in place of drought-resistant millets due to agricultural interventions that in the main targeted on yields.

- Research priorities on autochthonic food systems ought to incorporate systematic documentation of a large type of autochthonal foods known to the indigenous communities, their contribution to food security and dietary diversity.

Topic 23. KAMENG RIVER

Importance for Prelims: Geography



Arunachal Pradesh river turns black, thousands of fish die; locals blame China: Report

- The Kameng River (previously named Bharali River, now called Kameng in Arunachal Pradesh and Jiabharali (JiaBharali) in Assam) in the eastern Himalayan mountains, originates in Tawang district from the glacial lake below snow-capped Gori Chen mountain.
- It is on the India-Tibet border and flows through Bhalukpong circle of West Kameng District, Arunachal Pradesh and Sonitpur District of Assam, India.
- It becomes a braided stream in its lower reaches and is one among the main tributaries of the Brahmaputra river, connection it at Tezpur, simply east of the KoliaBhomoraSetubridge.
- The Kameng forms the boundary between East Kameng District and West Kameng Districts and is additionally the boundary between the

Sessa and Eaglenest sanctuaries to its west and also the Pakke tiger reserve to the east.

- The Dafla Hills are east and the Aka Hills (home of Aka tribe) are west of the Kameng River.
- Kameng is not a transboundary river. Tributaries: Tippi, Tenga, Bichom and Dirang Chu.

Topic 24. CHUMBI VALLEY

Importance for Prelims: Geography



‘China strengthening connectivity in Chumbi’

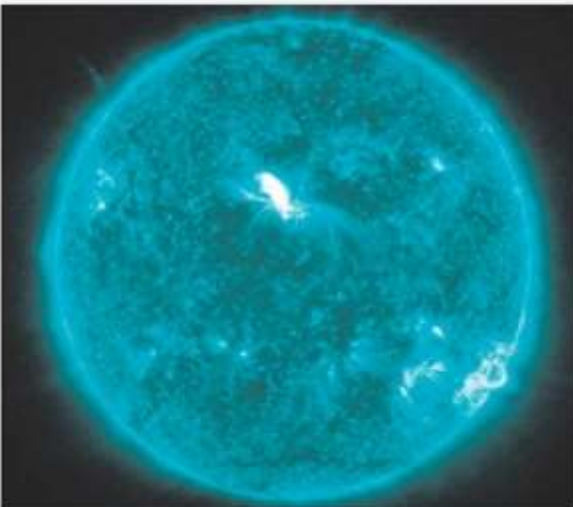
- Chumbi Valley is also called Dromo, Tromo or Chomo.
- It is a valley in the Himalayas that projects southwards from the Tibetan plateau, intervening between Sikkim and Bhutan.
- It is coextensive with the administrative unit Yadong County in the Tibet region of China.

- The Chumbi Valley is connected to Sikkim to the southwest via the mountain passes of Nathu La and Jelep La.
- The valley is at an altitude of 3,000 m (9,800 ft), and being on the south side of the Himalayas, enjoys a wetter and more temperate climate than most of Tibet.
- The natural depression supports some vegetation within the sort of the eastern himalayan broad-leaved forests and transitions to the eastern himalayan alpine shrub and meadows within the north.
- The plant *Pedicularischumbica* is called after the natural depression. Chumbi natural depression could be a 100-km protrusion of Chinese territory placed between bhutan within the east and sikkim within the west.
- **History** – The 1904 Younghusband Expedition of British India passed through the Chumbi Vally on its way to Lhasa.
- At the end of the expedition, the British took control of the Chumbi Valley in lieu of a war indemnity.
- China agreed to pay the indemnity owed by the Tibetans in three installments and the Chumbi Valley was transferred back to Tibet on 8 February 1908.

Topic 25. AURORAE IN HIGH-LATITUDE COUNTRIES

Importance for Prelims: Science and Tech

The Sun's contribution to the **festival of lights**



Storm seed: Image of the November 2 M-class flare captured using the extreme ultraviolet imaging telescope attached to NASA's Solar Dynamics Observatory (SDO) satellite. The flare brightening is clearly visible, near the disc's centre.

- A solar flare that occurred on the Sun triggered a magnetic storm which came towards the Earth
- Scientists from Center of Excellence in Space Sciences India (CESSI), in IISER, Kolkata, predicted that the solar storm would arrive at the Earth at 2.14 a.m. IST on November 4, moving at a speed of 768 km/s
- The storm arrived at 1 a.m. IST on November 4 and with speeds between 750 km/s and 800 km/s as observed by NASA

- Very powerful Earth-directed coronal mass ejections can cause failure of power grids and affect oil pipelines and deep-sea cables
- They also cause spectacular aurorae in the high-latitude and polar countries
- On November 4, people tweeted that aurorae, or brilliant streaks of light in the sky, have been observed in many countries, coinciding with the arrival of the storm

The Sun lights up aurorae in high-latitude countries

- A solar flare that occurred on the Sun triggered a magnetic storm that scientistshad expected can reach the planet within the early hours of Nov four, and that they said that the magnitude of this storm would be like to trigger spectacular displays of aurora (the coloured bands of sunshine seen within the North and South poles) within the high-latitude and polar regions.
- These observations are taken at Lagrange Point L1. Sunspots seed storms The solar magnetic cycle that works in the deep interior of the Sun creates regions that rise to the surface and appear like dark spots.
- These are the sunspots.
- Solar flares are highly energetic phenomena that happen inside the sunspots.

- In a solar flare, the energy hold on within the Sun's magnetic structures is converted into light and warmth energy.
- This causes the emission of high energy x-ray radiation and extremely accelerated charged particles to go away the Sun's surface.
- Sometimes star flares conjointly cause hot plasma to be ejected from the Sun, inflicting a star storm, and this can be known as coronal Mass Ejection (CME).
- Coronal Mass Ejections will harbour energies exceptional that of a billion atomic bombs.
- The energy, radiation and high-energy particles emitted by the flares will have an effect on Earth-bound objects and life on Earth – it will have an effect on the electronics at intervals satellites and have an effect on astronauts.
- Very powerful Earth-directed coronal mass ejections will cause failure of power grids and have an effect on oil pipelines and deep-sea cables.
- They may cause spectacular aurorae within the high-latitude and polar countries.
- The last time a significant blackout because of a coronal mass ejection was recorded was in 1989 – a strong geomagnetic storm that took down the North American power grid, plunging large elements of Canada into darkness and triggering spectacular aurorae on the far side the polar regions.
- Lagrange point one Lagrange Points, named when Italian-French mathematician Joseph-Louis Lagrange, are positions in area wherever the gravitative forces of a two-body system (like the Sun and also the Earth) manufacture increased regions of attraction and repulsion.
- The L1 point is regarding 1.5 million kilometer from Earth, or concerning 1/100th of the way to the Sun. L1 refers to Lagrangian/Lagrange purpose

one, one among five points within the orbital plane of the Earth-Sun system.

- These may be utilized by space capsule to cut back fuel consumption required to stay in position.
- A Satellite placed within the halo orbit round the Lagrangian point one (L1) has the main advantage of incessantly viewing the Sun with none occultation/ eclipses.
- The L1 point is home to the solar and Heliospheric Observatory Satellite (SOHO), a world collaboration project of National aeronautics and space Administration (NASA) and therefore the European space Agency (ESA).
- Auroras an Aurora may be a show of light within the sky predominantly seen within the high latitude regions (Arctic and Antarctic). it's additionally called a Polar light.
- They ordinarily occur at high northern and southern latitudes, less frequent at midlatitudes, and seldom seen close to the equator.
- While sometimes a milky light-green color, auroras can even show red, blue, violet, pink, and white.
- These colours seem during a sort of endlessly changing shapes. Auroras aren't simply one thing that happens on Earth.
- If a planet has an environment and magnetic field, they probably have auroras.