



News Analysis (24 Sep, 2020)

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G4 Foreign Ministers Meeting

Why in News

Recently, Foreign Ministers from the **Group of 4** (G4), consisting of **India, Brazil, Japan and Germany**, participated in a virtual meeting.

G4 is a group of countries that are seeking permanent membership of the **United Nations Security Council** (UNSC).

Key Points

- G4 will seek concrete and time-bound outcomes during the 75th session of the UN General Assembly.
 - The UN will celebrate its **75th anniversary** on 24th October 2020.
- The Ministers reaffirmed their common resolve to finally take decisive steps towards the **early and comprehensive reform of the Security Council** that was envisaged by Heads of State and Government in the **2005 World Summit**.
 - The 2005 World Summit was held at United Nations Headquarters in New York.
 - All governments expressed strong and unambiguous commitment to achieve the **Millennium Development Goals** by 2015.
 - It set up **two new bodies**, a **Peacebuilding Commission** to help countries in transition from war to peace, and a strengthened **Human Rights Council**.

- **G4 on UNSC Reforms**
 - **Ensuring greater representation for Africa:** Africa needs to be represented in **both the permanent and non-permanent categories** of UNSC to **correct the historical injustice** against this continent with regard to its under-representation in the Security Council.
 - **Enhanced role of developing countries and of major contributors to the UN:** To make UNSC more **legitimate, effective and representative**, it is needed to increase the number of permanent (from 5 to 11) and non-permanent (from 10 to 14) seats.
 - The permanent seats shall be elected in the following manner: Two from African States; Two from Asian States; One from Latin American and Caribbean States ; One from Western European and Other States.
 - Non-permanent members shall be elected according to the following pattern : One from African States ; One from Asian States ; One from Eastern European States ; One from Latin American and Caribbean State
 - The UNSC reforms proposed earlier had been opposed by the five permanent members (P5) of UNSC as they demanded veto power for new members as well (**Rizali Plan**). However, later the new countries decided to forego the veto power for new countries which was accepted by P5 countries (**Rizali Reform Plan**).
- **Text-Based Negotiations:** The G4 will work with other reform-minded countries and groups to start **text-based negotiations (TBN)**

India is a proponent of TBN at the UN. Countries opposed to UNSC reform, including China, are hesitant to have TBN for intergovernmental negotiations on the grounds that the matter is **too sensitive** for text.
- **Concerns over IGN:** Two sessions in February and March 2020 of Inter-Governmental Negotiations (IGN) on UNSC reform were adjourned due to **Covid-19**, which could have taken place virtually.
 - The countries expressed concern that IGN **lacks the necessary openness and transparency** and is constrained by **flawed working methods**.
 - IGN should also have included a reflection of the **Common African Position** as enshrined in the **Ezulwini Consensus** and the **Sirte Declaration**.
 - The **Ezulwini Consensus (2005)** is a position on international relations and reform of the United Nations, agreed by the African Union. It calls for a more representative and democratic Security council, in which Africa, like all other world regions, is represented.
 - The **Sirte Declaration (1999)** was the resolution adopted to establish the African Union.

- **Groups Opposed to UNSC Reforms:** An informal "**coffee club**" or **Uniting for Consensus Group** has opposed UNSC reforms.
 - Most members of the club are middle-sized states who oppose bigger regional powers grabbing permanent seats in the UN Security Council.
 - While **Italy and Spain are opposed to Germany's** bid for UNSC's permanent membership, **Pakistan is opposed to India's bid**. Similarly, **Argentina is against Brazil's** bid and **Australia opposes Japan's**.
- **India's Position:** India, will commence a two-year non-permanent term on the UNSC in January, 2021
 - It has long sought a **permanent seat** at the Council.
 - Four of the five permanent members of the Security Council – USA, UK, France and Russia support giving India a permanent seat at the Council. Only China is opposed to this.
 - India is also seeking reforms to democratize the UN, such as UNSC reforms and **UN peacekeeping reforms**.

Source: TH

CAG Survey Report on School Toilets

Why in News

The Comptroller and Auditor General of India (CAG) has flagged irregularities in the construction of toilets in schools by Central Public Sector Enterprises (CPSEs) in an audit report tabled before Parliament.

Key Points

- **Physical survey:**
 - There are **10.8 lakh** government schools in the country. Overall, more than **1.4 lakh toilets** have been built by **53 CPSEs**, with significant support coming from **power, coal and oil companies** as part of the **Swachh Vidyalaya Abhiyan**.
 - The CAG audit conducted a physical survey of a sample of **2,695 toilets** built by these companies in 15 States.

- **Issues Found:**
 - **No functional toilets:** Out of the **1,967 coeducational schools** surveyed, 99 schools had no functional toilets while 436 had only one functional toilet, meaning that the **objective of providing separate toilets for boys and girls was not fulfilled in 27% of the schools.**
 - **Maintenance and Sanitation:**
 - **75%** of toilets did not follow the norm for daily cleaning at least once a day.
 - **72%** of constructed toilets had no running water facilities inside, and **55%** had no hand washing facilities at all, an even greater necessity in **Covid-19** affected times.
 - **Construction Issues:** Out of the sample of 2,695 toilets, CPSEs identified but did not construct 83. Another 200 toilets were reported to be constructed, but were non-existent, while 86 toilets were only partially constructed.
 - Thus, almost **40%** of toilets were **non-existent, partially completed or unused.**
 - The audit also noticed cases of **defective construction** of toilets, non-provision of foundation, ramp/staircase and damaged or overflowed leach pit, which led to ineffective use of toilets.
 - **Prefabricated structures** were used for constructing many toilets leading to **extra expenditure, dilution in durability and non-compliance with direction.**
- **Swachh Vidyalaya Abhiyan:**
 - It was launched by the **Ministry of Human Resource Development** (now Ministry of Education) in September **2014.**
 - The aim is to meet the **Right to Education** Act's **mandate that all schools must have separate toilets for boys and girls.**
 - In order to **effectively change the behaviour of students**, the programme norms required the **CPSEs** to build toilets with running water and hand washing facilities, and to maintain the toilets for three to five years while charging the **annual expenses to their Corporate Social Responsibility (CSR) budgets.**

- **Importance of School Toilets:**

- **Constitutional Promises:** As mandated by the **Right to Education Act**, all children are required to spend **six hours** in school every day. During this period, they would want to use the toilets.

The Act mandates that all schools must have **separate toilets for boys and girls**.

- **Health & Nutrition:** The provision of water, sanitation and hygiene facilities in school secures a **healthy school environment** and protects children from **illness and exclusion**.
 - Hygiene in school also **supports school nutrition**.
 - The simple act of washing hands with soap before eating the school mid-day meal assists to break disease transmission routes.
- **Enrolments & Dropouts:** Lack of toilets for girls, is a reason for dropouts. A school latrine generally increased female enrolment more than male enrolment.
- **Child as a Change Agent:** Having a clean school fosters a child's pride in his or her school and community.

It enables every child to become an agent of change for improving water, sanitation and hygiene practices in their families and within their community.

Right to Education (RTE) Act, 2009

- The RTE Act aims to provide **primary education to all children aged 6 to 14 years**.
- It enforces **Education as a Fundamental Right (Article 21-A)**.
- The act mandates **25% reservation for disadvantaged sections** of the society where disadvantaged groups include:
 - SCs and STs
 - Socially Backward Class
 - Differently abled
- It also makes provisions for a non-admitted child to be admitted to an age appropriate class.

Way Forward

- Regular monitoring is essential for the success of such a programme related to basic facilities.
- In addition to an adequate provision of funds, cleaning, sanitation training, maintenance of toilets and other things, the issue of fixing accountability must be addressed. Else we will keep revisiting the basic issues over and over again, reformulating strategies and recommissioning funds.

Source: TH

Science & Technology Indicators, 2019-20

Why in News

According to the latest **Science & Technology Indicators (STI) report** for 2019-20, India performs very dismally in the field science & technology innovation.

The STI report is released by the **Department of Science and Technology (DST)**.

Key Points

- **Patent Data:**

- Between 2005-06 and 2017-18, a total of 5,10,000 patent applications were filed in India. However, nearly **three-quarters were filed by foreign entities or individuals**.
- In other words, in these 13 years, **just 24% of patent claims came from Indians**.
- Patent filing in India is governed by **Patents Act, 1970**. Recently, the **Office of the Principal Scientific Adviser** to the Government of India and the **DST** have jointly initiated the formulation of a new national **Science Technology and Innovation Policy (STIP 2020)**.
 - A **patent** is the granting of a **property right** by a sovereign authority to an inventor.
 - This grant provides the inventor **exclusive rights** to the patented **process, design, or invention** for a **designated period** in exchange for a comprehensive disclosure of the invention.
- According to the **World Intellectual Property Organisation (WIPO)**, **India** stands at the **7th position on number of patents filed**.
China tops the list, followed by the USA and Japan.

- **Reasons for Dismal Performance:**
 - **Poor investment in research and development (R&D)** by the government, and the private sector.
 - The **pathetic state of higher education.**
 - **Lack of employable personnel**, who have neither the skills nor the aptitude in a variety of fields.
 - **Lack of funds** and a **lack of conducive environment** for start-ups.
 - However, as per a recent report by the IBM Institute for Business Value, most Indian start-ups have failed because they **lack pioneering ideas based on new technologies.**
 - The Indian start-ups also **do not come up with unique business models** and **prefer to copy successful ideas from elsewhere** and focus on creating value merely by fine-tuning these successful concepts to local markets.
 - The **Makeshift solutions or Jugaad** enjoys respectability in India. It has been termed frugal innovation by some peoples.
- **Suggestions:**
 - To spark the innovation in India, **research content** at major institutions, especially at universities, **needs to be increased.**
 - The **national labs can be linked to universities** to create new knowledge ecosystems.
 - Greater **public engagement of the science and research establishment** and **attracting more scientists** from across the world in India.
 - Increasing **scientific temper** among students.
 - Strengthening **higher education** in India.
 - There is a need to **increase funding in R&D** and to create a conducive environment for innovation.
 - Participation of the private sector in R&D needs to be increased.

Way Forward

- The makeshift solutions provide short term solutions, but to increase innovation, there is a need for pure research, which can be done when Indians will come up with new and original ideas.
- Experience of developing countries shows that Science & Technology Innovation policies that are well integrated into national development strategies and combined with institutional and organizational changes can help raise productivity, improve firm competitiveness, support faster growth and create jobs.

Source: DTE

Non-utilisation of Cesses & Levies

Why in News

Recently, the **Comptroller and Auditor General of India** (CAG) told Parliament that the Centre has **only transferred 60% of the proceeds from cess/levies** in Fiscal Year 2018-19 to the **relevant Reserve Funds** and retained the balance in the **Consolidated Fund of India (CFI)**.

Key Points

- **Non-utilisation of Funds:**

- The Centre had collected Rs. 2.75 lakh crore from **35 cesses/levies in FY19**. However, it has only transferred Rs. 1.64 lakh crore and retained Rs. 1.1 lakh crore in the CFI.
 - Rs. 40,000 crore of **GST Compensation Cess** was not credited to the related Reserve Fund.
 - Rs. 10,157 crore of the **Road and Infrastructure Cess** collected was neither transferred to the related Reserve Fund nor utilised for the purpose for which the cess was collected.
 - Rs. 2,123 crore of **Universal Service levy** and Rs. 79 crore collected as **National Mineral Trust levy** was not transferred to the relevant Reserve Funds.
 - **Social Welfare Surcharge on Customs** amounting to Rs. 8,871 crore was levied but no dedicated fund for the same was envisaged.
 - Non-creation/non operation of Reserve Funds makes it difficult to ensure that cesses and levies have been utilised for the specific purposes intended by the Parliament.
- In addition, Rs. 1,24,399 crore, representing the **Cess on crude** oil collected between 2010-20, had not been transferred to the **Oil Industry Development Board** (designated Reserve Fund) and was retained in CFI.

- **Mechanism of Utilisation:**

- Cesses and levies collected are required to be first **transferred to designated Reserve Funds** and **utilised for the specific purposes** intended by Parliament.
- Funds collected through **Central taxes** along with cesses and other levies **go to the CFI**.
 - Taxes and surcharges in CFI are parked in a divisible pool and 42% of the total is given to States as devolution.

Consolidated Fund of India

- It was constituted under **Article 266 (1)** of the Constitution of India.

- It is made up of:
 - All **revenues received** by the Centre by way of **taxes** (Income Tax, Central Excise, Customs and other receipts) and all **non-tax revenues**.
 - All **loans raised by the Centre** by issue of Public notifications, treasury bills (internal debt) and from foreign governments and international institutions (external debt).
- **All government expenditures are incurred from this fund** (except exceptional items which are met from the **Contingency Fund** or the **Public Account**) and no amount can be withdrawn from the Fund without **authorization from the Parliament**.
- The CAG audits the fund and reports to the relevant legislatures on the management.

Cess

- Cess is a **form of tax** levied over and above the base tax liability of a taxpayer.
- Cess is resorted to only when there is a need to meet the **particular expenditure for public welfare**.
- Cess is not a permanent source of revenue for the government, and it is **discontinued** when the purpose of levying it is fulfilled.
- It can be levied on **both indirect and direct taxes**.
- **Examples :**
 - **Swachh Bharat Cess:** Introduced in 2015, a 0.5% Swachh Bharat cess was imposed to fund a national campaign for clearing the roads, streets and the infrastructure of India.
 - **Infrastructure Cess:** Announced in Union Budget 2016, this cess was charged on the production of vehicles.

Surcharge

- A surcharge is an **extra fee, charge, or tax** that is added on to the cost of a good or service, beyond the initially quoted price.
- It is **added to an existing tax** and is not included in the stated price of the good or service.
- It is levied for extra services or to defray the cost of increased commodity pricing.

Source: TH

Plastic Parks Scheme

Why in News

The **Ministry of Chemicals & Fertilizers** has approved **setting up of 10 Plastic Parks** in the country.

- The Parks are being set up in the states of Assam, Madhya Pradesh, Odisha, Tamil Nadu, Jharkhand, Uttarakhand and Chhattisgarh.
- A **Plastic Park is an industrial zone** devoted to plastic enterprises and its allied industries.

Key Points

- **Background:**
 - The share of India in world trade of plastics is very low. **India's share in the USD 1 trillion global plastic exports market** is about **1%**.
 - The Indian Plastics industry is **large but highly fragmented** with dominance of tiny, small and medium units and thus lacks the capacity to tap this opportunity.
 - The **Scheme for setting up of Plastic Parks** has been formulated with a view to **synergize and consolidate the capacities through cluster development**.
- **Features of the Scheme:**
 - **Demand-Driven:** Supports setting up of a **need based 'Plastic Parks'** - an ecosystem with requisite state of the art infrastructure and enabling common facilities to assist the plastic sector move up the value chain and contribute to the economy more effectively.
 - **Major Objectives:**
 - Increase the competitiveness, polymer absorption capacity and value addition in the **domestic downstream plastic processing industry** through adaptation of modern, research and development led measures.
 - In the **petrochemical supply chain**, the plastics industry can be classified into **two categories**.
 - First, the **manufacturing of polymers**, which is called **'upstream'**.
 - The second one is **conversion of processable polymers** (plastic raw materials) into useful end products, which are classified as **'downstream'**.
 - Achieve **environmentally sustainable growth** through innovative methods of waste management, recycling, etc.
- **Funding Pattern:**
 - The **Central Government provides grant funding up to 50% of the project cost**, subject to a **ceiling of Rs. 40 crore per project**.
 - The **remaining project cost** is funded by the State Government, beneficiary industries and by loan from financial institutions.
- **Implementation:** A Special Purpose Vehicle (SPV) shall complete the setting up of the Plastic Park in a **period of three years** from the date of final approval.
The SPV is a **distinct legal entity** formed by the State Government or its agency.

- The **Central Institute of Petrochemicals Engineering and Technology (CIPET)** has established a **Centre for Skilling and Technical Support (CSTS) at Vijayawada in Andhra Pradesh** which provides Diploma programmes and skill development training programmes in the field of Plastics Engineering & Technology.
CIPET is a premier government of India institute.
- **Challenges for the Plastic Industry:**
 - **Increased volume of plastic waste.** As per reports on the status of India, only 60% of this waste gets recycled.
 - The major challenge is segregation and re-aggregation of plastic waste streams such as packaging waste, including laminated plastic.
 - **Pollution caused by plastic waste** is tormenting the environment including aquatic resources necessitating urgent action, that is why the plastic sector needs better management.
 - **A lack of upgrading quality and diversification** in the product range.
India has committed to phase out the use of single-use plastic by 2022.

Way Forward

- **Plasticulture**, i.e. the use of plastics in agriculture, horticulture, water-management, food grains storage and related areas should be promoted. **Recycling of plastics** is one of the foremost steps towards innovation and sustainability in this industry.
- Further, the government needs to work on the **draft 'National Plastic and Packaging Industry Development Policy 2019'**.

Source: PIB

Modern Grand Solar Minimum

Why in News

The magnitude of the Sun's solar activity is decreasing. This period of decreased solar activity is known as the **Modern Grand Solar Minimum** that will last from **2020 to 2053**.

Key Points

- **Measurement of Solar Activity:** This is done by observing the number of **Sunspots** at any given time. The number of sunspots is directly proportional to solar activity. More Sunspots mean more solar activity.
 - Sunspots (some as large as 50,000 km in diameter) are areas that **appear dark on the surface of the Sun (photosphere)**. They appear dark because they are **cooler than other parts of the Sun's surface**.
 - Sunspots are relatively cool because they form at areas where **magnetic fields are particularly strong**. These magnetic fields are so strong that they keep some of the heat within the Sun from reaching the surface.
- **Decrease in Sun Spots:** According to the United States **National Oceanic and Atmospheric Administration's (NOAA)**, 71% of the Sun had no Sun spots in 2020 through September 21, 2020 as compared to 77% in 2019.
- **Possible Reason:**

2020 marks the beginning of the **11th solar cycle**. The beginning of a solar cycle is a **solar minimum**, or when the Sun has the sunspots and thus, least activity.

 - Solar Cycle is the periodic flipping of the magnetic field of the Sun that occurs every 11 years or so. The north and south poles of the Sun change positions.
 - The middle of the solar cycle is the **solar maximum**, or when the Sun has the most sunspots.
- **Maunder Minimum:** The last time such an event occurred was during the Maunder Minimum, from 1645 CE to 1710 CE. That period is a part of the **Little Ice Age (from 1300 to around 1850)**, when Earth went through a series of elongated cold periods.

During the Maunder Minimum, the solar irradiance went down by 0.22 % in 1710 CE when the period ended. This brought **down the temperatures in the Northern Hemisphere**, especially in Europe, by 1-1.5°C and led to frozen rivers, long cold winters and cold summers.

- **Impact:**
 - The surface temperatures on Earth may go down during the Modern Grand Solar Minimum due to a 70% reduction in solar magnetic activity.
 - Variations in solar irradiance lead to heating of the upper layer of the Earth's atmosphere and influences the **transport of solar energy towards the planet's surface.**
 - Decreased solar activity has complex impacts on the **abundance of ozone in the Earth's atmosphere**
 - It also affects the climatic cycles of Earth such as the **North Atlantic Oscillation (NAO).**
 - North Atlantic Oscillation (NAO) is an **irregular fluctuation of atmospheric pressure** over the North Atlantic Ocean that has a strong effect on winter weather in Europe, Greenland, northeastern North America, North Africa, and northern Asia.
 - It was in a negative phase during the Maunder Minimum.
 - The sun's magnetic field shields the Earth from harmful cosmic and galactic rays. In the absence of the shielding more rays will reach the Earth and form high clouds in the atmosphere leading to the cooling.
- **Impact on Global Warming:**
 - It is possible that the cooling due to solar minimum may offset the rising temperatures due to global warming.
 - However, the **National Aeronautics and Space Administration (NASA)** has dismissed this and said the decrease in climate crisis would only be worth as much as three years of carbon dioxide growth in the atmosphere.
 - According to NASA, the impact of global warming would be **six times greater** than the cooling caused by the Grand Solar Minimum.
- **Other Related Events:** NASA had observed a family of sunspots in May 2020 that were associated with the biggest solar flare since October 2017.
 - A solar flare is a burst of activity on the sun's surface accompanied by an ejection of particles known as the coronal mass ejection.
 - Big solar flares can disrupt satellite communications and many other technological equipment in and around Earth.

Way Forward

- The sun's activity **is not completely understood.** It takes months to just decide about the Sun's activities from observations. Also, Sunspots are **mere symptoms and not causes of solar activity** so they can not be used as reliable measurements.
- Even with state-of-the-art models and top scientists reviewing them, the only conclusion that could be drawn was that the Sun will attain a **peak sunspot range of 95-130, and that this will happen sometime between 2023 and 2026, during the 25th solar cycle.**

Source: DTE

World Risk Index 2020

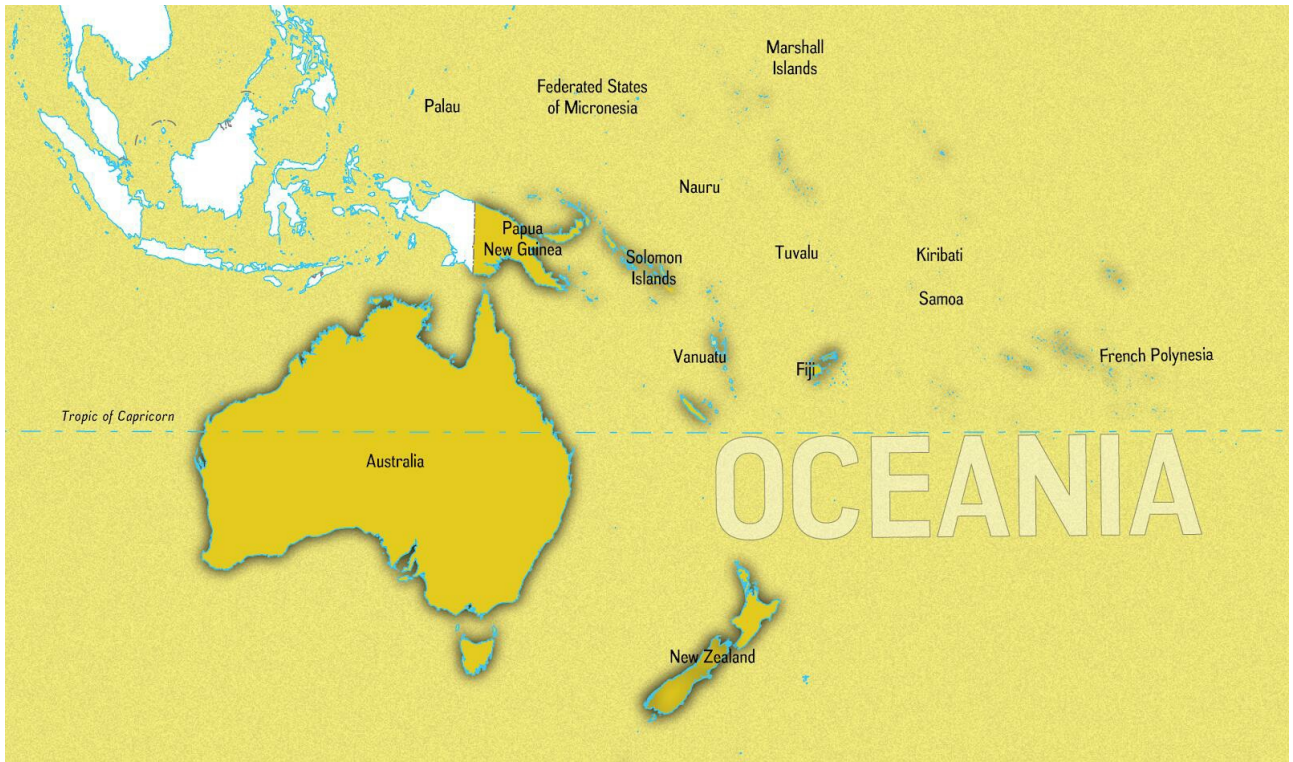
Why in News

According to the **World Risk Index (WRI) 2020**, India is 'poorly prepared' to deal with '**climate reality**', due to which it is vulnerable to extreme natural disasters.

Key Points

- **World Risk Index:**
 - It is calculated on a **country-by-country basis**, through the multiplication of exposure and vulnerability and **describes the disaster risk** for various countries and regions.
 - **Released annually since 2011**, it indicates which countries are in the greatest need to strengthen measures for coping with and adapting to extreme natural events.
 - It is **part of the World Risk Report 2020** released by the **United Nations University Institute for Environment and Human Security (UNU-EHS)**, Bundnis Entwicklung Hilft and the University of Stuttgart in Germany.
 - **Among continents, Oceania is at the highest risk**, followed by Africa and the Americas.

- **Oceania:**



- Small island states, **especially in the South Pacific and the Caribbean**, are disproportionately represented among high-risk countries.
 - **Vanuatu** (South Pacific Ocean) is the country with the **highest disaster risk worldwide**. It is followed by Tonga (South Pacific Ocean) and Dominica (Caribbean Sea).
- They are at a **high exposure to extreme natural events** which include the **rise in sea level** as a result of **global warming**.
- The small island states have **limited financial resources and have made small contributions to climate change**, but are **affected the most** by its consequences.
- They are **needed to be compensated for the climate damage and losses** already incurred and merely providing financial resources for adaptation to climate change is not sufficient.

- **Africa:**

- It has been identified as a hotspot of vulnerability. **More than two-thirds of the most vulnerable countries in the world are located on the continent.**
 - The **size of semiarid regions in Africa is expected to increase**, with over half of Africa's land area **vulnerable to desertification**.
 - Large areas of Africa are **marginalized and already under significant financial stress**.
- The **Central African Republic is the most vulnerable** country, followed by Chad, the Democratic Republic of Congo, Niger and Guinea-Bissau.

- **South Asia and India:**
 - **India has ranked 89th among 181 countries** on the WRI 2020 and is **fourth-most-at-risk in South Asia**, after Bangladesh, Afghanistan and Pakistan.
 - **Sri Lanka, Bhutan and the Maldives have fared better than India** in their **abilities to cope with extreme disasters. India also lags behind** these three neighbours in terms of **lack of adaptive capacities or the preparedness to deal** with extreme events.
 - A comparison with the WRI 2019, shows that **all south Asian countries have slipped** on their **ability to adapt** to the reality of climate emergency.
 - Countries with a **score above 52.73, are ‘very poor’** in their **adaptive capacities** for extreme natural disasters.
 - **India has also slipped on strengthening adaptive capacities** which is **concerning as it highlights the inability of systems, institutions, and other organisms to adjust** to potential damage, to take advantage of opportunities, or to respond to consequences.
 - It becomes more important given that **India's first ever comprehensive climate change assessment report** highlighted the impacts of the climate crisis.

Source: DTE

China's Renewed Support for Paris Agreement

Why in News

Recently, China has renewed its support for the **Paris Agreement** at the **United Nations (UN) General Assembly**, while calling for a **‘green focus’** as the world recovers from the **Covid-19** crisis.

Key Points

- China is the **world's biggest polluter** and **accounts for a quarter of the planet's greenhouse gas (GHG) emissions.**
- It now aims to reach **carbon-dioxide emissions peak before 2030** and **achieve carbon neutrality before 2060.**
 - The 2060 objective is **still a decade later than the date set by other small states as well as European powers** but it has been appreciated by experts as a significant step to inject momentum into the Paris accord.
- In addition to its embrace of global emissions-busting deals, China already feeds **nearly 15% of its energy demands with non-fossil fuels** and its **installation of renewable energy stands at 30% of the world total.**

- However, global experts have highlighted that there are **massive investments continuing within China and overseas in coal and other fossil fuels.**
 - China currently has **135 gigawatts of coal-power capacity either permitted or under construction**, according to **Global Energy Monitor**, a San Francisco-based environmental group.
 - This equates to about **half the total coal-power capacity in the USA** which is the **second-largest polluter after China.**
- **Against the USA:**
 - China **highlighted USA's demand for plastics and export of waste and criticised it for "obstructing" the global fight** against emissions.
 - Earlier, the **USA had pulled out of the Paris agreement**, calling it unfair and **blamed China for the stalled momentum** on tackling global emissions.
 - This move has opened a **new divergence in US-China relations which are already troubled** over issues like **trade**, technology, defence and human rights.

Paris Agreement

- Paris Agreement (also known as the **Conference of Parties 21** or **COP 21**) is a landmark environmental accord that was **adopted in 2015 to address climate change and its negative impacts.**
 - It replaced the **Kyoto Protocol** which was an earlier agreement to deal with climate change.
- **Aims:** To reduce global GHG emissions in an effort to **limit the global temperature increase in this century to well below 2°C above pre-industrial levels**, while pursuing means to **limit the increase to 1.5°C by 2100.**
- **It includes:**
 - **Addressing the financial losses vulnerable countries face** from climate impacts such as extreme weather.
 - **Raising money to help developing countries** adapt to climate change and transition to clean energy.
 - This part of the deal has been made **non-legally binding on developed countries.**
- Before the conference started, **more than 180 countries had submitted pledges to cut their carbon emissions (Intended Nationally Determined Contributions or INDCs).**
 - The INDCs were **recognised under the agreement, but are not legally binding.**
 - **India also reaffirmed its INDCs commitments** to meeting the goals under the Agreement in order to **combat the climate change.**

Source: TH

New Brucellosis Vaccine by ICAR

Why in News

“*Brucella abortus* S19Δ per vaccine” is developed by **the Indian Council of Agricultural Research’s -Indian Veterinary Research Institute (ICAR-IVRI)** for **brucellosis** prevention in the **dairy sector**.

Key Points

- **Brucellosis:** It is a **bacterial disease** caused by various **Brucella species**, which mainly infect cattle, swine, goats, sheep and dogs.
 - It is also known as **Malta fever or Mediterranean fever**.
 - **Brucellosis** is a **zoonotic disease** and **endemic in India** causing **huge economic losses to dairy industry** due to:
 - Infertility
 - Abortion
 - Birth of weak off springs
 - Reduced productivity
- **Old Vaccine:**
 - **B. abortus S19 strain:** In India, calf-hood vaccination is practiced using live attenuated **Brucella abortus S19 strain** for control of the disease.
 - *B. abortus* S19 strain is a very strong **immunogen and provides lifelong immunity**.

An immunogen refers to a molecule that is capable of eliciting an immune response by an organism's immune system.
 - **Drawbacks:**
 - Residual virulence to humans and animals.
 - Not suitable for vaccination in adult animals.
 - Causes abortion when used in pregnant animals.
 - Interferes with sero-diagnosis of clinical infection.

- **New Vaccine: To overcome some of these drawbacks**, a modified strain of *B. abortus* S19 has been developed at ICAR-IVRI. The newly developed strain is named as ***B. abortus* S19Δ per**.
 - It is developed under the **Department of Biotechnology (DBT)** funded “**Brucellosis network program**”.
 - The programme **aims at** studying the epidemiological status of Brucella infections in India and to develop novel diagnostics and vaccines.
 - In the process of modifying the S19 strain, **lipopolysaccharide (LPS) structure** of the organism was altered through **deletion mutation**.
 - **Lipopolysaccharide** is the major component of the outer membrane of **Gram-negative bacteria**.
 - A **deletion mutation** occurs when part of a DNA molecule is not copied during DNA replication.
 - Vaccine potential of S19Δ per has been evaluated in experimental small animal models and also in buffalo calves.
 - The vaccine has **great demand in India** and will be of immense help in the national control programme on brucellosis.
 - The vaccine has **DIVA capability**.
 - DIVA means** differentiating infected from **vaccinated** animals. These **vaccines**, also termed as marker **vaccines**, can differentiate between naturally infected and vaccinated animals.

Infection to Humans

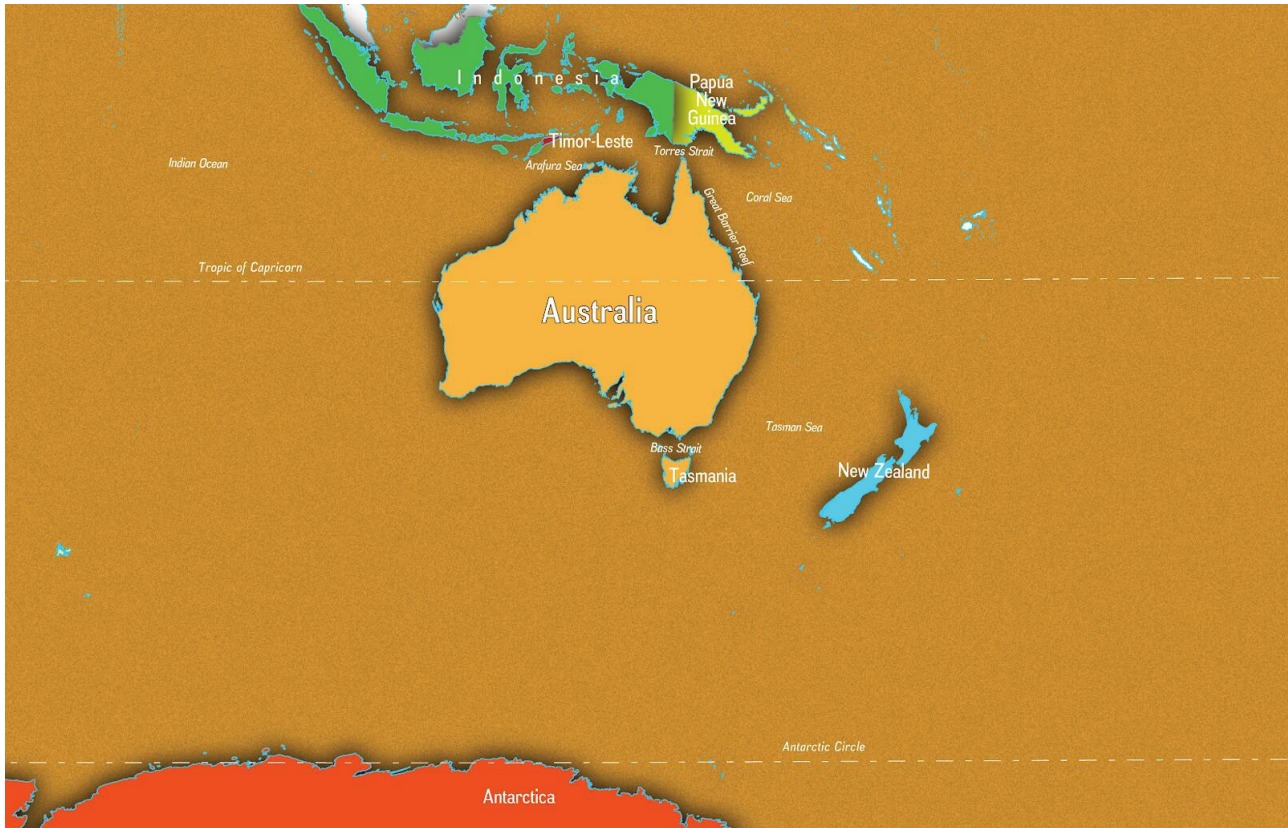
- Brucellosis has infected over 3000 people in China.
- Humans generally acquire the disease through:
 - **Direct contact with infected animals or**
 - Eating, drinking **contaminated** animal products, unpasteurized milk or
 - **Inhaling airborne agents**.
- The US Centers for Disease Control and Prevention states that person-to-person transmission of brucellosis is “**extremely rare**” but some symptoms may reoccur or never go away.
- **Symptoms** of Brucellosis include **fever, sweats, malaise, anorexia** (psychological disorder in which one eats less due to fear of weight gain), **headache** and **muscle pain**.
- **Treatment and prevention:**
 - It is usually treated with **antibiotics**, including **rifampin and doxycycline**.
 - Avoiding unpasteurised dairy products and taking safety precautions such as wearing rubber gloves, gowns or aprons, when handling animals or working in a laboratory can help prevent or reduce the risk of getting brucellosis.
 - Other preventive measures include cooking meat properly, vaccinating domestic animals, etc.

Source PIB

Whale Mass Strandings

Why in News

Over **450 long-finned pilot whales** have died in **Australia's largest recorded mass-stranding event**. The whales were **beached at a remote beach in Tasmania's west coast**.



Key Points

- **Beaching/Stranding Events:**
 - Beaching refers to the **phenomenon of dolphins and whales stranding themselves on beaches**.
 - There are **around 2,000 strandings each year** worldwide, with most **resulting in the death of the animal**.
 - Whales strand themselves on beaches either **singularly or in groups**. While **individual strandings** are mostly attributed to **injury or sickness**, it is **not clear why exactly whales beach themselves in groups**.

- **Possible Reasons behind Whale Mass Strandings:**

- Some whales **follow schooling fish or other prey** into shallow waters, which causes the whales to become disoriented, as a result of which they get stranded.
 - Another reason could be **panic from being trapped by a predator** such as killer whales or sharks.
 - Another possibility is that **whales might be drawn to land by prey-rich currents.**
 - Some scientists believe that **sonar signals and other man-made loud underwater noises** may contribute to beaching events.
 - Further, the **shape of the beach** and the **coastline** could also have a role to play.
- **Protection:** Scientists and workers try to drag the whales away from the shore and guide them back into the water.



- **Long-finned pilot whales:**

- **Scientific Name:** Globicephala melas
- These are **one of two species of pilot whale**, along with short-finned pilot whales.
- These prefer **deep temperate to subpolar oceanic waters**, but they have been known to occur in coastal waters in some areas.
- They have been documented near the **Antarctic sea ice** and associated with the colder **Benguela and Humboldt Currents**, which may extend their normal range.
- **Protection Status:**

Source: IE
