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and Issues Update

MARCH 2021



COLD WAR

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CENSUS IN INDIA

CLIMATE CHANGE

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COLD WAR

- Cold War was rivalry that developed after World War II between the United States and the Soviet Union and their respective allies.
- The Cold War was waged on political, economic, and propaganda fronts and had only limited recourse to weapons.
- The term was first used by the English writer **George Orwell** in an article published in 1945 to refer to what he predicted would be a nuclear stalemate between “two or three monstrous super-states, each possessed of a weapon by which millions of people can be wiped out in a few seconds.” It was first used in the United States by the American financier and presidential adviser Bernard Baruch in a speech at the State House in Columbia, South Carolina, in 1947.



Origins of The Cold War

- Following the surrender of Nazi Germany in May 1945 near the close of World War II, the uneasy wartime alliance between the United States and Great Britain on the one hand and the Soviet Union on the other began to unravel. By 1948 the Soviets had installed left-wing governments in the countries of eastern Europe that had been liberated by the Red Army.
- The **Americans and the British feared the permanent Soviet domination of eastern Europe** and the threat of **Soviet-influenced communist parties coming to power in the democracies of western Europe**.
- The Soviets, on the other hand, were determined to maintain control of eastern Europe in order to safeguard against any possible renewed threat from Germany, and they were intent on spreading communism worldwide, largely for ideological reasons.
- The Cold War had solidified by **1947–48**, when U.S. aid provided under the **Marshall Plan** to western Europe had brought those countries under American influence and the Soviets had installed openly communist regimes in eastern Europe.

The Struggle Between Superpowers

- The Cold War reached its peak in **1948–53**. In this period the Soviets unsuccessfully blockaded the Western-held sectors of West Berlin (1948–49); the United States and its European allies formed the North Atlantic Treaty Organization (NATO), a unified military command to resist the Soviet presence in Europe (1949); the Soviets exploded their first atomic warhead (1949), thus ending the American monopoly on the atomic bomb; the Chinese communists came to power in mainland China (1949); and the Soviet-supported communist government of North Korea invaded U.S.-supported South Korea in 1950, setting off an indecisive Korean War that lasted until 1953.
- From **1953 to 1957** Cold War tensions relaxed somewhat, largely owing to the death of the longtime Soviet dictator Joseph Stalin in 1953; nevertheless, the standoff remained.
- A unified military organization among the **Soviet-bloc countries, the Warsaw Pact, was formed in 1955**; and West Germany was admitted into NATO that same year.
- Another intense stage of the Cold War was in **1958–62**. The United States and the Soviet Union began developing intercontinental ballistic missiles, and in 1962 the Soviets began secretly **installing missiles in Cuba** that could be used to launch nuclear attacks on U.S. cities. This sparked the **Cuban missile crisis**

(1962), a confrontation that brought the two superpowers to the brink of war before an agreement was reached to withdraw the missiles.

- The Cuban missile crisis showed that neither the United States nor the Soviet Union were ready to use nuclear weapons for fear of the other's retaliation (and thus of mutual atomic annihilation). The two superpowers soon signed the **Nuclear Test-Ban Treaty of 1963**, which banned aboveground nuclear weapons testing. But the crisis also hardened the Soviets' determination never again to be humiliated by their military inferiority, and they began a buildup of both conventional and strategic forces that the United States was forced to match for the next 25 years.
- Throughout the Cold War the United States and the Soviet Union **avoided direct military confrontation** in Europe and engaged in actual combat operations only to keep allies from defecting to the other side or to overthrow them after they had done so. Thus, the Soviet Union sent troops to preserve communist rule in **East Germany (1953), Hungary (1956), Czechoslovakia (1968), and Afghanistan (1979)**.
- For its part, the United States helped overthrow a **left-wing government in Guatemala (1954)**, supported an unsuccessful invasion of Cuba (1961), invaded the Dominican Republic (1965) and Grenada (1983), and undertook a long (1964–75) and unsuccessful effort to prevent communist North Vietnam from bringing South Vietnam under its rule (see Vietnam War).

Toward A New World Order

- In the course of the 1960s and '70s, however, the bipolar struggle between the Soviet and American blocs gave way to a more-complicated pattern of international relationships in which the world was no longer split into two clearly opposed blocs. A major split had occurred between the **Soviet Union and China in 1960** and widened over the years, shattering the unity of the communist bloc.
- In the meantime, western Europe and Japan achieved dynamic economic growth in the 1950s and '60s, reducing their relative inferiority to the United States. Less-powerful countries had more room to assert their independence and often showed themselves resistant to superpower coercion or cajoling.
- The 1970s saw an easing of Cold War tensions as evinced in the **Strategic Arms Limitation Talks (SALT) that led to the SALT I and II agreements of 1972 and 1979**, respectively, in which the two superpowers set limits on their antiballistic missiles and on their strategic missiles capable of carrying nuclear weapons. That was followed by a period of renewed Cold War tensions in the early 1980s as the two superpowers continued their massive arms buildup and competed for influence in the Third World.
- But the Cold War began to break down in the late 1980s during the administration of Soviet leader **Mikhail S. Gorbachev**. He dismantled the totalitarian aspects of the Soviet system and began efforts to democratize the Soviet political system. When communist regimes in the Soviet-bloc countries of eastern Europe collapsed in 1989–90, Gorbachev acquiesced in their fall. The rise to power of democratic governments in East Germany, Poland, Hungary, and Czechoslovakia was quickly followed by the unification of West and East Germany under NATO auspices, again with Soviet approval.
- Gorbachev's internal reforms had meanwhile weakened his own Communist Party and allowed power to shift to Russia and the other constituent republics of the Soviet Union. In late **1991 the Soviet Union collapsed and 15 newly independent nations were born**, including a Russia with a democratically elected, anticommunist leader. The Cold War had come to an end.



INDO-PACIFIC

- The Indo-Pacific has gained currency in recent times. In terms of geo-spatiality, the Indo-Pacific is broadly to be understood as an **interconnected space between the Indian Ocean and the Pacific Ocean**.
- Its expanse is debated to be ranging from the **eastern shores of Africa to the western coast of the United States**, albeit with variations in definitions depending on each actor and their own geographic positioning in the vast expanse.
- In a more functional understanding, the interconnectedness and the interdependence of the two oceans is a product of **growing forces of globalization, trade and changing equations between various actors** which

has broken down older boundaries and opened up new avenues. Growing mobility across the oceans has helped formulate an integrated approach. Given that it contains the world's most crucial sea routes, the world's most populous nations fueling high energy demands on its rims and a stretch encapsulating finest global

commons, the Indo-Pacific is adjudged to be the center of the globe in terms of politics and economics.

- Strategically, the Indo-Pacific has been seen as a continuum across the two oceans joined



together by its main trading channel, the **straits of Malacca**. Two broad reasons explain the rise of a strategic imagination of the Indo-Pacific. **First**, the growing footprint of China across the length and breadth of the region and **second**, the relative decline of the U.S. alliance system and its strive for resurgence.

- China's maritime advances have sprawled across the two oceans in a bid to secure its energy requirements and boost its trading ties. China's rise has taken multiple forms. In the **South China Sea**, its claims have been showcased through territorial advances. Its growing strides in South Asian waters alongside the **"string" of port facilities** across the Indian Ocean is likely to make it a resident power. In terms of connectivity and infrastructure, the **Belt and Road Initiative** puts forward the Chinese-led plan to bind the geopolitical space. Economically, China is a crucial trading partner for all the major states in the region and also taking active interests to lead the economic partnerships of the region.
- The rise of China is to be read alongside a relative decline of the U.S. presence in the region. While the United States still is a net-security provider in the region for its allies and possesses the most potent navy, its strategies have left the door open for China in some cases and harmed its own allies in the rest. Although the United States has accorded renewed importance to the Indo-Pacific by a significant renaming of the U.S. Pacific Command to the **Indo-Pacific command**, its unilateral withdrawal from the **Trans-Pacific Partnership** and continuous calls for equitable burden-sharing for its allies has left its alliance system in limbo. Added to that, it has been unable to blow steam into the **Quad grouping** of like-minded democracies, comprised also of Australia, Japan and India in order to build the much touted "free and open Indo-Pacific."
- The U.S.-China conflict at the heart of the Indo-Pacific has also led to contested imaginations from other littoral actors. Australia, which was one of the first nations to discuss the idea of Indo-Pacific, has implicitly argued for a balance between the United States and China. While it is a part of the U.S. alliance system and favors its large scale presence in the region, Australia is also aware of its gradual decline.
- Simultaneously, Australia neither can discount the economic gains served by China and the possibility of deepening ties with other important actors like Japan, India and South Korea in the region which would be vital for its strategic future. Reflecting on the spirit of the **"confluence of two seas"** first espoused by Japanese Prime Minister Shinzo Abe, Japan's idea of the Indo-Pacific overlaps with the U.S. vision but with a strong emphasis on promoting infrastructure, beyond East Asia into Middle East and Africa. Placed centrally at the heart of the Indo-Pacific, **ASEAN nations** have taken a more functional outlook towards the Indo-Pacific, basing its strategy on four aspects – maritime cooperation, connectivity, sustainable development and economy.

- **India's imagination** of the Indo-Pacific is an extension of its advances in the east through the **Look East Policy**, now the **Act East Policy**. While the United States has pushed for a more active Indian role in the region, India's Indo-Pacific strategy has been more about dodging than distinctiveness. India, arguing for a **"free and open Indo-Pacific"** and siding with the Quad nations initially, has been unable to determine whether its Indo-Pacific strategy is inclusive of China or set against it. While it echoes the concerns of the U.S. alliance to bring about a **rules-based order characterized by freedom of navigation and settlement of disputes** through dialogue, it has also mentioned that its idea of the Indo-Pacific is not about restricting a particular state, hinting China, and also a parallel focus on its **Security and Growth for All in the Region approach, coined SAGAR**.
- Like every imaginative space, the Indo-Pacific is a construct of contested interpretation, necessitating warring visions and constructs likely to be wrestled out between opposed strategic stakeholders in the region. A rising China, a defiant United States, and a host of other regional actors in the ongoing Indo-Pacific are likely to define the politics of the region, which is open to multiple possibilities.

SHARP POWER

- Sharp power is a term coined by **Christopher Walker** and **Jessica Ludwig** of the National Endowment for Democracy, a think-tank based in United States. The text referred to Sharp power as a **form of information warfare that is being waged by authoritarian powers** such as Russia and China to shape public perceptions around the world, by using communication formats such as social media. They consider sharp power as form of power which **penetrates or perforates the political and information environments** in the targeted countries by exploiting the openness of democratic societies.
- Thereafter, an article in The Economist modified the understanding of sharp power as information warfare which relies on subversion of information, bullying and pressure tactics that seeks to promote self-censorship by targeted audiences in other countries. Sharp power therefore is a behavioural aspect of International relations that uses information, both genuine and fake, as a warfare tool to weaken the targeted country by augmenting the socio-political cleavages in the targeted country. Moreover, it seeks to control the flow of negative information about itself by using economic sanctions, threats, etc. on media houses, research institutes, and other forms of pressure tactics.

Hard and Soft Power

- The term Soft power, as coined and defined by **Joseph Nye Jr.**, harnesses the allure of culture and values of a country to enhance a country's strength and the ability to affect other countries by attraction and persuasion. While, Hard power is the ability to affect other countries by coercion and payment. According Joseph Nye Jr., if someone puts a gun to your head and demands your wallet, it does not matter what you want or think. That is hard power. If that person is trying to persuade you to freely give up your wallet, everything depends on what you want or think. That is Soft power.
- Soft power is rarely sufficient on its own for power projection, but when coupled with hard power, it is a force multiplier. Power thereby depends on whose army wins, but it also depends on whose narrative also wins. **A strong narrative therefore is a source of power**. For example, the United States may have had a military victory in the War in Vietnam but the narrative of 'who won' or the 'moral victor' is attributed to Vietnam. Similarly, Joseph Nye Jr. provides the analogy of Osama bin Laden having neither threatened nor paid the men who flew aircraft into the World Trade Center—he had attracted them with his ideas. Therefore, soft power can be used for evil ends, but its means depend on positive attributes of voluntarism, allure and attraction.

Difference between Soft and Sharp Power

- The ability to harness Soft power is based upon the voluntarism of the targeted audience through forming an allure and attractive opinion, while **Sharp power is based upon compelling the behaviour of the targeted audience through manipulation of opinion**. The distinction between Soft power and Sharp power

becomes hard to discern wherein which action would constitute voluntarism or a compelling scenario, or which information is targeted to attain allure or manipulation. Sharp and Soft power therefore are also inversely proportional to each other.

- Joseph Nye Jr. considers that all information to enhance Soft power provides the ability for the audience to choose on how to frame that information. Only when that information attempts to limit the framing ability of the targeted audience, the information delves into deliberate deception and a mean to coerce and not allure the targeted audience. He concludes by asserting that it is this quality—openness and limits on deliberate deception—that distinguishes Soft power from Sharp power since without proper disclosure, the principle of voluntarism has been breached. Sharp power through the deceptive use of information for hostile purposes, therefore becomes closer to Hard power.

Using Sharp Power

- The manipulation of socio-political perceptions and electoral processes has been resorted to by the United States and the Soviet Union in other countries during the Cold War, to reduce the attractiveness of ideological frameworks of communism and free-market economics respectively in foreign countries. Similarly, the private sector such as Cambridge Analytica, Facebook hearing in US Congress, etc. have become, knowingly and otherwise, as means of information warfare by Russia to manipulate electoral processes such as in United States and increasing the socio-political cleavages such as between Brexit voters in UK.
- The fear from China, as earlier with US and USSR during Cold War, is that it seeks to conquer foreign minds with its thoughts and ideas. Australia became the first nation to raise a red flag against Chinese tactics of Sharp power with allegations of interference in research in Australian universities and publishing houses, bribing members of Australian parliament for positive image construction in Australian parliamentary discourse, barring critical researchers from access into China, spying on Chinese diaspora and other tactics.
- Information through Government backed formats does not necessarily mean they are a Sharp power threat. Al-Jazeera, BBC, Doordarshan, etc. are government backed institutions but it is only when they use deceptive information for hostile purposes such as forming animosity between groups in other countries, promoting civil disobedience, etc., it is then that the actions of these institutions can be treated as Sharp power projection. The use of information warfare by Pakistan through separatist organisations and PTV to promote communal and ethnic feud in Kashmir can be attributed as Sharp power projections.
- Democratic societies are more prone in providing opportunities for other countries to employ techniques of information warfare since hostile information even after identification becomes protected as fundamental freedom till decided otherwise. This leaves an opportunity to only countering information with information as means to protect against malign influence. This identification and countering ability by democratic societies such as India therefore becomes essential.

BRICS

- BRICS is the group composed by the five major emerging countries - Brazil, Russia, India, China and South Africa -, which together represent about 42% of the population, 23% of GDP, 30% of the territory and 18% of the global trade.
- The acronym BRIC was coined by **Goldman Sachs in 2001** to indicate the emerging powers that would be, alongside the United States, the five largest economies of the world in the 21st century. In 2006, BRIC countries started their dialogue, which since 2009 takes place at annual meetings of heads of state and government. In 2011, with South Africa joining the group, the BRICS reached its final composition, incorporating a country from the African continent.
- Since the beginning of their dialogue, in 2006, these countries have sought to establish fairest international governance, one that would be more suitable to their national interests. This goal would be achieved, for

example, through the reform of the **International Monetary Fund quota system**, which came to include, for the first time, Brazil, Russia, India, and China amongst the top ten largest shareholders.

- Throughout its first decade, BRICS has developed sectorial cooperation in different areas, such as science and technology, trade promotion, energy, health, education, innovation and fight against transnational crime. Currently, sectorial cooperation, which covers more than 30 subject areas, brings important concrete benefits to the populations of the five countries. It is the case of the Tuberculosis Research Network, which aims to introduce quality medicines and diagnoses with affordable prices.
- At the **Fortaleza Summit (2014)**, in Brazil, important institutions were created: the **New Development Bank (NDB)** and the **Contingent Reserve Arrangement (CRA)**. So far, the NDB has approved more than 8 billion-dollars in infrastructure and renewable energy financing projects in the BRICS countries. The CRA is operational and is an important financial stability mechanism for countries affected by crises in their balance of payments.
- In addition to presidential meetings (summit and the informal meeting in the margins of the G20), BRICS organizes, through its rotating chairship, nearly 100 annual meetings, including about 15 ministerial meetings and dozens of gatherings with official seniors, technical events, as well as meetings on culture, education and sport areas.

INTERNATIONAL CRIMINAL COURT

- The International Criminal Court (ICC) **investigates** and, where warranted, **tries individuals** charged with the gravest crimes of concern to the international community: genocide, war crimes, crimes against humanity and the crime of aggression.
- The ICC is the **first and only permanent international court with jurisdiction to prosecute individuals** for the international crimes of genocide, crimes against humanity, war crimes, and the crime of aggression.
- It is intended to complement existing national judicial systems and it may therefore exercise its jurisdiction only when national courts are unwilling or unable to prosecute criminals.
- The ICC began operations on 1 July 2002, upon the entry into force of the **Rome Statute**, a multilateral treaty that serves as the court's foundational and governing document. States which become party to the Rome Statute become members of the ICC, serving on the Assembly of States Parties, which administers the court. As of December 2020, there are 123 ICC member states; 42 states have neither signed nor become parties to the Rome Statute.
- The ICC has **four principal organs**: *The Presidency, the Judicial Divisions, the Office of the Prosecutor, and the Registry*.
- The Court's founding treaty, called the Rome Statute, grants the ICC jurisdiction over four main crimes.

1. **First**, the **crime of genocide** is characterised by the specific intent to destroy in whole or in part a national, ethnic, racial or religious group by killing its members or by other means: causing serious bodily or mental harm to members of the group; deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part; imposing measures intended to prevent births within the group; or forcibly transferring children of the group to another group.
2. **Second**, the ICC can prosecute **crimes against humanity**, which are serious violations committed as part of a large-scale attack against any civilian population. The 15 forms of crimes against humanity listed in the Rome Statute include offences such as murder, rape, imprisonment, enforced disappearances, enslavement – particularly of women and children, sexual slavery, torture, apartheid and deportation.
3. **Third**, **war crimes** which are grave breaches of the Geneva conventions in the context of armed conflict and include, for instance, the use of child soldiers; the killing or torture of persons such as civilians or prisoners of war; intentionally directing attacks against hospitals, historic monuments, or buildings dedicated to religion, education, art, science or charitable purposes.
4. **Finally**, the fourth crime falling within the ICC's jurisdiction is the **crime of aggression**. It is the use of armed force by a State against the sovereignty, integrity or independence of another State. The definition of this

crime was adopted through amending the Rome Statute at the first Review Conference of the Statute in Kampala, Uganda, in 2010.



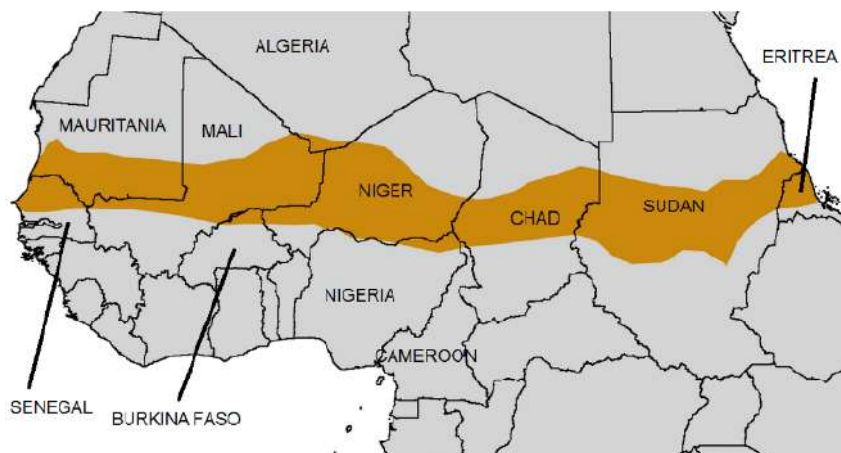
UNHRC

- The Human Rights Council is an **inter-governmental body** within the United Nations system responsible for strengthening the promotion and protection of human rights around the globe and for addressing situations of human rights violations and make recommendations on them. It has the ability to discuss all thematic human rights issues and situations that require its attention throughout the year. It meets at the UN Office at Geneva.
- The Council was created by the United Nations General Assembly on 15 March 2006 by resolution.
- Its first session took place from 19 to 30 June 2006. One year later, the Council adopted its "**Institution-building package**" to guide its work and set up its procedures and mechanisms.
- Among them were the **Universal Periodic Review mechanism** which serves to assess the human rights situations in all United Nations Member States, the **Advisory Committee** which serves as the Council's "think tank" providing it with expertise and advice on thematic human rights issues and the Complaint Procedure which allows individuals and organizations to bring human rights violations to the attention of the Council.
- The Human Rights Council also works with the **UN Special Procedures** established by the former Commission on Human Rights and now assumed by the Council. These are made up of special rapporteurs, special representatives, independent experts and working groups that monitor, examine, advise and publicly report on thematic issues or human rights situations in specific countries.



SAHEL REGION

- The Sahel region of Africa is a **3,860-kilometre arc-like land mass** lying to the immediate south of the Sahara Desert and stretching east-west across the breadth of the African continent.
- A largely semi-arid belt of barren, sandy and rock-strewn land, the **Sahel marks the physical and cultural transition between the continent's more fertile tropical regions to the south and its desert in the north.**
- Geographic definitions of the Sahel region vary. Commonly, the Sahel stretches from Senegal on the Atlantic coast, through parts of Mauritania, Mali, Burkina Faso, Niger, Nigeria, Chad and Sudan to Eritrea on the Red Sea coast.
- Culturally and historically, the **Sahel is a shoreline between the Middle East and sub-Saharan Africa.** This means it is the site of interaction between Arabic, Islamic and nomadic cultures from the north, and indigenous and traditional cultures from the south.
- Concerns abound over the region's vast spaces, often beyond the reach of the state, in an era of violent criminal and political movements operating across borders. The Sahel also suffers from ethno-religious tensions, political instability, poverty and natural disasters.

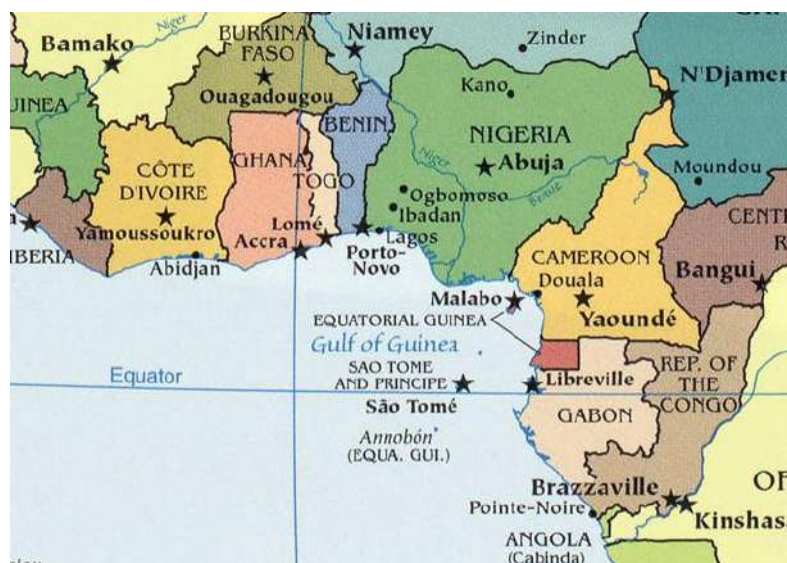


- In recent years, the Sahel has been in the global spotlight due to famines, terrorism, anti-state rebellions, and arms, drugs and human trafficking. These developments are the product of both local and global dynamics. They remain substantial challenges for the region in 2017.
- In **Mali**, extremism will remain a threat, despite national and international efforts to halt it. Islamist fighters may be dispersed, but not halted. The al Qaeda-affiliated al-Mourabitoun group, operating from Mali, have recently launched attacks in Burkina Faso and Ivory Coast.
- In **Mauritania**, a traditional route for drug and human trafficking between South America and Europe, the existence of sub-state militant activities in the greater Sahel region, and local governance challenges, make political violence a threat.
- In **Nigeria**, despite claims that Boko Haram has technically been defeated, it is very likely that the group's remaining members are on the run. A relaunch of the offensive from elsewhere in the Lake Chad Basin area is therefore highly probable.
- There have been positive developments as well. These include an emerging consolidation of support for democratic transitions of power through popular protests, and elite-led regional diplomatic and military interventions against unconstitutional changes of government or attempted unlawful retention of power.
- The African Union and the Economic Community of West African States (ECOWAS) have opposed unlawful takeover of power in Mali and Burkina Faso. Peaceful protests in Mauritania also promise some democratic gains.
- Regional governance and integration projects have continued, with ECOWAS and other bodies such as the Lake Chad Basin Commission and the Economic Community of Central African States (ECCAS) offering the promise of collective action to tackle major regional challenges, although so far with mixed success.



GULF OF GUINEA

- Gulf of Guinea is the part of the **eastern tropical Atlantic Ocean** off the western African coast, extending westward from Cap López, near the Equator, to Cape Palmas at longitude 7° west.
- Its major tributaries include the **Volta and Niger rivers**.
- The coastline of the Gulf of Guinea forms part of the **western edge of the African tectonic plate** and corresponds remarkably to the continental margin of South America running from Brazil to the Guianas. The coincidence between the geology and the geomorphology of these two coastlines constitutes one of the clearest confirmations of the **theory of continental drift**.
- The continental shelf of the Gulf of Guinea is almost uniformly narrow and widens to as much as 100 miles (160 km) only from Sierra Leone to the Bijagós Archipelago, Guinea-Bissau, and in the Bight of Biafra. The Niger River has built a great delta of **Holocene muds** (i.e., those less than 11,700 years old)—and it is only here that the fit between the African and South American tectonic plates is seriously disturbed.
- The only active volcanic region is the island arc aligned with **Mount Cameroon** on the coast of the Cameroon Republic; the islands of this arc (São Tomé and Príncipe, and Annobón) extend 450 miles offshore to the southwest.



- The entire northern coast of the gulf is washed by the eastward flow of the **Guinea Current**, which extends from Senegal to the Bight of Biafra. The gulf's tropical water is separated from the Equator-ward flow of the **cool Benguela and Canary currents** by sharp frontal regions off the Congo and Senegal rivers, respectively. The Benguela Current, as it swings westward, forms the South Equatorial Current to the south of, and running counter to, the Guinea Current.
- The warm tropical water of the Gulf of Guinea is of **relatively low salinity** because of river effluents and high rainfall along the coast. This warm water is separated from deeper, more-saline, and colder water by a shallow thermocline—a layer of water between upper and lower levels that lies usually less than 100 feet (30 m) deep.
- **Coastal upwelling**, and hence a rich production of plant and animal life, occurs seasonally and locally off the central gulf coasts of Ghana and Côte d'Ivoire.
- The variety of the marine flora and fauna of the Gulf of Guinea is limited when compared with that of the western tropical Atlantic and, especially, with the Indo-Pacific biogeographic realm. This relative biological poverty results from **(1)** a lack of coral-reef ecosystems because of low salinity and the high turbidity of Guinea Current water and **(2)** the climatic regression to cool conditions during the Miocene Epoch (i.e., some 23 to 5.3 million years ago), during which far fewer refuges for tropical species of animals and plants were available in the Atlantic than in the Indo-Pacific region.
- Because most of the coast is low-lying, without natural harbours, and largely separated from the dry land of the interior by a belt of muddy mangrove-infested creeks and lagoons, the African coastal peoples have usually not taken easily to seafaring on the gulf. Groups located in Côte d'Ivoire and Ghana, where the coast is less irregular and coastal fisheries are relatively productive, form an exception. The gulf's natural resources include offshore oil deposits and deposits of hard minerals within the continental shelf.



TRILATERAL HIGHWAY

- The India-Myanmar-Thailand Trilateral Highway **starts from India and goes to Thailand via Myanmar**. It is at the centre of transport diplomacy among ASEAN countries. Recently, Bangladesh has shown its willingness to join the tripartite highway.
- Bangladesh is interested in joining the IMT Trilateral Highway to enhance the connectivity with South East Asia. It wants to open new chapters in trans-border corridors in the Indo Pacific Region.

About the IMT Trilateral Highway:

- The highway's Imphal-Moreh portion on the Indian side, however, is expected to be completed only by 2023.
- It will be linking **Moreh (India) -Bagan (Myanmar) -Mae Sot (Thailand)**.
- This highway is expected to help greatly in the transport connectivity which is almost 3660 km long cross border highway network and is currently under construction, expected to be completed by 2021.
- The transnational highway connectivity was envisaged to enable trade from India to the other ASEAN nations.
- It was decided to extend the Trilateral Highway to Lao PDR and Cambodia to deepen the India-ASEAN Relations at the **ASEAN-India Commemorative Summit 2012**.

Benefits of the project

- The India-Myanmar-Thailand (IMT) highways project is aimed at opening the gate to ASEAN through the land.



- The project will boost trade and commerce in the ASEAN–India Free Trade Area, as well as with the rest of Southeast Asia.
 - Since India has been working towards increasing its engagements with South East Asia under its 'Act East Policy' the India-Myanmar-Thailand Trilateral Highway is one of the biggest infrastructure projects in the region.
 - India's efforts under the project:
 - India has undertaken the construction of two sections of the Trilateral Highway in Myanmar. These are the 120.74 km **Kalewa-Yagyi road section** and 69 bridges along with the approach road on the 149.70 km **Tamu-Kyigone-Kalewa (TKK) road section**.
 - India requested for one Land Port without a negative list, starting with Agartala-Akhaura and for transportation of goods from Chattogram port to the North East of India. India also proposed that its trucks use the Feni Bridge, once it is complete.
 - Recently, India and Bangladesh have expanded their transport and connectivity routes. Sonamura Daudkandi Inland Waterway Route, Feni Bridge from Sabroom to Ramgarh and Haldibari Chilahati rail route are its examples. Leaving India aside now, it is upto Thailand and Myanmar to accept Bangladesh to join IMT Highway.
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GEOGRAPHY AND ENVIRONMENT

(Ecology; Biodiversity and Disaster Management)



CLIMATE CHANGE

- The Earth's average temperature is about **15°C** but has been much higher and lower in the past.
- There are natural fluctuations in the climate but scientists say temperatures are now rising faster than at many other times.
- This is linked to the **greenhouse effect**, which describes how the Earth's atmosphere traps some of the Sun's energy.
- Solar energy radiating back to space from the Earth's surface is absorbed by greenhouse gases and re-emitted in all directions.
- This heats both the lower atmosphere and the surface of the planet. Without this effect, the Earth would be about 30°C colder and hostile to life.
- Scientists believe we are adding to the natural greenhouse effect, with gases released from industry and agriculture trapping more energy and increasing the temperature.
- This is known as **climate change or global warming**.

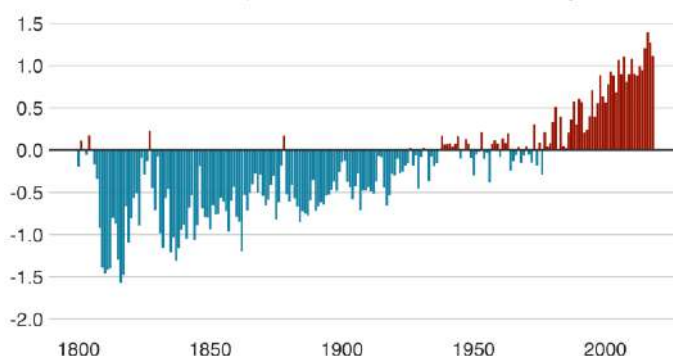
What are greenhouse gases?

- The greenhouse gas with the greatest impact on warming is **water vapour**. But it remains in the atmosphere for only a few days.
- **Carbon dioxide (CO₂)**, however, persists for much longer. It would take hundreds of years for a return to pre-industrial levels and only so much can be soaked up by natural reservoirs such as the oceans.
- Most man-made emissions of CO₂ come from burning fossil fuels. When carbon-absorbing forests are cut down and left to rot, or burned, that stored carbon is released, contributing to global warming.
- Since the Industrial Revolution began in about 1750, CO₂ levels have risen more than 30%. The concentration of CO₂ in the atmosphere is higher than at any time in at least 800,000 years.
- Other greenhouse gases such as **methane and nitrous oxide** are also released through human activities but they are less abundant than carbon dioxide.

What is the evidence for warming?

The world has been getting warmer

Annual mean land temperature above or below average (°C)

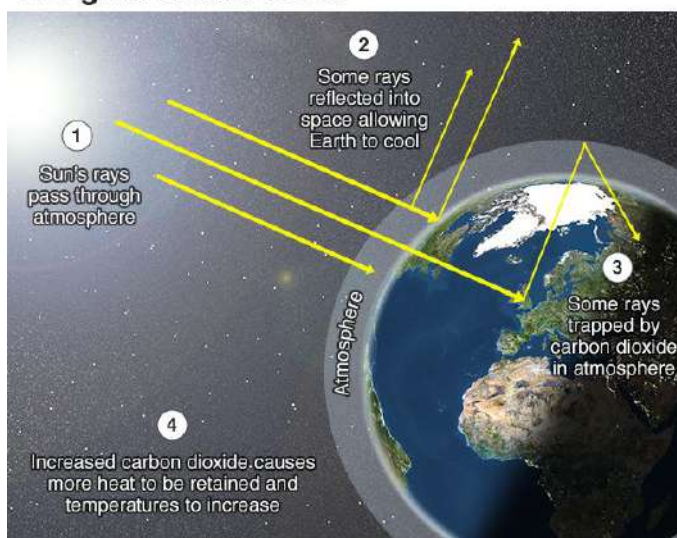


Note: Average is calculated from 1951-1980 land surface temperature data

Source: University of California Berkeley

BBC

The greenhouse effect



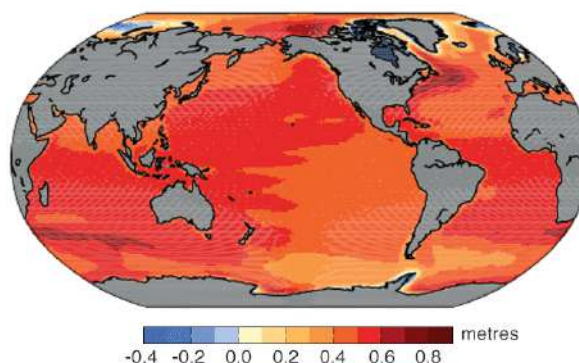
BBC

- The world is about **one degree Celsius warmer** than before widespread industrialisation, according to the World Meteorological Organization (WMO).
- It says the past five years, 2015–2019, were the warmest on record.
- Across the globe, the **average sea level increased by 3.6mm per year** between 2005 and 2015.
- Most of this change was because water increases in volume as it heats up.

- However, melting ice is now thought to be the main reason for rising sea levels. Most glaciers in temperate regions of the world are retreating.
- And satellite records show a dramatic **decline in Arctic sea-ice since 1979**. The Greenland Ice Sheet has experienced record melting in recent years.
- Satellite data also shows the **West Antarctic Ice Sheet is losing mass**. A recent study indicated East Antarctica may also have started to lose mass.
- The effects of a changing climate can also be seen in vegetation and land animals. These include earlier flowering and fruiting times for plants and changes in the territories of animals.

Forecast change in sea level

By 2100 under a medium-low emissions scenario



Source: IPCC

BBC

How much will temperatures rise in future?

- The change in the global surface temperature **between 1850 and the end of the 21st Century is likely to exceed 1.5C**, most simulations suggest.
- The WMO says that if the current warming trend continues, temperatures could rise 3-5C by the end of this century.
- Temperature rises of 2C had long been regarded as the gateway to dangerous warming. More recently, scientists and policymakers have argued that limiting temperature rises to 1.5C is safer.
- An Intergovernmental Panel on Climate Change (IPCC) report in 2018 suggested that keeping to the 1.5C target would require "rapid, far-reaching and unprecedented changes in all aspects of society".
- The UN is leading a political effort to stabilise greenhouse-gas emissions. China emits more CO₂ than any other country. It is followed by the US and the European Union member states, although emissions per person are much greater there.
- But even if we now cut greenhouse-gas emissions dramatically, scientists say the effects will continue. Large bodies of water and ice can take hundreds of years to respond to changes in temperature. And it takes CO₂ decades to be removed from the atmosphere.

How will climate change affect us?

- There is uncertainty about how great the impact of a changing climate will be.
- It could cause **fresh water shortages**, dramatically **alter our ability to produce food**, and **increase the number of deaths** from floods, storms and heatwaves. This is because climate change is expected to **increase the frequency of extreme weather events** - though linking any single event to global warming is complicated.
- As the world warms, more water evaporates, leading to more moisture in the air. This means many areas will experience **more intense rainfall** - and in some places snowfall. But the **risk of drought** in inland areas during hot summers will increase. **More flooding** is expected from storms and rising sea levels. But there are likely to be very strong regional variations in these patterns.
- Poorer countries, which are least equipped to deal with rapid change, could suffer the most.
- Plant and animal extinctions are predicted as habitats change faster than species can adapt. And the World Health Organization (WHO) has warned that the health of millions could be threatened by increases in malaria, water-borne disease and malnutrition.



- The Intergovernmental Panel on Climate Change (IPCC) is the leading **international body for assessment of climate change**.
- It is a key source of scientific information and technical guidance to the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and Paris Agreement. The IPCC provides governments at all levels with scientific information they can use to develop climate policies.
- The IPCC is an **organisation of governments that are members of the United Nations or the World Meteorological Organization (WMO)**. **The IPCC currently has 195 members**.
- The **IPCC Plenary is the main body** of IPCC members. Representatives of IPCC member governments meet one or more times a year in Plenary Sessions of the Panel. They **elect a Bureau of scientists** for the duration of an assessment cycle. Governments and Observer Organisations nominate, and Bureau members select, experts to prepare IPCC reports.

IPCC's main activities are to prepare:

- comprehensive **Assessment Reports** on climate change, its causes, impacts and response options.
- **Methodology Reports** which provide practical guidance to Parties to help them prepare national greenhouse gas inventories.
- **Special Reports** on topics that inform the Assessment Reports.
- The IPCC **does not undertake new research but synthesises** published and peer-reviewed literature to develop a comprehensive assessment of scientific understanding, published in IPCC Assessment Reports.
- The IPCC's work is guided by a set of principles and procedures that govern all the main activities of the organisation. IPCC member governments and observer organisations nominate experts and the IPCC Bureau selects authors and editors, with expertise in a range of scientific, technical and socio-economic fields. IPCC reports are the product of multiple drafting and review processes to promote an objective, comprehensive and transparent assessment of current knowledge.
- The IPCC was created in **1988 by the World Meteorological Organization (WMO)** and the **United Nations Environment Programme (UNEP)**.

Sixth Assessment Report

- The IPCC is preparing its Sixth Assessment Report. It will provide an update on the scientific, technical and socio-economic aspects of climate change, its causes, potential impacts and response strategies. It is divided into three main topics with each prepared by a separate Working Group:

- Physical Sciences
- Impacts, Adaption and Vulnerability
- Mitigation of Climate Change

- **Special Reports:** The IPCC delivered three Special Reports between 2018 and 2019:

1. **Global warming of 1.5°C** assesses literature relevant to global warming of 1.5°C and for the comparison between global warming of 1.5°C and 2°C above pre-industrial levels. It was requested by the Parties to the Paris Agreement to inform key aspects of climate policy and strengthening the global response to climate change.
2. The **Ocean and the Cryosphere in a Changing Climate** assesses how the ocean and cryosphere have and are expected to change with ongoing global warming. It also assesses the risks and opportunities these changes bring to ecosystems and people, and options for reducing future risks.
3. **Climate Change and Land** provides information on the impacts of climate change on land systems and opportunities for action. The report covers climate change and its relevance to land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.

ESSO-INCOIS

Indian National Center for Ocean Information Services (INCOIS) is an autonomous organization of the Government of India, under the Ministry of Earth Sciences, located Hyderabad. ESSO-INCOIS was established as an autonomous body in 2007 under the Ministry of Earth Sciences (MoES) and is a unit of the Earth System Science Organization (ESSO).

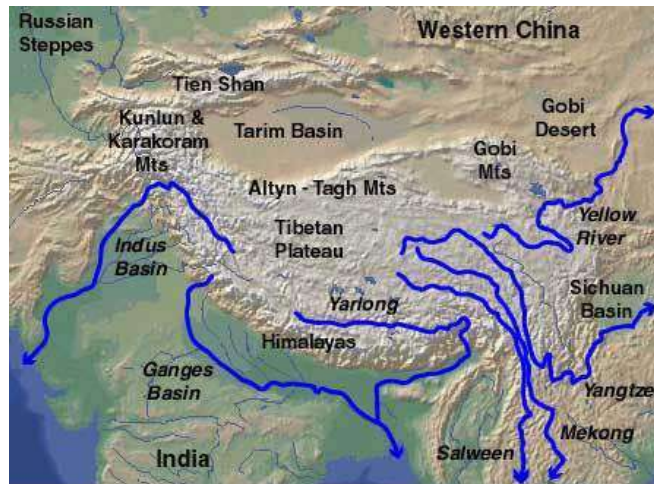
- It **provides** ocean data, information and advisory services to society, industry, the government and the scientific community through sustained ocean observations and constant improvements through systematic and focused research in information management and ocean modelling.
- Provides **round-the-clock monitoring and warning services** for the coastal population on tsunamis, storm surges, high waves, etc. through the in-house Indian Tsunami Early Warning Centre (ITEWC). The Intergovernmental Oceanographic Commission (IOC) of UNESCO designated ITEWC as a Regional Tsunami Service Provider (RTSP) to provide tsunami warnings to countries on the Indian Ocean Rim.
- Provides **daily advisories** to fisher folk to help them easily locate areas of abundant fish in the ocean while saving on both fuel and time used to search for the same. These advisories called **Potential Fishing Zone Advisories** are issued in Hindi, English and 8 vernacular languages. Currently more than one lakh fisher folk successfully use these advisories obtained through SMS, Village Information Centres, local radio, local TV, Electronic Display Boards at fish landing centres, NGO websites, the ESSO-INCOIS website etc.
- **Short term (3-7 days) Ocean State Forecasts** (waves, currents, sea surface temperature, etc.) are issued daily to fisher folk, the shipping industry, the oil and natural gas industry, the Navy, the Coast Guard, etc. These forecasts inform users about the expected sea conditions during the next few days and help them to plan their activities at sea.
- **Deploys and maintains a suite of Ocean Observing Systems** in the Indian Ocean to collect data on various oceanic parameters to understand the processes in the ocean and to predict their changes.
- **Conducts systematic quality checks and archives** all observational, satellite and other oceanic data at the ESSO-INCOIS Data Centre and then makes such data available to students, researchers and any other users. ESSO-INCOIS has been designated as the 'National Oceanographic Data Centre' by IOC/IODE of UNESCO and is also identified as the 'Regional Argo Data Centre for the Indian Ocean'.
- **Generates Global Ocean Analysis data** using mathematical models and observations on a daily basis to provide the initial conditions to ocean-atmosphere coupled models used for the prediction of the monsoon and to understand oceanic processes.
- Carries out **Research and Modeling** to optimize the performance of mathematical models used for ocean state forecasts, prediction of tsunami waves, storm surges, etc. along the coast.
- ESSO-INCOIS has a prominent international presence, being a permanent member of the Indian delegation to IOC of UNESCO and a founding member of the **Indian Ocean Global Ocean Observing System (IOGOOS)** and the **Partnership for Observing the Oceans (POGO)** which is actively engaged in capacity building and international exchange of students and researchers.
- ESSO-INCOIS houses the IOGOOS secretariat and the Sustained Indian Ocean Biogeochemistry and Ecosystem Research (SIBER) International Programme Office. Through the **Regional Integrated Multi-Hazard Early Warning System for Africa and Asia (RIMES)**, ESSO-INCOIS provides ocean information and forecasts to member countries. ESSO-INCOIS is also a member of the Global Ocean Data Assimilation Experiment (GODAE) Ocean View Science Team (GOVST) and Patron's Group.



HIMALAYAN CATCHMENT

- The Himalayas are drained by 19 major rivers, of which the Indus and the Brahmaputra are the largest, each having catchment basins in the mountains of about 100,000 square miles (260,000 square km) in extent.

- Five of the 19 rivers, with a total catchment area of about 51,000 square miles (132,000 square km), belong to the **Indus system—the Jhelum, the Chenab, the Ravi, the Beas, and the Sutlej**—and collectively define the vast region divided between Punjab state in India and Punjab province in Pakistan. Of the remaining rivers, **nine belong to the Ganges system**—the Ganges, Yamuna, Ramganga, Kali (Kali Gandak), Karnali, Rapti, Gandak, Baghmata, and Kosi rivers—draining roughly 84,000 square miles (218,000 square km) in the mountains, and **three belong to the Brahmaputra system**—the Tista, the Raidak, and the Manas—draining another 71,000 square miles (184,000 square km) in the Himalayas.
- The major Himalayan rivers rise north of the mountain ranges and flow through deep gorges that generally reflect some geologic structural control, such as a **fault line**.
- The rivers of the **Indus system** as a rule follow **northwesterly courses**, whereas those of the **Ganges-Brahmaputra systems generally take easterly courses** while flowing through the mountain region.
- To the north of India, the **Karakoram Range, with the Hindu Kush** range on the west and the **Ladakh Range on the east, forms the great water divide**, shutting off the Indus system from the rivers of Central Asia. The counterpart of that divide on the east is formed by the Kailas Range and its eastward continuation, the **Nyainqêntanglha (Nyenchen Tangla) Mountains**, which prevent the Brahmaputra from draining the area to the north. South of that divide, the Brahmaputra flows to the east for about 900 miles (1,450 km) before cutting across the Great Himalaya Range in a deep transverse gorge, although many of its Tibetan tributaries flow in an opposite direction, as the Brahmaputra may once have done.
- The Great Himalayas, which normally would form the main water divide throughout their entire length, function as such only in limited areas. That situation exists because the major Himalayan rivers, such as the Indus, the Brahmaputra, the Sutlej, and at least two headwaters of the Ganges—the Alaknanda and the Bhagirathi—are probably older than the mountains they traverse.
- It is believed that the Himalayas were uplifted so slowly that the old rivers had no difficulty in continuing to flow through their channels and, with the rise of the Himalayas, acquired an even greater momentum, which enabled them to cut their valleys more rapidly. The elevation of the Himalayas and the deepening of the valleys thus proceeded simultaneously.
- As a result, the **mountain ranges emerged with a completely developed river system cut into deep transverse gorges** that range in depth from 5,000 to 16,000 feet (1,500 to 5,000 metres) and in width from 6 to 30 miles (10 to 50 km). The earlier origin of the drainage system explains the peculiarity that the major rivers drain not only the southern slopes of the Great Himalayas but, to a large extent, its northern slopes as well, the water divide being north of the crest line.
- The role of the **Great Himalaya Range as a watershed, nevertheless, can be seen between the Sutlej and Indus valleys** for 360 miles (580 km); the drainage of the northern slopes is carried by the north-flowing Zaskar and Dras rivers, which drain into the Indus.
- Glaciers also play an important role in draining the higher elevations and in feeding the Himalayan rivers. Several glaciers occur in Uttarakhand, of which the largest, the Gangotri, is 20 miles (32 km) long and is one of the sources of the Ganges. The **Khumbu Glacier** drains the Everest region in Nepal and is one of the most popular routes for the ascent of the mountain. The rate of movement of the Himalayan glaciers varies considerably; in the neighbouring Karakoram Range, for example, the **Baltoro Glacier** moves about 6 feet



(2 metres) per day, while others, such as the Khumbu, move only about 1 foot (30 cm) daily. Most of the Himalayan glaciers are in retreat, at least in part because of climate change.



LITTLE ANDAMAN ISLAND

- Recently, a plan named the **Sustainable Development of Little Andaman Island Vision Document** by NITI Aayog for the sustainable and holistic development of the 680 sq. km, fragile Little Andaman Island in the Andaman and Nicobar island group has raised alarm among conservationists.
- This island is part of the **Little Andaman Group** (Little Andaman is the counterpart of Great Andamans). This island is the fourth largest island in Andamans.
- It is famous by the name of its main village and the largest settlement –**Hut Bay** (rarely known by its other name Kwate-tu-kwage).

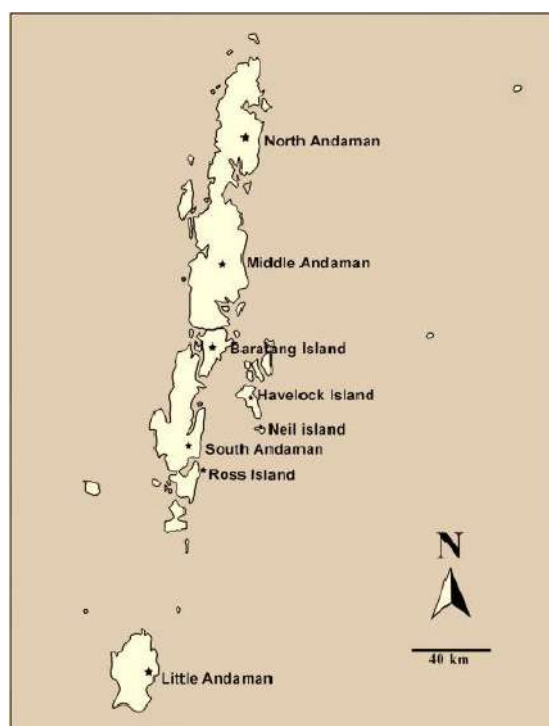
Tribes:

- At a distance of about 120 Kilometers by sea from the capital town of Port Blair, this island has become a tribal reserve from sometime near to 1957.
- This is considered home to the **Onge Tribes**, even though there are multilingual settlers of Bengali, Tamil, Telugu, and Ranchi communities.

Location and Transport:

- Lying at the southern end of the archipelago, Hut Bay Jetty is the only harbor for ships or boats coming into this island from the capital town –Port Blair.
- Little Andamans is less explored due to the limited mode of connection with the capital town of Port Blair.

- **Purpose:** To leverage the strategic location and natural features of the island. The islands are critical for India's security because of their strategic location in the Indian Ocean Region (IOR). Better infrastructure and connectivity will help India enhance its military and naval strength in the islands.
- **Plan:** Building a new greenfield coastal city, that will be developed as a free trade zone and will compete with Singapore and Hong Kong. Three Zones: It has divided the development in three zones:



1. **Zone 1:** Spread over 102 sq. km alongside the east coast of Little Andaman. It would be the monetary district and metropolis and can embody an aerocity, and a tourism and hospital district.
2. **Zone 2:** Spread over 85 sq. km of pristine forest. It is the leisure zone, can have a movie metropolis, a residential district and a tourism Special Economic Zone (SEZ).
3. **Zone 3:** Spread over 52 sq. km of pristine forest. It shall be a nature zone, additional categorized into three districts: a unique forest resort, a nature therapeutic district and a nature retreat, all on the western coast.

Transport Development:

- A worldwide airport able to deal with all varieties of plane is central to the plan as a global airport is vital for growth.
- The solely jetty on the island might be expanded and a marina might be developed subsequent to the tourist entertainment district.

- A 100 km greenfield ring highway might be constructed parallel to the shoreline from east to west and might be supplemented with a mass fast transit community with stations at common intervals.



JAL JEEVAN MISSION

- Government of India has restructured and subsumed the ongoing **National Rural Drinking Water Programme(NRDWP)** into **Jal Jeevan Mission (JJM)** to provide Functional Household Tap Connection (FHTC) to every rural household i.e., **Har Ghar Nal Se Jal (HGNSJ)** by 2024.

Mission- Jal Jeevan Mission is to assist, empower and facilitate:

- States/ UTs in planning of participatory rural water supply strategy for ensuring potable drinking water security on long-term basis to every rural household and public institution, viz. GP building, School, Anganwadi centre, Health centre, wellness centres, etc.
- States/ UTs for creation of water supply infrastructure so that every rural household has Functional Tap Connection (FHTC) by 2024 and water in adequate quantity of prescribed quality is made available on regular basis.
- States/ UTs to plan for their drinking water security
- GPs/ rural communities to plan, implement, manage, own, operate and maintain their own in-village water supply systems
- States/ UTs to develop robust institutions having focus on service delivery and financial sustainability of the sector by promoting utility approach
- Capacity building of the stakeholders and create awareness in community on significance of water for improvement in quality of life
- In making provision and mobilization of financial assistance to States/ UTs for implementation of the mission.

Objectives: The broad objectives of the Mission are:

- To provide FHTC to every rural household.
- To prioritize provision of FHTCs in quality affected areas, villages in drought prone and desert areas, Sansad Adarsh Gram Yojana (SAGY) villages, etc.
- To provide functional tap connection to Schools, Anganwadi centres, GP buildings, Health centres, wellness centres and community buildings
- To monitor functionality of tap connections.
- To promote and ensure voluntary ownership among local community by way of contribution in cash, kind and/ or labour and voluntary labour (shramdaan)
- To assist in ensuring sustainability of water supply system, i.e. water source, water supply infrastructure, and funds for regular maintenance.
- To empower and develop human resource in the sector such that the demands of construction, plumbing, electrical, water quality management, water treatment, catchment protection, O&M, etc. are taken care of in short and long term
- To bring awareness on various aspects and significance of safe drinking water and involvement of stakeholders in manner that make water everyone's business.

Components Under JJM: The following components are supported under JJM:

- Development of in-village piped water supply infrastructure to provide tap water connection to every rural household
- Development of reliable drinking water sources and/ or augmentation of existing sources to provide long-term sustainability of water supply system

- Wherever necessary, bulk water transfer, treatment plants and distribution network to cater to every rural household
- Technological interventions for removal of contaminants where water quality is an issue
- Retrofitting of completed and ongoing schemes to provide FHTCs at minimum service level of 55 lpcd;
- Greywater management
- Support activities, i.e. IEC, HRD, training, development of utilities, water quality laboratories, water quality testing & surveillance, R&D, knowledge centre, capacity building of communities, etc.
- Any other unforeseen challenges/ issues emerging due to natural disasters/ calamities which affect the goal of FHTC to every household by 2024, as per guidelines of Ministry of Finance on Flexi Funds
- Efforts should be made to source funds from different sources/ programmes and convergence is the key.



ARAVALLI

- Aravalli Range, also spelled **Aravali Range** is a hill system of northern India.
- It is running northeasterly for 350 miles (560 km) through Rajasthan state. Isolated rocky offshoots continue to just south of Delhi.
- The series of peaks and ridges, with breadths varying from 6 to 60 miles (10 to 100 km), are generally between 1,000 and 3,000 feet (300 and 900 metres) in elevation.
- The system is divided into two sections: The **Sambhar-Sirohi ranges**, taller and including Guru Peak on Mount Abu, the highest peak in the Aravalli Range (5,650 feet [1,722 metres]); and the **Sambhar-Khetri ranges**, consisting of three ridges that are discontinuous.
- The Aravalli Range is rich in natural resources (including minerals) and serves as a **check to the growth of the western desert**.
- It gives rise to several rivers, including the Banas, Luni, Sakhi, and Sabarmati. Though heavily forested in the south, it is generally bare and thinly populated, consisting of large areas of sand and stone and of masses of **rose-coloured quartzite**.



CHAR DHAM PROJECT

- The Char-Dham Road Project is a prestigious two-lane expressway scheme being executed in the Himalayan state, Uttarakhand. The project proposes widening of roads up to 10 meters to improve the accessibility to **Char-Dham (shrines); Yamunotri, Gangotri, Badrinath and Kedarnath**.
- A significant portion of the project area falls under the **dry deciduous biome** along the dry slopes of the rivers. Ruthless harvesting or uprooting of vegetation in the widening of roads can prove to be perilous for the biodiversity and regional ecology.
- The existence of river slopes depends on the vegetal cover. These slopes become fragile for flash floods and landslides in the absence of vegetal cover. River-slope vegetation contributes to slope stability by increasing the resisting force in the form of root-cohesion; reduces the pore water pressure; reduces the weight of the soil mass by absorbing the moisture; reduces surface run-off; and intercepts rainfall.
- Besides, river slopes act as conduits for species migration from low areas to mountains.

Biodiversity within project corridor

- Prominent vegetation along river slopes of the project includes *Chir Pine (Pinus roxburghii)*; *Malu (Bauhinia vahlii)*; *Semal (Bombax ceiba)*; *Khair (Acacia catechu)*; *Bel (Aegle marmelos)*; *Dhaura (Woodfordia fruticosa)*; *Bansa (Adhatoda vasica)* along with high-value medicinal herbs like *Kalihari (Gloriosa superba)* and *Makoy (Solanum nigrum)*.
- Grasses such as *Apluda mutica*, *Heteropogon contortus*, *Thysolaena sp.*, and *Eriophorum comosum* can also be found.

- *Leopard (Panthera pardus)*, *Sambhar (Rusa unicolor)*, *Kakad (Muntiacus muntjak)*, *Goral (Naemorhedus goral)*, *Siyar (Canis aureus)*, *Sehi (Hystrix indica)*, *Khargosh (Lepus nigricollis)*, *Udbilav (Lutra lutra & Aonyx cinerea)* and many species of bats are common mammals of this biome.
- Birds like *Kalij Pheasant (Lophura leucomelanos, Schedule-I)*, *Tragopans (Tragopan melanocephalus & Tragopan satyra, Schedule-I)*, and various species of *Vultures (Schedule-I)* along with endangered fish *Golden Mahseer (Tor putitora)* are among the wonderful species found there.

Adverse impacts

- Forest loss is among the major impacts of project — about 508.66 hectares of forest area would be diverted into the non-forestry purpose and 33,000-43,000 trees would be cut down to build roads.
- Uttarakhand has 24,295 square kilometres (2,429,500 hectares) forest area with a trivial increase of 23 hectares (@ 11.5 ha / year) between 2015 and 2017. If we maintain the current rate of forest cover increase, it would take 40-45 years to recover this loss.
- The loss of forest will reduce the probability of maintaining effective reproductive units of plant and animal populations in the project zone.
- Removal of roadside trees will lead to patch isolation, reduced canopy cover and decreased number of successful dispersers that can be devastating in community establishment and ecosystem functioning.
- The road edge effect is a common ecological phenomenon that wraps wide areas and creates ecological pressures on nearby plant and animal communities.
- Possibilities of landslides



LEATHERBACK TURTLE

- Proposals for tourism and port development in the Andaman and Nicobar (A&N) Islands have conservationists worried over the fate of some of the most important nesting populations of the Giant Leatherback turtle in this part of the Indian Ocean.
- The **leatherback is the largest turtle in the world**. They are the only species of sea turtle that lack scales and a hard shell and are named for their tough rubbery skin and have existed in their current form since the age of the dinosaurs.
- Leatherbacks are **highly migratory**, some swimming over 10,000 miles a year between nesting and foraging grounds. They are also accomplished divers with the deepest recorded dive reaching nearly 4,000 feet — deeper than most marine mammals.
- The **leatherback turtle has the widest distribution of any reptile** with a global range with nesting mainly on tropical or subtropical beaches. Once prevalent in every ocean except the Arctic and Antarctic, the leatherback population is rapidly declining in many parts of the world. They face threats on both nesting beaches and in the marine environment. The greatest of these threats worldwide are incidental capture in fishing gear (or bycatch), and hunting of adults and collection of eggs for human consumption.
- **Conservation status:** Within the Indian Ocean, they nest only in Indonesia, Sri Lanka and the Andaman and Nicobar Islands and are also listed in **Schedule I of India's Wildlife Protection Act, 1972**, according to the highest legal protection. **IUCN: Vulnerable.**



SAFAR

- The **System of Air Quality and Weather Forecasting And Research (SAFAR)** is a national initiative introduced by the Ministry of Earth Sciences (MoES) to measure the air quality of a metropolitan city, by measuring the overall pollution level and the location-specific air quality of the city.

- The system is indigenously developed by the **Indian Institute of Tropical Meteorology (IITM), Pune** and is operationalized by the India Meteorological Department (IMD).
- It has a giant true color LED display that gives out real-time air quality index on a 24x7 basis with color-coding (along with 72 hours advance forecast).
- The ultimate objective of the project is to increase awareness among the general public regarding the air quality in their city so that appropriate mitigation measures and systematic action can be taken up.
- It organizes awareness drive by educating the public (prompting self-mitigation).
- It also helps the policy-makers to develop mitigation strategies keeping in mind the nation's economic development.
- SAFAR is an integral part of India's first Air Quality Early Warning System operational in Delhi.
- It **monitors all weather parameters** like temperature, rainfall, humidity, wind speed, and wind direction, UV radiation, and solar radiation.
- **Pollutants monitored:** *PM2.5, PM10, Ozone, Carbon Monoxide (CO), Nitrogen Oxides (NOx), Sulfur Dioxide (SO2), Benzene, Toluene, Xylene, and Mercury.*
- The World Meteorological Organization has recognized SAFAR as a prototype activity on the basis of the high-quality control and standards maintained in its implementation.
- SAFAR system would benefit cost savings to several other sectors like agriculture, aviation, infrastructure, disaster management, tourism, etc. which directly or indirectly gets affected by air quality and weather.



AIR QUALITY INDEX (AQI)

- The AQI is an index for reporting daily air quality.
- It focuses on health effects one might experience within a few hours or days after breathing polluted air.
- AQI is calculated for eight major air pollutants:
 1. Ground-level ozone,
 2. PM10,
 3. PM2.5,
 4. Carbon monoxide,
 5. Sulfur dioxide,
 6. Nitrogen dioxide,
 7. Ammonia,
 8. Lead,
- Ground-level ozone and airborne particles are the two pollutants that pose the greatest threat to human health in India.

SCIENCE AND TECHNOLOGY

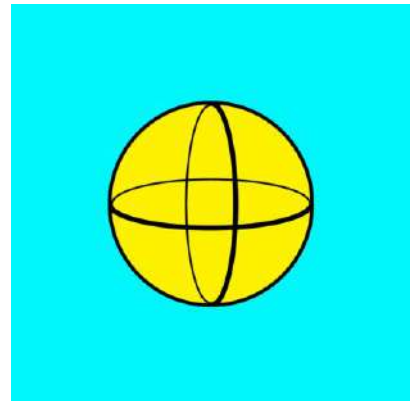
(Inventions, Innovations, Discoveries and Explorations)

QUANTUM COMPUTER

- A quantum computer harnesses some of the almost-mystical phenomena of quantum mechanics to deliver huge leaps forward in processing power. Quantum machines promise to outstrip even the most capable of today's—and tomorrow's—supercomputers.
- The secret to a quantum computer's power lies in its ability to generate and manipulate **quantum bits**, or qubits.

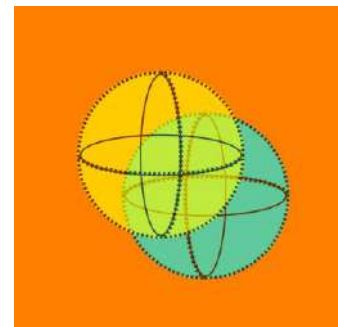
What is a qubit?

- Today's computers use bits—a stream of electrical or optical pulses representing 1s or 0s. Everything from your tweets and e-mails to your iTunes songs and YouTube videos are essentially long strings of these binary digits.
- Quantum computers, on the other hand, use qubits, which are typically **subatomic particles such as electrons or photons**. Generating and managing qubits is a scientific and engineering challenge. Some companies, such as IBM, Google, and Rigetti Computing, use superconducting circuits cooled to temperatures colder than deep space. Others, like IonQ, trap individual atoms in electromagnetic fields on a silicon chip in ultra-high-vacuum chambers. In both cases, the goal is to isolate the qubits in a controlled quantum state.
- Qubits have some quirky quantum properties that mean a connected group of them can provide way more processing power than the same number of binary bits. One of those properties is known as **superposition** and another is called **entanglement**.



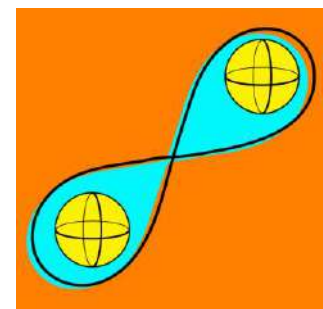
What is superposition?

- Qubits can represent numerous **possible combinations of 1 and 0** at the same time. This ability to simultaneously be in **multiple states** is called **superposition**. To put qubits into superposition, researchers manipulate them using precision lasers or microwave beams.
- Thanks to this counterintuitive phenomenon, a quantum computer with several qubits in superposition can crunch through a vast number of potential outcomes simultaneously. The final result of a calculation emerges only once the qubits are measured, which immediately causes their quantum state to “collapse” to either 1 or 0.



What is entanglement?

- Researchers can generate pairs of qubits that are “entangled,” which means the two members of a pair exist in a single quantum state. Changing the state of one of the qubits will instantaneously change the state of the other one in a predictable way. This happens even if they are separated by very long distances.
- Nobody really knows quite how or why entanglement works. It even baffled Einstein, who famously described it as “spooky action at a distance.” But it's key to the power of quantum computers. In a conventional computer, doubling the number of bits doubles its processing power. But thanks to

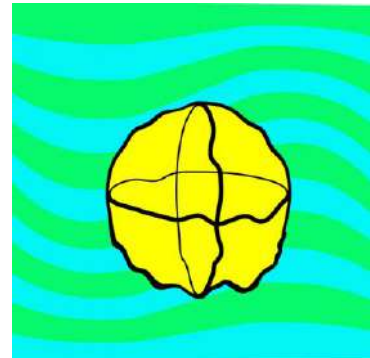


entanglement, adding extra qubits to a quantum machine produces an exponential increase in its number-crunching ability.

- Quantum computers harness entangled qubits in a kind of quantum daisy chain to work their magic. The machines' ability to speed up calculations using specially designed quantum algorithms is why there's so much buzz about their potential.
- That's the good news. The bad news is that quantum machines are way more error-prone than classical computers because of **decoherence**.

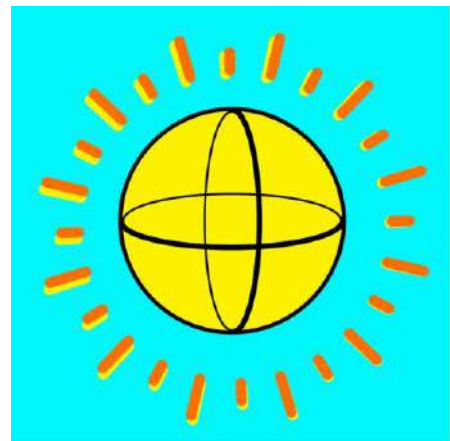
What is decoherence?

- The interaction of qubits with their environment in ways that cause their quantum behaviour to decay and ultimately disappear is called **decoherence**. Their quantum state is extremely fragile. The slightest vibration or change in temperature—disturbances known as “noise” in quantum-speak—can cause them to tumble out of superposition before their job has been properly done. That's why researchers do their best to protect qubits from the outside world in those supercooled fridges and vacuum chambers.
- But despite their efforts, noise still causes lots of errors to creep into calculations. Smart quantum algorithms can compensate for some of these, and adding more qubits also helps. However, it will likely take thousands of standard qubits to create a single, highly reliable one, known as a “logical” qubit. This will sap a lot of a quantum computer's computational capacity.
- And there's the rub: so far, researchers haven't been able to generate more than 128 standard qubits (see our qubit counter here). So we're still many years away from getting quantum computers that will be broadly useful.
- That hasn't dented pioneers' hopes of being the first to demonstrate “**quantum supremacy**.”



What is quantum supremacy?

- It's the point at which a **quantum computer can complete a mathematical calculation** that is demonstrably beyond the reach of even the most powerful supercomputer.
- It's still unclear exactly how many qubits will be needed to achieve this because researchers keep finding new algorithms to boost the performance of classical machines, and supercomputing hardware keeps getting better. But researchers and companies are working hard to claim the title, running tests against some of the world's most powerful supercomputers.
- There's plenty of debate in the research world about just how significant achieving this milestone will be. Rather than wait for supremacy to be declared, companies are already starting to experiment with quantum computers made by companies like IBM, Rigetti, and D-Wave, a Canadian firm. Chinese firms like Alibaba are also offering access to quantum machines. Some businesses are buying quantum computers, while others are using ones made available through cloud computing services.



Where is a quantum computer likely to be most useful first?

- One of the most promising applications of quantum computers is for **simulating the behaviour of matter down to the molecular level**. Auto manufacturers like Volkswagen and Daimler are using quantum computers to **simulate the chemical composition of electrical-vehicle batteries** to help find new ways to

improve their performance. And pharmaceutical companies are leveraging them to **analyze and compare compounds that could lead to the creation of new drugs**.

- The machines are also great for optimization problems because they can crunch through vast numbers of potential solutions extremely fast. Airbus, for instance, is using them to help **calculate the most fuel-efficient ascent and descent paths for aircraft**. And Volkswagen has unveiled a service that calculates the optimal routes for buses and taxis in cities in order to minimize congestion. Some researchers also think the machines could be used to accelerate artificial intelligence.
- It could take quite a few years for quantum computers to achieve their full potential. Universities and businesses working on them are facing a shortage of skilled researchers in the field—and a lack of suppliers of some key components. But if these exotic new computing machines live up to their promise, they could transform entire industries and turbocharge global innovation.

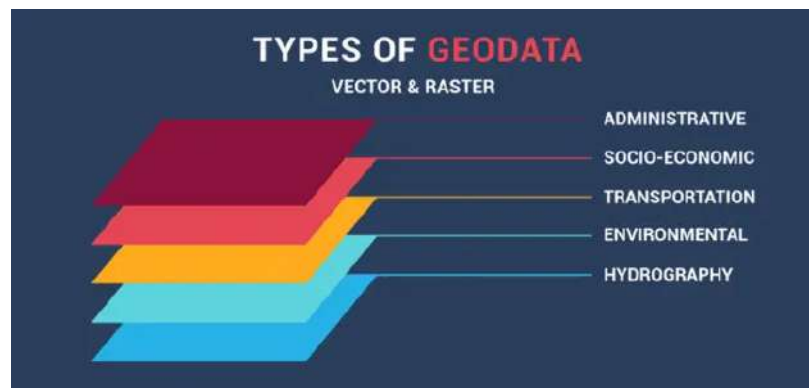


GEOSPATIAL DATA

Geospatial definition: Any data that is indicated by or related to a geographic location. Geospatial technology collects and analyzes the geospatial data.

What is Geospatial Data?

- Geospatial data, also known as **geodata**, has locational information connected to a dataset such as address, city or ZIP code. Geospatial data can also come from Global Positioning System (GPS) data, geospatial satellite imagery, telematics devices, IoT and geotagging.



What are the Types of Geospatial Data?

The two main types of geospatial data are **vector data** and **raster data**.

- **Vector Data:** Uses **geometric shapes to show the location and shape of geographic features**. Points, lines and polygons can represent things like cities, roads and waterways. Vector data is scalable, has small file sizes and ideal for depicting boundaries.
- **Raster Data:** Represents **data through a digital image** such a scanned map or photograph. It also includes aerial and satellite imagery. Raster data uses a cell-based format called stairstepping to record data as pixels or grids with an image. Spatial analysis depends heavily on raster datasets.

What is Geospatial Technology?

- Geospatial technology is used to collect, analyse and store geographic information. It uses software to map geographic locations while analysing the impact of human activity.
- Geographic Information System (GIS) uses digital software to combine maps and datasets about environmental events and socioeconomic trends.
- GIS creates layered maps to better analyse complex data. The layering is possible because each data point is connected to a precise location on Earth. Other forms of geospatial technology include GPS, remote sensing, and geofencing.

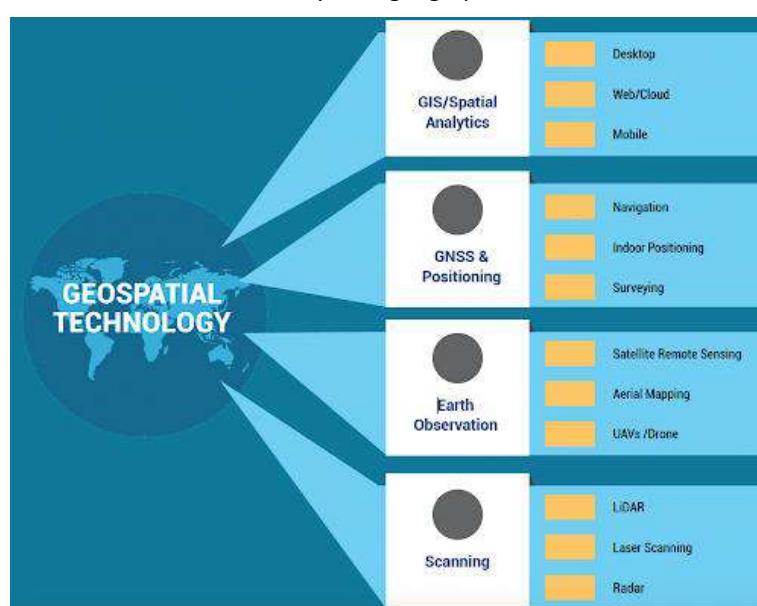
A Brief History of Geospatial

- One of the biggest moments in geospatial history was the launch of Google Maps in 2005. It made mapping technology available to a mass audience.

- But the seeds for what we know of geospatial technology today were first planted in 1832. During a cholera outbreak in Paris that year, French cartographer Charles Picquet created one of the first heat maps to show where the incidents of illness were concentrated.
- When cholera struck London in 1854, physician John Snow built upon the Paris example. In addition to making a map that depicts the location of cholera deaths, he used spatial analysis of the data to show the connection between contaminated water sources and cholera.
- By the early 1900s, photozincography was invented. It was a form of map printing with separate layers. Each layer could visually represent data on the map.
- In the 1960s, Roger Tomlinson pioneered the concept of a Geographic Information System (GIS) that took traditional cartography to a new level. The advent of satellites focused on national security, scientific, and commercial ventures provided images of the Earth's surface and human activity for the first time, opening up more ways to visualize data. A GIS combines a base map with the capture, manipulation and management of data. A GIS map can contain unlimited amounts of data. This geospatial data not only lets users visualize and analyze the data, it helps users better understand trends, relationships and patterns.
- GIS was further refined until the early 2000s when Google Maps produced a user-friendly version for the masses in 2005.
- Since then, geospatial technology has evolved from the desktop to a cloud-based system. Geospatial databases used to be proprietary but open source software has changed that, making access to this type of information more widespread.

Geospatial Technologies: Geospatial technologies provide data for a number of industries that include the military, utility companies, urban planners and industrial engineers. The application of geospatial data is useful for biodiversity conservation, forest fire suppression, agricultural monitoring, humanitarian relief and any field that could benefit from better visualization and analysis of geographic data.

- **Remote Sensing:** Space or airborne camera and sensor platforms provide imagery and data at great detail. Images that can zoom into less than one meter are available on some commercial satellites.
- **Geographic Information System (GIS):** Offers software that can map a specific geographic location anywhere on Earth and analyze geospatial data. GIS geospatial can also detect patterns in the data.
- **Global Positioning System (GPS):** Provides coordinate locations for military and civilian use.
- **Internet Mapping Technologies:**



- **Internet Mapping Technologies:** Google Earth and Microsoft Virtual Earth are examples of geospatial software and geospatial mapping tools that makes it easier for people to view and share geospatial data.

Future of Geospatial Technology: The future of geospatial technology largely involves the further integration of machine learning and AI. Mapping as a service, drones and autonomous vehicles are growth areas driving geospatial technology adoption.

- **Geospatial AI:** Places a geographic component on machine learning. App users can provide real-time information about traffic or other conditions in their surroundings. Myriads of contributors improve the

accuracy of geospatial data, allowing for better predictions when managing things like traffic flow. Also known as Geo AI.

- **Autonomous Vehicles:** The eye of an autonomous vehicle is **LiDAR (Light Detection and Ranging)**, which is a sensing method that uses pulsed laser light to measure variable distances. Geospatial technology make LiDAR possible and mapping companies will take it to the next level to make autonomous driving safer and more accessible.
- **Mapping as a Service:** Not every map found online is high-resolution. But geospatial mapping technology can make on-demand maps of any location desired. The maps can be created based on customer needs and used for any number of industries, including construction. Geospatial imagery and the Mapping as a Service market could reach \$8 billion by 2025.
- **Drones:** Drones used for aerial mapping will become more common. Combined with GIS and high precision sensors, the drone-capture images can fly over acres of land to gather data to influence everything from farming to urban planning.



GENOME

A genome is an organism's complete set of genetic instructions. Each genome contains all of the information needed to build that organism and allow it to grow and develop.

- Our bodies are made up of millions of cells, each with their own complete set of instructions for making us, like a recipe book for the body. This set of instructions is known as our genome and is made up of DNA. Each cell in the body, for example, a skin cell or a liver cell, contains this same set of instructions:
 - The instructions in our genome are made up of DNA.
 - Within DNA is a unique chemical code that guides our growth, development and health.
 - This code is determined by the order of the four nucleotide bases that make up **DNA, adenine, cytosine, guanine and thymine, A, C, G and T for short.**
 - DNA has a twisted structure in the shape of a double helix.
 - Single strands of DNA are coiled up into structures called **chromosomes.**
 - Your chromosomes are located in the nucleus within each cell.
 - Within our chromosomes, sections of DNA are "read" together to form genes.
 - Genes control different characteristics such as eye colour and height.
 - All living things have a unique genome.
 - The human genome is made of **3.2 billion bases of DNA** but other organisms have different genome sizes.

GENOME MAP

- A genome map helps scientists navigate around the genome. Like road maps and other familiar maps, a genome map is a set of landmarks that tells people where they are, and helps them get where they want to go.
- The landmarks on a genome map might include **short DNA sequences**, regulatory sites that turn genes on and off, and genes themselves. Often, genome maps are used to **help scientists find new genes.**
- Road maps chart well-known territory surveyed with astonishing precision, but a genome map is a map of a new frontier.
- Some parts of the genome have been mapped in great detail, while others remain relatively uncharted territory. It may turn out that a few landmarks on current genome maps appear in the wrong place or at the wrong distance from other landmarks. But over time, as scientists continue to explore the genome frontier, maps will become more accurate and more detailed. A genome map is a work in progress.

What does a genome map look like?

- Most everyday maps have length and width, latitude and longitude, like the world around us. But a genome map is **one-dimensional—it is linear**, like the DNA molecules that make up the genome itself. A

genome map looks like a straight line with landmarks noted at irregular intervals along it, much like the towns along the map of a highway. The landmarks are usually inscrutable combinations of letters and numbers that stand for genes or other features—for example, D14S72, GATA-P7042, and so on.

What is the difference between a genome map and a genome sequence?

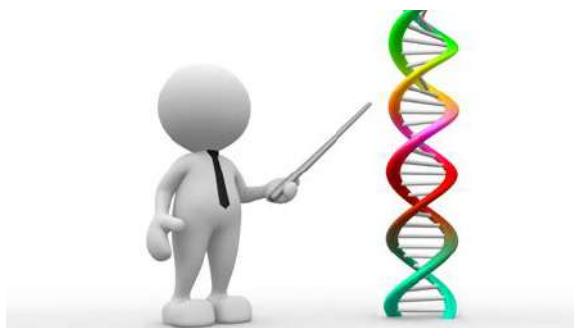
- Both are portraits of a genome, but a genome map is less detailed than a genome sequence. A sequence spells out the order of every DNA base in the genome, while a map simply identifies a series of landmarks in the genome.
- Sometimes mapping and sequencing are completely separate processes. For example, it's possible to determine the location of a gene—to "map" the gene—without sequencing it. Thus, a map may tell you nothing about the sequence of the genome, and a sequence may tell you nothing about the map.
- Genome maps help scientists find genes, particularly those involved in human disease. This process is much like a scientific game of hot and cold. Scientists study many families affected by a disease, tracing the inheritance of the disease and of specific genome landmarks through several generations. Landmarks that tend to be inherited along with the disease are likely to be located close to the disease gene and become "markers" for the gene in question.
- Once they have identified a few such markers, scientists know the approximate location of the disease gene. In this way, they narrow down their search from the entire 3-billion-base-pair genome to a region of the genome a few million base pairs long.



EPIGENETICS

Your genes play an important role in your health, but so do your behaviours and environment, such as what you eat and how physically active you are.

- Epigenetics is the **study of how your behaviours and environment can cause changes that affect the way your genes work**. Unlike genetic changes, epigenetic changes are reversible and do not change your DNA sequence, but they can change how your body reads a DNA sequence.
- Gene expression refers to how often or when proteins are created from the instructions within your genes. While genetic changes can alter which protein is made, **epigenetic changes affect gene expression to turn genes "on" and "off."**



Since your environment and behaviours, such as diet and exercise, can result in epigenetic changes, it is easy to see the connection between your genes and your behaviours and environment.

How Does Epigenetics Work?

Epigenetic changes affect gene expression in different ways. Types of epigenetic changes include:

- **DNA Methylation:** DNA methylation works by **adding a chemical group to DNA**. Typically, this group is added to specific places on the DNA, where it blocks the proteins that attach to DNA to "read" the gene. This chemical group can be removed through a process called demethylation. Typically, methylation turns genes "off" and demethylation turns genes "on."
- **Histone modification:** DNA wraps around proteins called histones. DNA wrapped tightly around histones cannot be accessed by proteins that "read" the gene. Some genes are wrapped around histones and are turned "off" while some genes are not wrapped around histones and are turned "on." Chemical groups can be added or removed from histones and change whether a gene is unwrapped or wrapped ("on" or "off").

- **Non-coding RNA:** Your DNA is used as instructions for making coding and non-coding RNA. Coding RNA is used to make proteins. Non-coding RNA helps control gene expression by attaching to coding RNA, along with certain proteins, to break down the coding RNA so that it cannot be used to make proteins. Non-coding RNA may also recruit proteins to modify histones to turn genes “on” or “off.”

How Can Your Epigenetics Change?

Your epigenetics change as you age, both as part of normal development and aging and in response to your behaviours and environment.

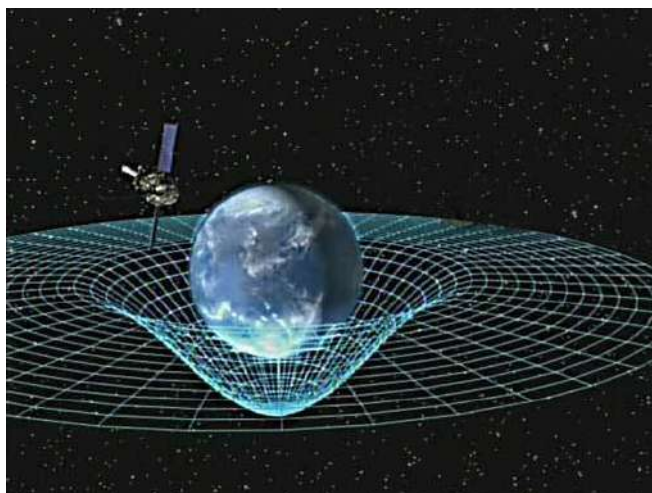
- **Epigenetics and Development:** Epigenetic changes begin before you are born. All your cells have the same genes but look and act differently. As you grow and develop, epigenetics helps determine which function a cell will have, for example, whether it will become a heart cell, nerve cell, or skin cell.
- **Epigenetics and Age:** Your epigenetics change throughout your life. Your epigenetics at birth is not the same as your epigenetics during childhood or adulthood.
- **Epigenetics and Reversibility:** Not all epigenetic changes are permanent. Some epigenetic changes can be added or removed in response to changes in behavior or environment.

Epigenetics and Health: Epigenetic changes can affect your health in different ways:

- **Infections:** Germs can change your epigenetics to weaken your immune system. This helps the germ survive.
- **Cancer:** Certain mutations make you more likely to develop cancer. Likewise, some epigenetic changes increase your cancer risk. For example, having a mutation in the BRCA1 gene that prevents it from working properly makes you more likely to get breast and other cancers.
- **Nutrition During Pregnancy:** A pregnant woman’s environment and behavior during pregnancy, such as whether she eats healthy food, can change the baby’s epigenetics. Some of these changes can remain for decades and might make the child more likely to get certain diseases.

GRAVITATIONAL WAVES

- Gravitational waves are '**ripples**' in **space-time** caused by some of the most violent and energetic processes in the Universe.
- Albert Einstein predicted the **existence of gravitational waves in 1916 in his general theory of relativity**. Einstein's mathematics showed that massive accelerating objects (such as neutron stars or black holes orbiting each other) would disrupt space-time in such a way that 'waves' of undulating space-time would propagate in all directions away from the source. These cosmic ripples would travel at the speed of light, carrying with them information about their origins, as well as clues to the nature of gravity itself.
- The strongest gravitational waves are produced by cataclysmic events such as **colliding black holes, supernovae (massive stars exploding at the end of their lifetimes), and colliding neutron stars**. Other waves are predicted to be caused by the rotation of neutron stars that are not perfect spheres, and possibly even the remnants of gravitational radiation created by the Big Bang.
- Though Einstein predicted the existence of gravitational waves in 1916, the first proof of their existence didn't arrive until 1974, 20 years after his death. In that year, two



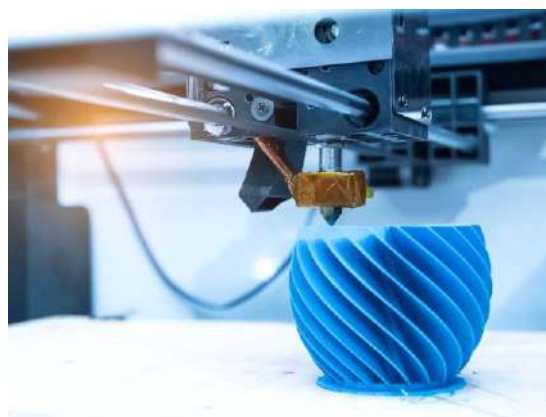
astronomers using the Arecibo Radio Observatory in Puerto Rico discovered a binary pulsar, exactly the type of system that general relativity predicted should radiate gravitational waves. Knowing that this discovery could be used to test Einstein's audacious prediction, astronomers began measuring how the stars' orbits changed over time. After eight years of observations, they determined that the stars were getting closer to each other at precisely the rate predicted by general relativity if they were emitting gravitational waves. For a more detailed discussion of this discovery and work, see Look Deeper.

- Since then, many astronomers have studied **pulsar radio-emissions** (*pulsars are neutron stars that emit beams of radio waves*) and found similar effects, further confirming the existence of gravitational waves. But these confirmations had always come indirectly or mathematically and not through direct contact.
- All of this changed on September 14, 2015, when LIGO physically sensed the undulations in spacetime caused by gravitational waves generated by two colliding black holes 1.3 billion light-years away. LIGO's discovery will go down in history as one of humanity's greatest scientific achievements.
- While the processes that generate gravitational waves can be extremely violent and destructive, by the time the waves reach Earth they are thousands of billions of times smaller! In fact, by the time gravitational waves from LIGO's first detection reached us, the amount of space-time wobbling they generated was a 1000 times smaller than the nucleus of an atom! Such inconceivably small measurements are what LIGO was designed to make.



3D PRINTING

- 3D printing or **additive manufacturing** is a process of **making three dimensional solid objects** from a digital file.
- The creation of a 3D printed object is achieved using additive processes. In an **additive process an object is created by laying down successive layers of material until the object is created**. Each of these layers can be seen as a thinly sliced cross-section of the object.
- 3D printing is the **opposite of subtractive manufacturing which is cutting out / hollowing out a piece of metal** or plastic with for instance a milling machine.
- 3D printing enables you to produce complex shapes using less material than traditional manufacturing methods.
- The first 3D printer was created by **Charles W. Hull in the mid-1980s**.



How Does 3D Printing Work?

1. Much like traditional printers, 3D printers use a variety of technologies. The most commonly known is **fused deposition modeling (FDM)**, also known as **fused filament fabrication (FFF)**. In it, a filament—composed of acrylonitrile butadiene styrene (ABS), polylactic acid (PLA), or another thermoplastic—is melted and deposited through a heated extrusion nozzle in layers.
2. Another technology used in 3D printing is **stereolithography**. In it, a UV laser is shined into a vat of ultraviolet-sensitive photopolymer, tracing the object to be created on its surface. The polymer solidifies wherever the beam touches it, and the beam "prints" the object layer by layer per the instructions in the CAD or CAM file it's working from.
3. In a variation on that, you also have **digital light projector (DLP) 3D printing**. This method exposes a liquid polymer to light from a digital light processing projector. This hardens the polymer layer by layer until the object is built, and the remaining liquid polymer is drained off.

4. **Multi-jet modeling** is an inkjet-like 3D printing system that sprays a coloured, glue-like binder onto successive layers of powder where the object is to be formed. This is among the fastest methods, and one of the few that supports multicolour printing.

What Are the Benefits of 3D Printing?

- With 3D printing, designers have the ability to quickly turn concepts into 3D models or prototypes (a.k.a. "rapid prototyping"), and implement rapid design changes.
- It lets manufacturers **produce products on demand** rather than in large runs, improving inventory management and reducing warehouse space. People in remote locations can fabricate objects that would otherwise be inaccessible to them.
- From a practical standpoint, 3D printing can save money and material versus subtractive techniques, as very little raw material is wasted. And it promises to change the nature of manufacturing, eventually letting consumers download files for printing even complex 3D objects—including, for example, electronics devices—in their own homes.

What Can 3D Printers Make?

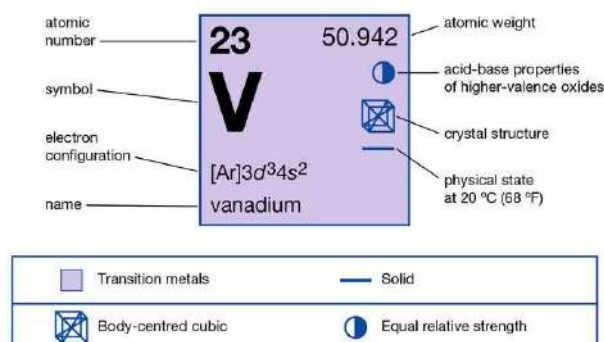
- Designers use 3D printers to quickly create product models and prototypes, but they're increasingly being used to make final products, as well. Among the items made with 3D printers are shoe designs, furniture, wax castings for making jewelry, tools, tripods, gift and novelty items, and toys.
- The automotive and aviation industries use 3D printers to make parts. Artists can create sculptures, and architects can fabricate models of their projects. Archaeologists are using 3D printers to reconstruct models of fragile artifacts, including some of the antiquities that in recent years have been destroyed.

The Benefits of 3D printing for Automotive

- **Faster product development:** Prototyping has become a key part of the product development process, offering a means to test and validate parts before they are manufactured. 3D printing offers a quick and cost-effective approach to designing and producing parts. Since the need for tooling is eliminated, product teams can significantly accelerate product development cycles.
- **Greater design flexibility:** The ability to produce designs quickly gives designers greater flexibility when testing multiple design options. 3D printing enables designers to make quick design changes and modifications in a fraction of the time.
- **Customisation:** 3D printing offers automakers a cost-effective and flexible way to produce customised parts. Within the luxury and motorsports segment of the industry, companies are already using the technology to produce personalised parts for both the interior and exterior parts of a vehicle.
- **Create complex geometries:** With the majority of car components requiring complex geometries like internal channels (for conformal cooling), thin walls and fine meshes, AM enables highly complex parts to be produced that are still lightweight and durable.

VANADIUM

- **Vanadium (V), chemical element, silvery white soft metal of Group 5 (Vb)** of the periodic table. It is alloyed with steel and iron for high-speed tool steel, high-strength low-alloy steel, and wear-resistant cast iron.
- Vanadium was discovered (1801) by the Spanish mineralogist **Andrés Manuel del Río**, who named it erythronium but eventually came to believe it was merely impure chromium. The element was rediscovered (1830) by the Swedish



chemist Nils Gabriel Sefström, who named it after Vanadis, the Scandinavian goddess of beauty and youth, a name suggested by the beautiful colours of vanadium's compounds in solution. The English chemist Henry Enfield Roscoe first isolated the metal in 1867 by hydrogen reduction of vanadium dichloride, VCl₂, and the American chemists John Wesley Marden and Malcolm N. Rich obtained it 99.7 percent pure in 1925 by reduction of vanadium pentoxide, V₂O₅, with calcium metal.

- Found combined in various minerals, coal, and petroleum, vanadium is the **22nd most abundant element in Earth's crust**. Some commercial sources are the minerals **carnotite, vanadinite, and roscoelite**. (Deposits of the important vanadium-bearing mineral patronite occurring in coal at Mina Ragra, Peru, have been materially depleted.) Other commercial sources are vanadium-bearing magnetite and flue dust from smokestacks and boilers of ships burning certain Venezuelan and Mexican oils. China, South Africa, and Russia were the leading producers of vanadium in the early 21st century.
- Vanadium is obtained from ores as **vanadium pentoxide (V₂O₅)** through a variety of smelting, leaching, and roasting processes. The pentoxide is then reduced to ferrovanadium or vanadium powder. The preparation of very pure vanadium is difficult because the metal is quite reactive toward oxygen, nitrogen, and carbon at elevated temperatures.
- Vanadium metal, sheet, strip, foil, bar, wire, and tubing have found use in high-temperature service, in the chemical industry, and in bonding other metals. Because the major commercial use of vanadium is in **steel and cast iron**, to which it lends ductility and shock resistance, most of the vanadium produced is used with iron as ferrovanadium (about 85 percent vanadium) in making vanadium steels.
- Vanadium (added in amounts between 0.1 and 5.0 percent) has two effects upon steel: **it refines the grain of the steel matrix, and with the carbon present it forms carbides**. Thus, vanadium steel is especially strong and hard, with improved resistance to shock. When the very pure metal is required, it may be obtained by processes similar to those for titanium.
- Very pure vanadium metal resembles titanium in being quite corrosion resistant, hard, and steel grey in colour.



PLUTO

- Pluto is a dwarf planet in the Kuiper belt, a ring of bodies beyond Neptune. It was the first Kuiper belt object to be discovered.
- It is the largest known **trans-Neptunian object** by volume but is less massive than Eris, a dwarf planet in the scattered disc. Like other Kuiper belt objects, Pluto is primarily made of ice and rock and is relatively small—about one-sixth the mass of the Moon and one-third its volume.
- It has a moderately eccentric and inclined orbit around the Sun. This means that Pluto periodically comes closer to the Sun than Neptune, but a stable orbital resonance with Neptune prevents them from colliding.
- Pluto was discovered by Clyde Tombaugh in 1930, and was originally considered the ninth planet from the Sun. After 1992, its planethood was questioned following the discovery of several objects of similar size in the Kuiper belt.
- In 2005, Eris, which is more massive than Pluto, was discovered, which led the International Astronomical Union (IAU) to define the term "planet" formally for the first time the following year. This definition excluded Pluto and reclassified it as a member of the new "dwarf planet" category.
- Pluto has **five known moons**: Charon (the largest, with a diameter just over half that of Pluto), Styx, Nix, Kerberos, and Hydra

INDIAN POLITY

(Constitution; Polity and Governance)



CENSUS IN INDIA

A population Census is the process of **collecting, compiling, analyzing and disseminating** demographic, social, cultural and economic data relating to all persons in the country, at a particular time in ten years interval.

- Conducting population census in a country like India, with great diversity of physical features, is undisputedly the biggest administrative exercise of peace time. The wealth of information collected through census on houses, amenities available to the households, socio economic and cultural characteristics of the population makes Indian Census the richest and the only source for planners, research scholars, administrators and other data users. The planning and execution of Indian Census is challenging and fascinating.
- India is one of the very few countries in the World, which has a proud history of holding Census after every ten years. The Indian Census has a very long history behind it. The earliest literature 'Rig Veda' reveals that some kind of Population count was maintained during 800-600 BC. Kautilya's Arthashastra, written around 321-296 BC, laid stress on Census taking as a measure of State policy for purpose of taxation.
- During the regime of Mughal king Akbar the Great, the administrative report 'Ain-e-Akbari' included comprehensive data pertaining to population, industry, wealth and many other characteristics. The history of Indian Census can be divided in two parts i.e. Pre Independence era and Post-Independence era.

Pre Independence Period

- The History of Census began with 1800 when England had begun its Census but the population of dependencies was not known at that time. In its continuation, based on this methodology census was conducted in town of **Allahabad in 1824** and in the **city of Banaras in the year 1827-28 by James Prinsep**.
- The **first complete census of an Indian city was conducted in 1830 by Henry Walter in Dacca**. In this Census the statistics of Population with sex and broad age group and also the houses with their amenities were collected. Second Census was conducted in 1836-37 by Fort St. George.
- In **1849**, Government of India ordered Local Government to conduct quinquennial returns of population. As a result, a system of periodical stock taking of people was inaugurated in Madras which was continued till the imperial census was ordered. These returns were taken during the official years 1851-52, 1856-57, 1861- 62 and 1866-67 respectively. The Census in North Western provinces took place in 1852, which was regular house to house numbering of all the people in the province at the night of 31st December 1852. The quinquennial Census of 1866-67 was merged in the imperial census of 1871.
- The Home Government of Government Of India had desired, under Statistical Dispatch No.2 of July 23, 1856, that a general census of population might be taken in 1861, which was postponed in 1859 due to the mutinies. However, on 10th January, 1865 a census by an actual house to house enumeration was undertaken in North western provinces. A similar census was undertaken in November, 1866 in central provinces and in 1867 in Berar. The Census in Punjab territory was taken in January 1855 and 1868 respectively. The Census of Oudh was taken in 1869. In the cities of Madras, Bombay and Calcutta census was taken in 1863, 1864 and 1866 respectively. An experimental census of lower provinces of Bengal was organized in 1869, which was completed by H. Beverley, Registrar General.
- In 1865 the Government of India and Home Government had agreed upon the principal that a general population census would be taken in 1871. In the year 1866-67 census was undertaken by the actual counting of heads in most of the part of the country, which is known as the **Census of 1872**. This Census did not cover all territories possessed or controlled by the British. In this Census a House Register was canvassed with 17 questions. The information collected pertains to name, age, religion, caste or class, race

or nationality, attending school /college and able to read and write. These common questions were asked separately from males and females. A question on occupation was canvassed for males only.

- The **Census of 1881** which was undertaken on **17th February, 1881** by **W.C. Plowden**, Census Commissioner of India was a great step towards a modern synchronous census. Since then, censuses have been undertaken uninterruptedly once every ten years.
- In this Census, emphasis was laid not only on complete coverage but also on classification of demographic, economic and social characteristics. The census of 1881 took in entire continent of British India (except Kashmir) which also includes feudatory states in political connection with the Government of India.
- In the Census of 1881 a schedule 'Census Schedule' with 12 questions was canvassed. Deviating from past a question on sex was introduced and practice of canvassing same questions for males and females separately dropped. New question on marital status, mother tongue, place of birth and infirmities were included. The question on education was modified to the extent that for those who are not educated it was ascertained that whether they are able to read and write. From Hindus their caste was ascertained and in other cases information on Sect was obtained.



REGISTRATION OF POLITICAL PARTIES

- Registration of Political parties is governed by the provisions of **Section 29A** of the **Representation of the People Act, 1951**.
- A party seeking registration under the said Section with the Commission has to submit an application to the Commission **within a period of 30 days following the date of its formation** as per guidelines prescribed by the Election Commission of India in exercise of the powers conferred by Article 324 of the Commission of India and Section 29A of the Representation of the People Act, 1951.

National Party: To be eligible for a 'National Political Party of India,' the Election Commission has set the following criteria:

- It secures **at least six percent of the valid votes polled in any four or more states**, at a general election to the House of the People or, to the State Legislative Assembly; and
- In addition, it wins **at least four seats** in the House of the People from any State or States. OR
- It wins at least two percent seats in the House of the People (i.e., 11 seats in the existing House having 543 members), and these members are elected from at least three different States.

State Party: To be eligible for a 'State Political Party,' the Election Commission has set the following criteria:

- It secures **at least six percent of the valid votes polled in the State** at a general election, either to the House of the People or to the Legislative Assembly of the State concerned; and
- In addition, it wins at least two seats in the Legislative Assembly of the State concerned. OR
- It wins at least three percent (3%) of the total number of seats in the Legislative Assembly of the State, or at least three seats in the Assembly, whichever is more.

Benefits:

- If a party is recognised as a State Party', it is entitled for exclusive allotment of its reserved symbol to the candidates set up by it in the State in which it is so recognised, and if a party is recognised as a 'National Party' it is entitled for exclusive allotment of its reserved symbol to the candidates set up by it throughout India.
- Recognised 'State' and 'National' parties need only one proposer for filing the nomination and are also entitled for two sets of electoral rolls free of cost at the time of revision of rolls and their candidates get one copy of electoral roll free of cost during General Elections.
- They also get broadcast/telecast facilities over Akashvani/Doordarshan during general elections.

- Political parties are entitled to nominate “Star Campaigners” during General Elections. A recognized National or State party can have a maximum of 40 “Star campaigners” and a registered un-recognised party can nominate a maximum of 20 ‘Star Campaigners’.
- The travel expenses of star campaigners are not to be accounted for in the election expense accounts of candidates of their party.



QUESTION HOUR

- Question Hour is the liveliest hour in Parliament. It is during this one hour that **Members of Parliament ask questions of ministers and hold them accountable** for the functioning of their ministries. The questions that MPs ask are designed to elicit information and trigger suitable action by ministries.
- Over the last 70 years, MPs have successfully used this parliamentary device to shine a light on government functioning. Their questions have exposed financial irregularities and brought data and information regarding government functioning to the public domain. With the broadcasting of Question Hour since 1991, Question Hour has become one of the most visible aspects of parliamentary functioning.
- Asking questions of the government has a long history in our legislative bodies. Prior to Independence, the first question asked of government was in 1893. It was on the burden cast on village shopkeepers who had to provide supplies to touring government officers.
- Parliament has comprehensive rules for dealing with every aspect of Question Hour. And the presiding officers of the two houses are the final authority with respect to the conduct of Question Hour.

What kind of questions are asked?

- Parliamentary rules provide guidelines on the kind of questions that can be asked by MPs. Questions have to be limited to 150 words. They have to be precise and not too general. The question should also be related to an area of responsibility of the Government of India.
- Questions should not seek information about matters that are secret or are under adjudication before courts.
- It is the presiding officers of the two Houses who finally decide whether a question raised by an MP will be admitted for answering by the government.

How frequently is Question Hour held?

- The process of asking and answering questions starts with identifying the days on which Question Hour will be held. At the beginning of Parliament in 1952, Lok Sabha rules provided for Question Hour to be held every day. Rajya Sabha, on the other hand, had a provision for Question Hour for two days a week. A few months later, this was changed to four days a week. Then from 1964, Question Hour was taking place in Rajya Sabha on every day of the session.
- Now, **Question Hour in both Houses is held on all days of the session**. But there are two days when an exception is made.
- There is **no Question Hour on the day the President addresses MPs from both Houses in the Central Hall**. The President’s speech takes place at the beginning of a new Lok Sabha and on the first day of a new Parliament year.
- Question Hour is not scheduled either on the day the Finance Minister presents the Budget. Since the beginning of the current Lok Sabha, approximately 15,000 questions have been asked in the Lower House.

How does Parliament manage to get so many questions answered?

- To streamline the answering of questions raised by MPs, the ministries are put into five groups. Each group answers questions on the day allocated to it. For example, in the last session, on Thursday the Ministries of Civil Aviation, Labour, Housing, and Youth Affairs and Sports were answering questions posed by Lok Sabha MPs. This grouping of ministries is different for the two Houses so that ministers can be present in one

house to answer questions, So the minister of Civil Aviation was answering questions in Rajya Sabha on Wednesday, during the Budget session.

- MPs can specify whether they want an oral or written response to their questions. They can put an asterisk against their question signifying that they want the minister to answer that question on the floor. These are referred to as starred questions. After the minister's response, the MP who asked the question and other MPs can also ask a follow-up question. This is the visible part of Question Hour, where you see MPs trying to corner ministers on the functioning of their ministries on live television. Seasoned parliamentarians choose to ask an oral question when the answer to the question will put the government in an uncomfortable position.

How do ministers prepare their answers?

- Ministries receive the questions 15 days in advance so that they can prepare their ministers for Question Hour. They also have to prepare for sharp follow-up questions they can expect to be asked in the House. Governments officers are close at hand in a gallery so that they can pass notes or relevant documents to support the minister in answering a question.
- When MPs are trying to gather data and information about government functioning, they prefer the responses to such queries in writing. These questions are referred to as **unstarred questions**. The responses to these questions are placed on the table of Parliament.

Are the questions only for ministers?

- MPs usually ask questions to hold ministers accountable. But the rules also provide them with a mechanism for asking their colleagues a question. Such a question should be limited to the role of an MP relating to a Bill or a resolution being piloted by them or any other matter connected with the functioning of the House for which they are responsible. Should the presiding officer so allow, MPs can also ask a question to a minister at a notice period shorter than 15 days.

Is there a limit to the number of questions that can be asked?

- Rules on the number of questions that can be asked in a day have changed over the years. In Lok Sabha, until the late 1960s, there was no limit on the number of unstarred questions that could be asked in a day.
- Now, Parliament rules limit the number of starred and unstarred questions an MP can ask in a day. The total number of questions asked by MPs in the starred and unstarred categories are then put in a random ballot. From the ballot in Lok Sabha, 20 starred questions are picked for answering during Question Hour and 230 are picked for written answers.



ZERO HOUR

- While Question Hour is strictly regulated, Zero Hour is an Indian parliamentary innovation. The phrase does not find mention in the rules of procedure. The concept of Zero Hour started organically in the first decade of Indian Parliament, when MPs felt the **need for raising important constituency and national issues**.
- During the initial days, Parliament used to break for lunch at 1 pm. Therefore, the opportunity for MPs to raise national issues without an advance notice became **available at 12 pm** and could last for an hour until the House adjourned for lunch. This led to the hour being popularly referred to as **Zero Hour and the issues being raised during this time as Zero Hour submissions**.
- Over the years, presiding officers of both Houses have given directions to streamline the working of Zero Hour to make it even more effective. Its importance can be gauged from the support it receives from citizens, media, MPs and presiding officers despite not being part of the rulebook.

COMMITTEES ON PANCHAYATI RAJ

A three-tier structure of the Indian administration for rural development is called Panchayati Raj. The aim of the Panchayati Raj is to develop local self-governments in districts, zones and villages.

Introduction to Panchayati Raj

- Rural development is one of the main objectives of Panchayati Raj and this has been established in all states of India except Nagaland, Meghalaya and Mizoram, in all Union Territories except Delhi. and certain other areas. These areas include:
- The scheduled areas and the tribal areas in the states;
 - The hill area of Manipur for which a district council exists; and
 - Darjeeling district of West Bengal for which Darjeeling Gorkha Hill Council exists.

Evolution of Panchayati Raj

- The Panchayati system in India is not purely a post-independence phenomenon. In fact, the dominant political institution in rural India has been the village panchayat for centuries. In ancient India, panchayats were usually elected councils with executive and judicial powers. In the pre-independence period, however, the panchayats were instruments for the dominance of the upper castes over the rest of the village, which furthered the divide based on either the socio-economic status or the caste hierarchy.
- The evolution of the Panchayati Raj System, however, got a fillip after the attainment of independence after the drafting of the Constitution. The Constitution of India in **Article 40 enjoined**: “*The state shall take steps to organise village panchayats and endow them with such powers and authority as may be necessary to enable them to function as units of self-government*”.
- There were a number of committees appointed by the Government of India to study the implementation of self-government at the rural level and also recommend steps in achieving this goal.
- The committees appointed are: *Balwant Rai Mehta Committee; Ashok Mehta Committee; G V K Rao Committee; L M Singhvi Committee.*

Balwant Rai Mehta Committee

- The committee was appointed in 1957, to examine and suggest measures for better working of the **Community Development Programme and the National Extension Service**. The committee suggested the establishment of a democratic decentralised local government which came to be known as the Panchayati Raj.

Recommendations by the Committee:

- Three-tier Panchayati Raj system: Gram Panchayat, Panchayat Samiti and Zila Parishad.
 - Directly elected representatives to constitute the gram panchayat and indirectly elected representatives to constitute the Panchayat Samiti and Zila Parishad.
 - **Planning and development** are the primary objectives of the Panchayati Raj system.
 - Panchayat Samiti should be the executive body and Zila Parishad will act as the advisory and supervisory body.
 - **District Collector to be made the chairman** of the Zila Parishad.
 - It also requested for **provisioning resources** so as to help them discharge their duties and responsibilities.
 - The Balwant Rai Mehta Committee further revitalised the development of panchayats in the country, the report recommended that the Panchayati Raj institutions can play a substantial role in community development programmes throughout the country. The objective of the Panchayats thus was the democratic decentralisation through the effective participation of locals with the help of well-planned programmes. Even the then Prime Minister of India, Pandit Jawaharlal Nehru, defended the panchayat system by saying, “. . . authority and power must be given to the people in the villages Let us give power to the panchayats.”

Ashok Mehta Committee

The committee was appointed in 1977 to suggest measures to revive and strengthen the declining Panchayati Raj system in India. The key recommendations are:

- The three-tier system should be replaced with a two-tier system: **Zila Parishad (district level)** and the **Mandal Panchayat (a group of villages)**.
- District level as the first level of supervision after the state level.
- Zila Parishad should be the executive body and responsible for planning at the district level.
- The institutions (Zila Parishad and the Mandal Panchayat) to have compulsory taxation powers to mobilise their own financial resources.

G V K Rao Committee

The committee was appointed by the planning commission in 1985. It recognised that development was not seen at the grassroot level due to bureaucratisation resulting in Panchayat Raj institutions being addressed as 'grass without roots'. Hence, it made some key recommendations which are as follows:

- Zila Parishad to be the most important body in the scheme of democratic decentralisation. Zila Parishad to be the principal body to manage the developmental programmes at the district level.
- The district and the lower levels of the Panchayati Raj system to be assigned with specific planning, implementation and monitoring of the rural developmental programmes.
- Post of **District Development Commissioner** to be created. He will be the chief executive officer of the Zila Parishad.
- Elections to the levels of Panchayati Raj systems should be held regularly.

L M Singhvi Committee

The committee was appointed by the Government of India in 1986 with the main objective to recommend steps to revitalise the Panchayati Raj systems for democracy and development. The following recommendations were made by the committee:

- The committee recommended that the **Panchayati Raj systems** should be constitutionally recognised. It also recommended constitutional provisions to **recognise free and fair elections for the Panchayati Raj systems**.
- The committee recommended reorganisation of villages to make the gram panchayat more viable.
- It recommended that village panchayats should have more finances for their activities.
- Judicial tribunals to be set up in each state to adjudicate matters relating to the elections to the Panchayati Raj institutions and other matters relating to their functioning.
- All these things further the argument that panchayats can be very effective in identifying and solving local problems, involve the people in the villages in the developmental activities, improve the communication between different levels at which politics operates, develop leadership skills and in short help the basic development in the states without making too many structural changes.
- Rajasthan and Andhra Pradesh were the first to adopt Panchayati raj in 1959, other states followed them later. Though there are variations among states, there are some features that are common. In most of the states, for example, a three-tier structure including **panchayats at the village level, panchayat samitis at the block level and the zila parishads at the district level**-has been institutionalized.
- Due to the sustained effort of the civil society organisations, intellectuals and progressive political leaders, the Parliament passed two amendments to the Constitution – **the 73rd Constitution Amendment for rural local bodies (panchayats) and the 74th Constitution Amendment for urban local bodies (municipalities)** making them 'institutions of self-government'. Within a year all the states passed their own acts in conformity to the amended constitutional provisions.

73rd CONSTITUTIONAL AMENDMENT ACT

Significance of the Act

- The Act added Part IX to the Constitution, **“The Panchayats”** and also added the Eleventh Schedule which consists of the 29 functional items of the panchayats.
- Part IX of the Constitution contains **Article 243 to Article 243 O**.
- The Amendment Act provides **shape to Article 40 of the Constitution**, (Directive Principles of State Policy), which directs the state to organise the village panchayats and provide them powers and authority so that they can function as self-government.
- With the Act, Panchayati Raj systems come under the purview of the justiciable part of the Constitution and mandates states to adopt the system. Further, the election process in the Panchayati Raj institutions will be held independent of the state government’s will.
- The **Act has two parts: compulsory and voluntary**. Compulsory provisions must be added to state laws, which includes the creation of the new Panchayati Raj systems. Voluntary provisions, on the other hand, is the discretion of the state government.
- The Act is a very significant step in creating democratic institutions at the grassroots level in the country. The Act has transformed the representative democracy into participatory democracy.

Salient Features of the Act

- **Gram Sabha**: Gram Sabha is the primary body of the Panchayati Raj system. It is a village assembly consisting of all the registered voters within the area of the panchayat. It will exercise powers and perform such functions as determined by the state legislature.
- **Three-tier system**: The Act provides for the establishment of the three-tier system of Panchayati Raj in the states (village, intermediate and district level). States with a population of less than 20 lakhs may not constitute the intermediate level.
- **Election of members and chairperson**: The members to all the levels of the Panchayati Raj are elected directly and the chairpersons to the intermediate and the district level are elected indirectly from the elected members and at the village level the Chairperson is elected as determined by the state government.

Reservation of seats:

- For SC and ST: Reservation to be provided at all the three tiers in accordance with their population percentage.
- For women: Not less than one-third of the total number of seats to be reserved for women, further not less than one-third of the total number of offices for chairperson at all levels of the panchayat to be reserved for women.
- The state legislatures are also given the provision to decide on the reservation of seats in any level of panchayat or office of chairperson in favour of backward classes.

Duration of Panchayat: The Act provides for a five-year term of office to all the levels of the panchayat. However, the panchayat can be dissolved before the completion of its term. But fresh elections to constitute the new panchayat shall be completed –

- before the expiry of its five-year duration.
- in case of dissolution, before the expiry of a period of six months from the date of its dissolution.

Disqualification: A person shall be disqualified for being chosen as or for being a member of panchayat if he is so disqualified –

- Under any law for the time being in force for the purpose of elections to the legislature of the state concerned.

- Under any law made by the state legislature. However, no person shall be disqualified on the ground that he is less than 25 years of age if he has attained the age of 21 years.
- Further, all questions relating to disqualification shall be referred to an authority determined by the state legislatures.

State Election Commission:

- The commission is responsible for superintendence, direction and control of the preparation of electoral rolls and conducting elections for the panchayat.
- The state legislature may make provisions with respect to all matters relating to elections to the panchayats.

Powers and Functions: The state legislature may endow the Panchayats with such powers and authority as may be necessary to enable them to function as institutions of self-government. Such a scheme may contain provisions related to Gram Panchayat work with respect to:

- the preparation of plans for economic development and social justice.
- the implementation of schemes for economic development and social justice as may be entrusted to them, including those in relation to the 29 matters listed in the Eleventh Schedule.

Finances: The state legislature may –

- Authorize a panchayat to levy, collect and appropriate taxes, duties, tolls and fees.
- Assign to a panchayat taxes, duties, tolls and fees levied and collected by the state government.
- Provide for making grants-in-aid to the panchayats from the consolidated fund of the state.
- Provide for the constitution of funds for crediting all money of the panchayats.

Finance Commission: The state finance commission reviews the financial position of the panchayats and provides recommendations for the necessary steps to be taken to supplement resources to the panchayat.

- **Audit of Accounts:** State legislature may make provisions for the maintenance and audit of panchayat accounts.
- **Application to Union Territories:** The President may direct the provisions of the Act to be applied on any union territory subject to exceptions and modifications he specifies.

Exempted states and areas: The Act does not apply to the states of Nagaland, Meghalaya and Mizoram and certain other areas. These areas include,

- The scheduled areas and the tribal areas in the states
- The hill area of Manipur for which a district council exists.
- Darjeeling district of West Bengal for which Darjeeling Gorkha Hill Council exists.
- However, Parliament can extend this part to these areas subject to the exception and modification it specifies. Thus, the PESA Act was enacted.

- **Continuance of existing law:** All the state laws relating to panchayats shall continue to be in force until the expiry of one year from the commencement of this Act. In other words, the states have to adopt the new Panchayati raj system based on this Act within the maximum period of one year from 24 April 1993, which was the date of the commencement of this Act. However, all the Panchayats existing immediately before the commencement of the Act shall continue till the expiry of their term, unless dissolved by the state legislature sooner.
- **Bar to interference by courts:** The Act bars the courts from interfering in the electoral matters of panchayats. It declares that the validity of any law relating to the delimitation of constituencies or the allotment of seats to such constituencies cannot be questioned in any court. It further lays down that no election to any panchayat is to be questioned except by an election petition presented to such authority and in such manner as provided by the state legislature.

PESA ACT

PESA Act of 1996

- The **provisions of Part IX are not applicable to the Fifth Schedule areas**. The Parliament can extend this Part to such areas with modifications and exceptions as it may specify. Under these provisions, Parliament enacted Provisions of the Panchayats (Extension to the Scheduled Areas) Act, popularly known as PESA Act or the extension act.

Objectives of the PESA Act:

- To extend the provisions of Part IX to the scheduled areas.
 - To provide self-rule for the tribal population.
 - To have village governance with participatory democracy.
 - To evolve participatory governance consistent with the traditional practices.
 - To preserve and safeguard traditions and customs of tribal population.
 - To empower panchayats with powers conducive to tribal requirements.
 - To prevent panchayats at a higher level from assuming powers and authority of panchayats at a lower level.
- As a result of these constitutional steps taken by the union and state governments, India has moved towards what has been described as 'multi-level federalism', and more significantly, it has widened the democratic base of the Indian polity. Before the amendments, the Indian democratic structure through elected representatives was restricted to the two houses of Parliament, state assemblies and certain union territories. The system has brought governance and issue redressal to the grassroot levels in the country but there are other issues too. These issues, if addressed, will go a long way in creating an environment where some of the basic human rights are respected.
 - After the new generation of panchayats had started functioning, several issues have come to the fore, which have a bearing on human rights. The important factor which has contributed to the human rights situation vis-a-vis the panchayat system is the nature of Indian society, which of course determines the nature of the state. Indian society is known for its inequality, social hierarchy and the rich and poor divide. The social hierarchy is the result of the caste system, which is unique to India. Therefore, caste and class are the two factors, which deserve attention in this context.
 - Thus, the local governance system has challenged the age old practices of hierarchy in the rural areas of the country particularly those related to caste, religion and discrimination against women.

ORDINANCE

- **Article 123** in the Constitution gives power to the president of India to promulgate Ordinances during recess of Parliament.
- If at any time, except when both Houses of Parliament are in session, the President is satisfied that circumstances exist which render it necessary for him to take immediate action, he may promulgate such Ordinance as the circumstances appear to him to require.
- An Ordinance promulgated under this article shall have the same force and effect as an Act of Parliament.
- All in all, the Ordinances are temporary and immediate provisions that are promulgated by the President of India on the recommendation of the Union Cabinet. They can only be issued when Parliament is not in session.
- They enable the Indian government to take immediate legislative action.
- They should be used sparingly and should not become a norm.

Ordinance making powers of the Governor

Just as the President of India is constitutionally mandated to issue Ordinances under Article 123, the Governor of a state can issue Ordinances under **Article 213**, when the state legislative assembly (or either of the two Houses in states with bicameral legislatures) is not in session. The powers of the President and the Governor are broadly comparable with respect to Ordinance making. Provided that the Governor shall not, without instructions from the President, promulgate any such Ordinance if,

- a Bill containing the same provisions would under this Constitution have required the previous sanction of the President for the introduction thereof into the Legislature; or
- he would have deemed it necessary to reserve a Bill containing the same provisions for the consideration of the President; or
- an Act of the Legislature of the State containing the same provisions would under this Constitution have been invalid unless, having been reserved for the consideration of the President, it had received the assent of the President.

How is an ordinance issued?

- The President acts on the advice of the Council of Ministers, so it is the government that takes the decision to issue an ordinance. After the Cabinet decides to issue an ordinance, it is sent to the President.
- The President may return the ordinance once if he feels that it requires reconsideration but has to promulgate it if it is sent back to him after reconsideration.



SECTION 123(3), RPA 1951

- The Supreme Court has clearly ruled that religion, race, caste, community or language would not be allowed to play any role in the electoral process and that election of a candidate would be declared null and void if an appeal is made to seek votes on these considerations.
- The SC stated that **elections are a secular exercise** and an appeal in the name of religion, race, caste, community or language is impermissible under the Representation of the People Act, 1951 and would constitute a corrupt practice sufficient to annul the election in which such an appeal was made.
- **Corrupt practice under Section 123(3)** of the Representation of People Act (RPA) 1951- The SC revisited the provision under Section 123(3) of the Representation of People Act (RPA) 1951, which defines as “corrupt practice” appeals made by a candidate or his agents to vote or refrain from voting for any person on the ground of “his” religion, race, caste, community or language.
- What actually came up for interpretation before the Constitution Bench was the meaning of the term “his” since that would define whose religion it has to be when an appeal is made.
- The bench headed by the former Chief Justice of India T S Thakur with a majority ruled that “his” would mean religion of candidate, his agents, voters as well as any other person who, with the candidate’s consent, brings up religion in an appeal for the furtherance of the prospects of the election.
- No place for religion in a secular state’s governance - The State being secular in character will not identify itself with any one of the religions or religious denominations. This necessarily implies that religion will not play any role in the governance of the country which must at all times be secular in nature.



RAJYA SABHA

- The origin can be traced to **Montague-Chelmsford Report of 1918**.
- The Government of India Act, 1919 provided for the creation of a ‘Council of State’ as a second chamber of the then legislature with a restricted franchise which actually came into existence in 1921.
- **Article 80 of the Constitution** lays down the maximum strength of Rajya Sabha as 250, out of which 12 members are nominated by the President and 238 are representatives of the States and of the two Union Territories of Delhi and Puducherry having state legislative assembly.

- The members nominated by the President are persons having special knowledge or practical experience in respect of such matters as literature, science, art and social service.
- The **Fourth Schedule** to the Constitution provides for allocation of seats to the States and Union Territories in Rajya Sabha.
- The allocation of seats is made on the **basis of the population of each State**.
- The representatives of the States and of the Union Territories in the Rajya Sabha are elected by the method of indirect election.
- The representatives of each State and two Union territories are elected by the elected members of the Legislative Assembly of that State and by the members of the Electoral College for that Union Territory, in accordance with the system of proportional representation by means of the single transferable vote.
- The Electoral College for the National Capital Territory of Delhi consists of the elected members of the Legislative Assembly of Delhi, and that for Puducherry consists of the elected members of the Puducherry Legislative Assembly.
- The Council of States shall not be subject to dissolution, but as nearly as possible one-third of the members thereof shall retire as soon as may be on the expiration of every second year.



BILLS

- A Bill is a draft statute which becomes law after it is passed by both the Houses of Parliament and assented by the President. All legislative proposals are brought before Parliament in the forms of Bills.
- Procedurally, Bills can be classified as: *Ordinary Bill; Money Bill; Finance Bill; Ordinance replacing Bill; Constitution Amendment Bill*

Money Bill

Under **Article 110 (1)** of the Constitution, a Bill is deemed to be a Money Bill if it contains only provisions on all or any of the following:

- imposition, abolition, remission, alteration or regulation of any tax
- regulation of borrowing by the government;
- custody of the Consolidated Fund or Contingency Fund of India, and payments into or withdrawals from these Funds
- appropriation of moneys out of the Consolidated Fund of India;
- declaring of any expenditure to be expenditure charged on the Consolidated Fund of India or the increasing of the amount of any such expenditure;
- receipt of money on account of the Consolidated Fund of India or the public account of India or the custody or issue of such money or the audit of the accounts of the Union or of a State.

Finance Bill

- Any Bill which deals with revenue or expenditure of the Government is a Finance Bill.
- Finance Bill is accompanied by a Memorandum explaining the provisions included in it.
- However, only those Finance Bills which are endorsed by the Speaker under **Article 110 (4)** become a Money Bill.
- The rest can be categorised as:

Financial Bill (A)

- Financial Bill (A) as under Article 117(1) = [includes any matters mentioned in the Money Bill] + [any other matters related to revenue or expenditure of the Government]
- Financial Bill (A) can only be introduced in the Lok Sabha on the recommendation of the President.
- However, once it has been passed by the Lok Sabha, it is like an ordinary Bill and there is no restriction on the powers of the Rajya Sabha on such Bills

Financial Bill (B).

- Financial Bill (B) is just like other Ordinary Bills that contain provisions involving expenditure from the Consolidated Fund as specified in Article 117 (3).
 - Financial Bill (B) can be introduced in either House of Parliament.
-
- **Ordinary Bill:** Thus, every Bill other than a Money Bill and Financial Bill (A) introduced in the Parliament acts like an Ordinary Bill.
 - **Ordinance Replacing Bill**
 - Ordinance replacing Bills are brought before Parliament to replace an Ordinance, with or without modifications, promulgated by the President under **Article 123** of the Indian Constitution.
 - Ordinance to become a law needs to be passed by both the Houses of Parliament and assented to by the President within six weeks of the reassembly of Parliament.
 - **Constitution Amendment Bill**
 - A Constitution Amendment Bill under article 368 can be introduced in either House of Parliament.
 - As per the procedure laid down in the Constitution under Article 368, Constitution Amendment Bills can be of three types:
 1. Amendment requiring simple majority for their passage in each House
 2. Amendment requiring special majority for their passage in each House.
Special Majority = Majority of the total membership of a House and by a majority of not less than two-thirds of the members of that House present and voting (article 368)
 3. Amendment which needs to be passed by Legislatures of not less than one-half of the States along with special majority for certain constitutional provisions relating to the federal character which may be categorised as entrenched provisions.
-

ECONOMY

(Global and Indian)

ASSET RECONSTRUCTION COMPANY

- An asset reconstruction company is a special type of financial institution that buys the debtors of the bank at a mutually agreed value and attempts to recover the debts or associated securities by itself.
- The asset reconstruction companies or ARCs are registered under the RBI and regulated under the **Securitisation and Reconstruction of Financial Assets and Enforcement of Securities Interest Act, 2002 (SARFAESI Act, 2002)**.
- The ARCs take over a portion of the debts of the bank that qualify to be recognised as Non-Performing Assets. Thus ARCs are engaged in the business of asset reconstruction or securitisation or both.
- All the rights that were held by the lender (the bank) in respect of the debt would be transferred to the ARC. The required funds to purchase such debts can be raised from Qualified Buyers.

What is asset reconstruction?

- It is the acquisition of any right or interest of any bank or financial institution in loans, advances granted, debentures, bonds, guarantees or any other credit facility extended by banks for the purpose of its realisation. Such loans, advances, bonds, guarantees and other credit facilities are together known by a term – ‘**financial assistance**’.

What is securitisation?

- It is the acquisition of financial assets either by way of **issuing security receipts to Qualified Buyers** or any other means. Such security receipts would represent an undivided interest in the financial assets.

Who are Qualified Buyers?

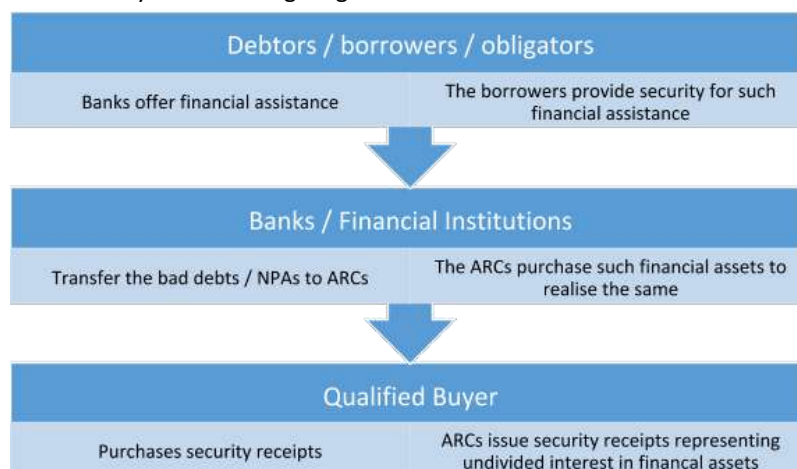
- Qualified Buyers include Financial Institutions, Insurance companies, Banks, State Financial Corporations, State Industrial Development Corporations, trustee or ARCs registered under SARFAESI and Asset Management Companies registered under SEBI that invest on behalf of mutual funds, pension funds, FIIs, etc. The Qualified Buyers (QBs) are the only persons from whom the ARC can raise funds.

Working of the ARC

- The working of the ARC can be summarized by the following diagram:

- The business of asset reconstruction or securitisation may be commenced **only after obtaining a registration certificate under Section 3 of the SARFAESI Act, 2002**. The main requirement in this regard is that the ‘net owned funds’ as prescribed in the RBI Act should be Rs. 100 crore or more.

How will the ARC carry out the process of asset reconstruction?



- The main intention of acquiring debts / NPAs is to ultimately realise the debts owed by them. However, the process is not a simple one. The ARCs have the following options in this regard:

- Change or takeover of the management of the business of the borrower;
- Sale or lease of such business;
- Rescheduling the payment of debts – offering alternative schemes, arrangements for the payment of the same;
- Enforcing the security interest offered in accordance with the law;
- Taking possession of the assets offered as security;
- Converting a portion of the debt into shares.



NON PERFORMING ASSETS

- Reserve Bank of India defines **NPA as any advance or loan that is overdue for more than 90 days**. “An asset becomes non-performing when it ceases to generate income for the bank,” said RBI in a circular form 2007. To be more attuned to international practices, RBI implemented the 90 days overdue. Depending on how long the assets have been an NPA, there are different types of non-performing assets as well.

NPAs are of 4 types:

- **Standard Assets:** It is a kind of performing asset which creates continuous income and repayments as and when they become due. These assets carry a normal risk and are not NPA in the real sense of the word. Hence, no special provisions are required for standard assets.
- **Sub-Standard Assets:** Loans and advances which are non-performing assets for a period of 12 months, fall under the category of Sub-Standard Assets.
- **Doubtful Assets:** The Assets considered as non-performing for a period of more than 12 months are known as Doubtful Assets.
- **Loss Assets:** All those assets which cannot be recovered by the lending institutions are known as Loss Assets.



HUMAN CAPITAL

- Human capital is an **intangible asset or quality not listed on a company's balance sheet**.
- It can be classified as the **economic value of a worker's experience and skills**. This includes assets like education, training, intelligence, skills, health, and other things employers value such as loyalty and punctuality.
- The concept of human capital recognizes that not all labor is equal. But employers can improve the quality of that capital by investing in employees—the education, experience, and abilities of employees all have economic value for employers and for the economy as a whole.
- Human capital is important because it is perceived to increase productivity and thus profitability. So the more a company invests in its employees (i.e., in their education and training), the more productive and profitable it could be.
- Human capital is typically managed by an organization's human resources (HR) department. This department oversees workforce acquisition, management, and optimization. Its other directives include workforce planning and strategy, recruitment, employee training and development, and reporting and analytics.

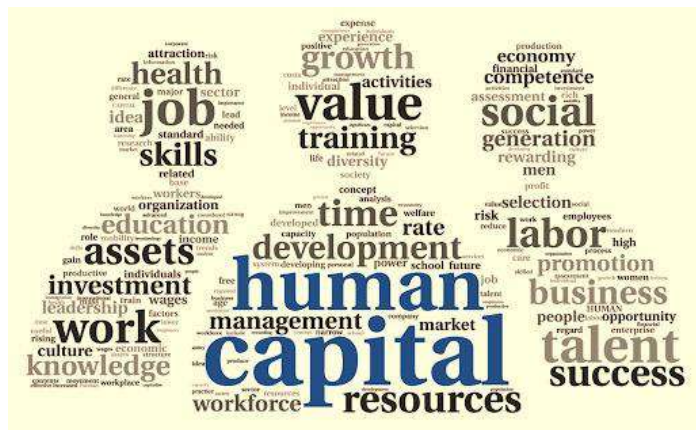
A Brief History of Human Capital

- The idea of human capital can be traced back to the 18th century. **Adam Smith** referred to the concept in his book "An Inquiry into the Nature and Causes of the Wealth of Nations," in which he explored the wealth, knowledge, training, talents, and experiences for a nation.

- Adams suggests that improving human capital through training and education leads to a more profitable enterprise, which adds to the collective wealth of society. According to Smith, that makes it a win for everyone.
- In more recent times, the term was used to describe the labor required to produce manufactured goods. But the most modern theory was used by several different economists including **Gary Becker** and **Theodore Schultz**, who invented the term in the 1960s to reflect the value of human capacities.
- Schultz believed human capital was like any other form of capital to improve the quality and level of production. This would require an investment in the education, training and enhanced benefits of an organization's employees.
- But not all economists agree. According to Harvard economist Richard Freeman, human capital was a signal of talent and ability. In order for a business to really become productive, he said it needed to train and motivate its employees as well as invest in capital equipment. His conclusion was that human capital was not a production factor.

Calculating Human Capital

- Since human capital is based on the investment of employee skills and knowledge through education, these investments in human capital can be easily calculated. HR managers can calculate the total profits before and after any investments are made.
- Any **return on investment (ROI)** of human capital can be calculated by dividing the company's total profits by its overall investments in human capital.



Human Capital and Economic Growth

- There is a strong relationship between human capital and economic growth. Because people come with a diverse set of skills and knowledge, human capital can certainly help boost the economy. This relationship can be measured by how much investment goes into people's education.
- Some governments recognize that this relationship between human capital and the economy exists, and so they provide higher education at little or no cost. People who participate in the workforce who have higher education will often have larger salaries, which means they will be able to spend more.

Does Human Capital Depreciate?

- Like anything else, human capital is not immune to depreciation. This is often measured in wages or the ability to stay in the workforce. The most common ways human capital can depreciate are through unemployment, injury, mental decline, or the inability to keep up with innovation.
- Consider an employee who has a specialized skill. If he goes through a long period of unemployment, he may be unable to keep these levels of specialization. That's because his skills may no longer be in demand when he finally reenters the workforce.
- Similarly, the human capital of someone may depreciate if he can't or won't adopt new technology or techniques. Conversely, the human capital of someone who does adopt them will.



INDUSTRIAL RELATIONS CODE BILL, 2020

Key Proposals are:

- **New conditions for legal strike** – no person employed in an industrial establishment shall go on strike without a 60-day notice and during the pendency of proceedings before a Tribunal and sixty days after the conclusion of such proceedings. Earlier such restrictions applied only to public utility services.
- **Raised the threshold for requirement of a standing order** — rules of conduct for workmen employed in industrial establishments — from the existing 100 to 300 workers.
- **Reskilling Fund** – To set up a re-skilling fund for training of retrenched workers with contribution of the employer of an amount equal to 15 days last drawn by the worker.



SOCIAL SECURITY CODE BILL, 2020

Key Proposals are:

- National Social Security Board which shall recommend to the central government for formulating suitable schemes for different sections of unorganised workers, gig workers and platform workers
- No more ambiguities: The bill has defined various terms like “career centre”, “aggregator”, “gig worker”, “platform worker”, “wage ceiling”, etc.
- Social security for gig workers: Also, aggregators employing gig workers will have to contribute 1-2 per cent of their annual turnover for social security of workers.
- The facility of ESIC would now be provided in all 740 districts. At present, this facility is being given in 566 districts only.
- EPFO's coverage would be applicable on all establishments having 20 workers. At present, it was applicable only on establishments included in the Schedule.
- Provision has been made to formulate various schemes for providing comprehensive social security to workers in the unorganised sector.
- Work to bring newer forms of employment created with the changing technology like “platform worker or gig worker” into the ambit of social security has been done in the Social Security Code.
- Provision for Gratuity has been made for Fixed Term Employee and there would not be any condition for minimum service period for this.
- With the aim of making a national database for unorganised sector workers, registration of all these workers would be done on an online portal and this registration would be done on the basis of Self Certification through a simple procedure.



OCCUPATIONAL SAFETY, HEALTH AND WORKING CONDITIONS CODE BILL, 2020

Key Proposals are:

- To employ women in all establishments for all types of work. They can also work at night, that is, beyond 7 PM and before 6 AM subject to the conditions relating to safety, holiday, working hours and their consent.
- **To Promote Formalisation:** Issuing of appointment letter mandatorily by the employer of an establishment to promote formalisation in employment
- **Inclusion of inter-state migrant workers in the definition of worker:** Inter-state migrant workers are defined as the worker who has come on his own from one state and obtained employment in another state, earning up to Rs 18,000 a month.
- The proposed definition makes a distinction from the present definition of only contractual employment.
- **Portability Benefits:** An Inter-State Migrant Worker has been provided with the portability to avail benefits in the destination State in respect of ration and availing benefits of building and other construction worker cess

- However, the Code has dropped the earlier provision for temporary accommodation for workers near worksites.
- It has though proposed a journey allowance — a lump sum amount of fare to be paid by the employer for to and fro journey of the worker to his/her native place from the place of his/her employment.
- Free health check-up once a year by the employer for workers which are more than a certain age.
- Cine Workers have been designated as Audio Visual Worker so that more and more workers get covered under the OSH code. Earlier, this security was being given to artists working in films only.



TRIPS AGREEMENT

The TRIPS Agreement, which came into effect on 1 January 1995, is to date the most comprehensive multilateral agreement on intellectual property.

- The areas of intellectual property that it covers are: **copyright and related rights** (i.e. the rights of performers, producers of sound recordings and broadcasting organizations); **trademarks including service marks**; **geographical indications** including appellations of origin; **industrial designs**; **patents** including the protection of new varieties of plants; the layout-designs of integrated circuits; and undisclosed information including trade secrets and test data.

The three main features of the Agreement are:

- **Standards:** In respect of each of the main areas of intellectual property covered by the TRIPS Agreement, the Agreement sets out the minimum standards of protection to be provided by each Member. Each of the main elements of protection is defined, namely the subject-matter to be protected, the rights to be conferred and permissible exceptions to those rights, and the minimum duration of protection.
 - The Agreement sets these standards by requiring, **first**, that the substantive obligations of the main conventions of the **WIPO**, the Paris Convention for the Protection of Industrial Property (**Paris Convention**) and the **Berne Convention** for the Protection of Literary and Artistic Works (Berne Convention) in their most recent versions, must be complied with.
 - With the exception of the provisions of the Berne Convention on moral rights, all the main substantive provisions of these conventions are incorporated by reference and thus become obligations under the TRIPS Agreement between TRIPS Member countries. The relevant provisions are to be found in Articles 2.1 and 9.1 of the TRIPS Agreement, which relate, respectively, to the Paris Convention and to the Berne Convention.
 - **Secondly**, the TRIPS Agreement adds a substantial number of additional obligations on matters where the pre-existing conventions are silent or were seen as being inadequate. The TRIPS Agreement is thus sometimes referred to as a Berne and Paris-plus agreement.
- **Enforcement:** The second main set of **provisions deals with domestic procedures and remedies for the enforcement of intellectual property rights**. The Agreement lays down certain general principles applicable to all IPR enforcement procedures. In addition, it contains provisions on civil and administrative procedures and remedies, provisional measures, special requirements related to border measures and criminal procedures, which specify, in a certain amount of detail, the procedures and remedies that must be available so that right holders can effectively enforce their rights.
- **Dispute settlement.** The Agreement makes disputes between WTO Members about the respect of the TRIPS obligations subject to the WTO's dispute settlement procedures.
- In addition, the Agreement provides for certain basic principles, such as **national and most-favoured-nation treatment**, and some general rules to ensure that procedural difficulties in acquiring or maintaining IPRs do not nullify the substantive benefits that should flow from the Agreement. The obligations under the Agreement will apply equally to all Member countries, but developing countries will have a longer

period to phase them in. Special transition arrangements operate in the situation where a developing country does not presently provide product patent protection in the area of pharmaceuticals.

- The TRIPS Agreement is a minimum standards agreement, which allows Members to provide more extensive protection of intellectual property if they so wish. Members are left free to determine the appropriate method of implementing the provisions of the Agreement within their own legal system and practice.



NON-BANKING FINANCIAL COMPANY (NBFC)

- A Non-Banking Financial Company (NBFC) is a company registered under the **Companies Act, 1956** engaged in the business of loans and advances, acquisition of shares/stocks/bonds/debentures/securities issued by Government or local authority or other marketable securities of a like nature, leasing, hire-purchase, insurance business, chit business but does not include any institution whose principal business is that of agriculture activity, industrial activity, purchase or sale of any goods (other than securities) or providing any services and sale/purchase/construction of immovable property.
- A non-banking institution which is a company and has principal business of receiving deposits under any scheme or arrangement in one lump sum or in installments by way of contributions or in any other manner, is also a non-banking financial company (Residuary non-banking company).
- NBFCs lend and make investments and hence their activities are akin to that of banks; however, there are a few differences as given below:

1. NBFC cannot accept demand deposits;
2. NBFCs do not form part of the payment and settlement system and cannot issue cheques drawn on itself;
3. Deposit insurance facility of Deposit Insurance and Credit Guarantee Corporation is not available to depositors of NBFCs, unlike in case of banks.

- NBFCs whose asset size is of ₹ 500 cr. or more as per last audited balance sheet are considered as systemically important NBFCs. The rationale for such classification is that the activities of such NBFCs will have a bearing on the financial stability of the overall economy.
- NBFCs are categorized **a) in terms of the type of liabilities into Deposit and Non-Deposit accepting NBFCs, b) non deposit taking NBFCs by their size into systemically important and other non-deposit holding companies (NBFC-NDSI and NBFC-ND) and c) by the kind of activity they conduct.** Within this broad categorization the different types of NBFCs are as follows:

1. **Asset Finance Company (AFC)** : An AFC is a company which is a financial institution carrying on as its principal business the financing of physical assets supporting productive/economic activity, such as automobiles, tractors, lathe machines, generator sets, earth moving and material handling equipments, moving on own power and general purpose industrial machines. Principal business for this purpose is defined as **aggregate of financing real/physical assets supporting economic activity and income** arising therefrom is not less than 60% of its total assets and total income respectively.
2. **Investment Company (IC)** : IC means any company which is a financial institution carrying on as its principal business the acquisition of securities.
3. **Loan Company (LC)**: LC means any company which is a financial institution carrying on as its principal business the providing of finance whether by making loans or advances or otherwise for any activity other than its own but does not include an Asset Finance Company.
4. **Infrastructure Finance Company (IFC)**: IFC is a non-banking finance company a) which deploys at least 75 per cent of its total assets in infrastructure loans, b) has a minimum Net Owned Funds of ₹ 300 crore, c) has a minimum credit rating of 'A' or equivalent d) and a CRAR of 15%.
5. **Systemically Important Core Investment Company (CIC-ND-SI)**: It is an NBFC carrying on the business of acquisition of shares and securities.
6. **Infrastructure Debt Fund**: Non- Banking Financial Company (IDF-NBFC) : IDF-NBFC is a company registered as NBFC to facilitate the flow of long term debt into infrastructure projects. IDF-NBFC raise resources

through issue of Rupee or Dollar denominated bonds of minimum 5-year maturity. Only Infrastructure Finance Companies (IFC) can sponsor IDF-NBFCs.

7. Non-Banking Financial Company - Micro Finance Institution (NBFC-MFI): NBFC-MFI is a non-deposit taking NBFC having not less than 85% of its assets in the nature of qualifying assets which satisfy the following criteria:

- a) loan disbursed by an NBFC-MFI to a borrower with a rural household annual income not exceeding ₹ 1,00,000 or urban and semi-urban household income not exceeding ₹ 1,60,000;
- b) loan amount does not exceed ₹ 50,000 in the first cycle and ₹ 1,00,000 in subsequent cycles;
- c) total indebtedness of the borrower does not exceed ₹ 1,00,000;
- d) tenure of the loan not to be less than 24 months for loan amount in excess of ₹ 15,000 with prepayment without penalty;
- e) loan to be extended without collateral;
- f) aggregate amount of loans, given for income generation, is not less than 50 per cent of the total loans given by the MFIs;
- g) loan is repayable on weekly, fortnightly or monthly instalments at the choice of the borrower

8. Non-Banking Financial Company – Factors (NBFC-Factors): NBFC-Factor is a non-deposit taking NBFC engaged in the principal business of factoring. The financial assets in the factoring business should constitute at least 50 percent of its total assets and its income derived from factoring business should not be less than 50 percent of its gross income.

9. Mortgage Guarantee Companies (MGC) - MGC are financial institutions for which at least 90% of the business turnover is mortgage guarantee business or at least 90% of the gross income is from mortgage guarantee business and net owned fund is ₹ 100 crore.

10. NBFC- Non-Operative Financial Holding Company (NOFHC) is financial institution through which promoter / promoter groups will be permitted to set up a new bank. It's a wholly-owned Non-Operative Financial Holding Company (NOFHC) which will hold the bank as well as all other financial services companies regulated by RBI or other financial sector regulators, to the extent permissible under the applicable regulatory prescriptions.



SOVEREIGN CREDIT RATING

A sovereign credit rating is an assessment of a country's creditworthiness. It shows the level of risk associated with lending to a particular country since it is applied to all bonds issued by the government.

- When evaluating the creditworthiness of a country, credit rating agencies consider various factors such as the **political environment, economic status, and its creditworthiness** to assign an appropriate credit rating.
- Obtaining a good credit rating is important for a country that wants to access funding for development projects in the international bond market. Also, countries with a good credit rating can attract foreign direct investments.
- The three influential rating agencies include **Moody's Services, Fitch Ratings, and Standard & Poor's**.
- Sovereign credit ratings are important for countries that want to access funds in the international bond market. Usually, a credit rating agency will evaluate a country's economic and political environment at the request of the government and assign a rating stretching from AAA grade to grade D.
- By allowing external credit rating agencies to review its economy, a country shows that it is willing to make its financial information public to investors. A country with high credit ratings can access funds easily from the international bond market and also secure foreign direct investment.
- A low sovereign credit rating means that a country faces a high risk of default and may have experienced difficulties in paying back debts. The level of sovereign credit risk depends on various factors, including a country's debt service ratio, import ratio, growth of domestic money supply, etc.

- Since sovereign credit ratings were introduced in the early 1900s, several countries have defaulted on their international bonds. For example, during the great depression, 21 nations defaulted on their debt obligations in the international bond market. Over the years, more than 70 nations have defaulted on either their domestic or foreign debts.

Determinants of Sovereign Credit Ratings

- Credit rating agencies use both qualitative and quantitative techniques to determine the sovereign credit rating of a country. A 1996 paper published by Richard Cantor and Frank Packer titled “Determinants and Impacts of Sovereign Credit Ratings” outlined various factors that explain the difference in credit ratings assigned by the various rating agencies. The factors include:

1. Per capita income

- Per capita income estimates the income earned per person in a specific area. It is calculated by taking the total income earned by individuals in a given area divided by the number of people residing in that area. A high per capita income increases the potential tax base of the government, which subsequently increases the government’s ability to repay its debts.

2. GDP growth

- The GDP growth rate of a country refers to the percentage growth in the GDP of a country from one quarter to another as the economy navigates a business cycle. Strong GDP growth means that a country will be able to meet its debt obligations since the growth in GDP results in higher tax revenues for the government.
- However, if the growth rate is negative, it means that the economy is experiencing a contraction, and the country may fail to honour its debt obligation if the situation continues.

3. Rate of inflation

- Sovereign debts are susceptible to changes in the rate of inflation, and an increase in inflation will affect a country’s ability to finance its debt. A high inflation rate points to structural problems in a country’s finances, and it is likely to cause political instability as the public becomes dissatisfied with the increasing inflation.

4. External debt

- Some countries rely heavily on external debts to finance their development and infrastructure projects. Increasing debt levels translate to a higher risk of default, which may affect its ability to access funding from international lenders. This burden increases if the foreign currency debts exceed the foreign currency income earned by a country in the form of exports.

5. Economic development

- Credit rating agencies consider the level of development when determining the sovereign credit rating of a country. Usually, once a country has reached a certain level of development or per capita income, it is considered less likely to default on its debt obligations. For example, economically developed nations are considered less likely to default compared to developing countries.

6. History of defaults

- A country that defaulted on its debt obligations in the past is considered to have a high sovereign credit risk by rating agencies. It means that countries with a record of defaults receive low ratings, making them less attractive to investors looking for low-risk investments.



ANTI-DUMPING DUTY

- An anti-dumping duty is a **protectionist tariff** that a domestic government imposes on foreign imports that it believes are priced below fair market value.
- In order to protect their respective economy, many countries impose duties on products they believe are being dumped in their national market; this is done with the rationale that these products have the potential to undercut local businesses and the local economy.
- While the intention of **anti-dumping duties is to save domestic jobs, these tariffs can also lead to higher prices for domestic consumers.**
- In the long-term, anti-dumping duties can reduce the international competition of domestic companies producing similar goods.
- The World Trade Organization (WTO) that deals with the rules of trade between nations also operates a set of international trade rules, including the international regulation of anti-dumping measures.

Role of the WTO in Regulating Anti-Dumping Measures

- The World Trade Organization (WTO) plays a critical role in the regulation of anti-dumping measures. As an international organization, the WTO does not regulate firms accused of engaging in dumping activities, but **it possesses the power to regulate how governments react to dumping activities** in their territories.
- Some government sometimes react harshly to foreign companies engaging in dumping activities by introducing punitive anti-dumping duties on foreign imports, and the WTO may come in to determine if the actions are genuine, or if they go against the WTO free-market principle.
- According to the WTO Anti-Dumping Agreement, **dumping is legal unless it threatens to cause material injury in the importing country domestic market.** Also, the organization prohibits dumping when the action causes material retardation in the domestic market.
- Where dumping occurs, the WTO allows the government of the affected country to take legal action against the dumping country as long as there is evidence of genuine material injury to industries in the domestic market. The government must show that dumping took place, the extent of the dumping in terms of costs, and the injury or threat to cause injury to the domestic market.



ANIMAL HUSBANDRY

- Animal husbandry refers to **livestock raising and selective breeding.** It is the management and care of animals in which the genetic qualities and behaviour of animals are further developed for profit. A large number of farmers depend upon animal husbandry for their livelihood.
- Animals provide us with a variety of food products which have high nutritional values. Therefore, they require a lot of care and attention.
- Animals are bred commercially in order to meet the high demand for food. Dairy products from animals like cows, buffaloes, goats, are rich sources of protein. These animals are called milch animals as they provide us with milk.
- Another set of animals that provide nutrient-rich food are hen, ducks, goose, etc. They provide us with eggs, which again are rich sources of protein.
- Animals like chicken, duck, ox, goat, pigs, etc. are bred for meat. Other than these domestic animals we have other sources of nutrients as well; they are marine animals. The seafood we eat has very high nutrient values. They are sources of a variety of nutrients like fat, proteins, vitamins and minerals.
- The care, breeding, management, etc. of animals are particularly monitored under the department of animal husbandry. Animal husbandry is a large scale business. The animals are bred, cared, reared and sheltered in a farm or region, which are specially built for them. Animal husbandry involves poultry, milk-farms, apiculture (bee agriculture), aquaculture, etc.

Types of Animal Husbandry

Dairy Farming

- Dairy farming is the agricultural technique concerned with the long term production of milk, which is then processed to obtain dairy products such as curd, cheese, yoghurt, butter, cream, etc. It involves the management of dairy animals such as cows, buffaloes, sheep, goat, etc.
- The animals are taken care of against diseases and are inspected regularly by veterinary doctors. A healthy animal is physically, mentally and socially sound.
- These animals are milked by hand or by machines. The milk is preserved and converted into dairy products industrially, which are then used for commercial purposes.

Poultry Farming

- Poultry farming is concerned with raising and breeding of birds for commercial purposes. Birds like ducks, chickens, geese, pigeons, turkeys, etc. are domesticated for eggs and meat.
- It is very important to take care of the animals and maintain them in a disease-free environment to obtain healthy food from them. The eggs and meat are a rich source of protein.
- Sanitation and hygienic conditions need to be maintained. The faeces of birds are used as manure to improve soil fertility. Poultry farming provides employment to a large number of people and helps in improving the economy of the farmers.

Fish Farming

- Fish farming is the process of raising fish in closed tanks or ponds for commercial purposes. There is an increasing demand for fish and fish protein. Fish species such as salmon, catfish, cod, and tilapia are raised in fish farms.

Bee Farming

- Bee farming or apiculture is the practice of maintaining bee colonies by humans in man-made hives. Honey bees are reared on a large scale. The bees are domesticated for honey, wax, and to pollinate flowers. They are also used by other beekeepers for the same purposes. The place where bees are kept is known as an apiary or a bee yard.



FISCAL POLICY

- Fiscal policy in India is the guiding force that helps the government decide how much money it should spend to support the economic activity, and how much revenue it must earn from the system, to keep the wheels of the economy running smoothly.
- In recent times, the importance of fiscal policy has been increasing to achieve economic growth swiftly, both in India and across the world. Attaining rapid economic growth is one of the key goals of fiscal policy formulated by the Government of India. Fiscal policy, along with monetary policy, plays a crucial role in managing a country's economy.
- Through the fiscal policy, the government of a country controls the flow of tax revenues and public expenditure to navigate the economy. If the government receives more revenue than it spends, it runs a surplus, while if it spends more than the tax and non-tax receipts, it runs a deficit. To meet additional expenditures, the government needs to borrow domestically or from overseas. Alternatively, the government may also choose to draw upon its foreign exchange reserves or print additional money.
- For example, during an economic downturn, the government may decide to open up its coffers to spend more on building projects, welfare schemes, providing business incentives, etc. The aim is to help make more of productive money available to the people, free up some cash with the people so that they can

spend it elsewhere, and encourage businesses to make investments. At the same time, the government may also decide to tax businesses and people a little less, thereby earning lesser revenue itself.

Main objectives of Fiscal Policy in India:

- **Economic growth:** Fiscal policy helps maintain the economy's growth rate so that certain economic goals can be achieved.
- **Price stability:** It controls the price level of the country so that when the inflation is too high, prices can be regulated.
- **Full employment:** It aims to achieve full employment, or near full employment, as a tool to recover from low economic activity

What is the difference between fiscal policy and monetary policy?

- The government uses both monetary and fiscal policy to meet the country's economic objectives. The central bank of a country mainly administers monetary policy. In India, the Monetary Policy is under the Reserve Bank of India or RBI. Monetary policy majorly deals with money, currency, and interest rates. On the other hand, under the fiscal policy, the government deals with taxation and spending by the Centre.

Importance of Fiscal Policy in India:

1. In a country like India, fiscal policy plays a key role in **elevating the rate of capital formation** both in the public and private sectors.
2. Through taxation, the fiscal policy **helps mobilise considerable amount of resources for financing** its numerous projects.
3. Fiscal policy also helps in **providing stimulus to elevate the savings rate**.
4. The fiscal policy gives adequate **incentives to the private sector** to expand its activities.
5. Fiscal policy aims to **minimise the imbalance in the dispersal of income and wealth**.



WHOLESALE PRICE INDEX

- Wholesale Price Index, or WPI, measures the changes in the prices of goods sold and traded in bulk by wholesale businesses to other businesses. WPI is unlike the Consumer Price Index (CPI), which tracks the prices of goods and services purchased by consumers.
- To put it simply, the **WPI tracks prices at the factory gate before the retail level**.
- The numbers are released by the **Economic Advisor in the Ministry of Commerce and Industry**. An upward surge in the WPI print indicates inflationary pressure in the economy and vice versa. The quantum of rise in the WPI month-after-month is used to measure the level of wholesale inflation in the economy.

What is the difference between WPI and CPI inflation?

- While WPI keeps track of the wholesale price of goods, the CPI measures the average price that households pay for a basket of different goods and services. Even as the WPI is used as a key measure of inflation in some economies, the RBI no longer uses it for policy purposes, including setting repo rates.
- The **central bank currently uses CPI or retail inflation as a key measure of inflation to set the monetary and credit policy**.

New series of WPI

- With an aim to align the index with the base year of other important economic indicators such as GDP and IIP, the base year was updated to 2011-12 from 2004-05 for the new series of Wholesale Price Index (WPI), effective from April 2017.

How do you calculate Wholesale Price Index?

- The monthly WPI number shows the average price changes of goods usually expressed in ratios or percentages.
- The index is based on the wholesale prices of a few relevant commodities available.
- The commodities are chosen based on their significance in the region. These represent different strata of the economy and are expected to provide a comprehensive WPI value.
- The advanced base year 2011-12 adopted recently uses 697 items.

Major components of WPI

- **Primary articles** are major components of WPI, further subdivided into Food Articles and Non-Food Articles.
 - Food Articles include items such as Cereals, Paddy, Wheat, Pulses, Vegetables, Fruits, Milk, Eggs, Meat & Fish, etc.
 - Non-Food Articles include Oil Seeds, Minerals and Crude Petroleum
- The **next major basket in WPI is Fuel & Power**, which tracks price movements in Petrol, Diesel and LPG
- The **biggest basket is Manufactured Goods**. It spans across a variety of manufactured products such as Textiles, Apparels, Paper, Chemicals, Plastic, Cement, Metals, and more.
- Manufactured Goods basket also includes manufactured food products such as Sugar, Tobacco Products, Vegetable and Animal Oils, and Fats.

WPI Food Index

- WPI has a sub-index called WPI Food Index, which is a **combination of the Food Articles from the Primary Articles basket, and the food products from the Manufactured Products basket.**



RECESSION

- A recession is when the **GDP growth rate of a country is negative for two consecutive quarters or more**. But a recession can be gauged even before the quarterly gross domestic product reports are out based on key economic indicators like manufacturing data, decline in incomes, employment levels etc.
- Although an economy can show signs of weakening months before a recession begins, the process of determining whether a country is in a true recession (or not) often takes time. A recession is short, but its impact can be long-lasting.

Why does recession occur?

- Understanding the sources of recessions has been one of the enduring areas of research in economics. There are a variety of reasons recessions occur. Some are associated with sharp changes in the prices, which lead to steep drop in spending by both the private and public sectors.
- Some recessions, like the 2008 global financial meltdown, are rooted in financial market problems. Sharp increases in asset prices and a rapid expansion of credit often coincide with accumulation of debt. As corporations and households get over-extended and face difficulties in meeting their debt obligations, they reduce investment and consumption, which in turn leads to a decrease in economic activity. Not all such credit booms end up in recessions, but when they do, these recessions are often costlier than others. In some countries with strong export sectors, recessions can be the result of a decline in external demand. Adverse effects of recessions in large countries—such as Germany, Japan, and the United States—are rapidly felt by their regional trading partners, especially during globally synchronized recessions.
- Some recessions are also a result of global shocks like the current coronavirus-triggered lockdowns, which shut down economic activity in many countries.

Impact of a recession

- One of the consequences of recession is **unemployment**, which tends to increase, especially among the low-skilled workers, due to companies and even government agencies laying off staff as a way of curtailing expenses.
 - Another result of recession is **drop in output and business closures**. Fall in output tends to last until weaker companies are driven out of the market, then output picks up again among the surviving firms. With more people out of work, and families increasingly unable to make ends meet, there will be demands for increased government-funded social schemes. With drop in government revenues during recession, it becomes difficult to meet the increased demands on the social sector.
 - The most popular, or most recommended, policy for any country to dig itself out of recession is expansionary fiscal policy, or fiscal stimulus. This can be usually a two-pronged approach – **tax sops and increased government spending**.
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SOCIETY

(Social Issues and Social Justice)

SDG GOAL 1: NO POVERTY

- By 2030, **eradicate extreme poverty** for all people everywhere, currently measured as people living on less than \$1.25 a day.
- By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.
- **Implement nationally appropriate social protection systems** and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable.
- By 2030, ensure that all men and women, in particular the poor and the vulnerable, have **equal rights to economic resources**, as well as **access to basic services, ownership and control over land** and other forms of properties, inheritance, natural resources, appropriate new technology and financial services, including micro-finance.
- By 2030, build the **resilience of the poor and those in vulnerable situations** and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.
- Ensure significant **mobilization of resources** from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions.
- **Create sound policy frameworks** at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions.

SDG GOAL 2: ZERO HUNGER

- By 2030, **end hunger** and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to **safe, nutritious and sufficient food all year round**.
- By 2030, **end all forms of malnutrition**, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons
- By 2030, **double the agricultural productivity and incomes of small-scale food producers**, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment
- By 2030, ensure **sustainable food production systems and implement resilient agricultural practices** that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality
- By 2020, **maintain the genetic diversity** of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed
- **Increase investment**, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed

countriesCorrect and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round

- Adopt measures to ensure the **proper functioning of food commodity markets and their derivatives** and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility.

SDG GOAL 3: GOOD HEALTH AND WELL-BEING

- By 2030, reduce the **global maternal mortality ratio to less than 70 per 100,000 live births**.
- By 2030, **end preventable deaths of newborns and children under 5 years of age**, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births
- By 2030, **end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases** and combat hepatitis, water-borne diseases and other communicable diseases
- By 2030, **reduce by one third premature mortality from non-communicable diseases** through prevention and treatment and promote mental health and well-being
- Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol
- By 2020, **halve the number of global deaths and injuries** from road traffic accidents.
- By 2030, ensure **universal access to sexual and reproductive health-care services**, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes
- **Achieve universal health coverage**, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all
- By 2030, substantially **reduce the number of deaths and illnesses from hazardous chemicals** and air, water and soil pollution and contamination
- **Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control** in all countries, as appropriate
- **Support the research and development of vaccines and medicines** for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all
- Substantially **increase health financing** and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States
- **Strengthen the capacity of all countries**, in particular developing countries, for early warning, risk reduction and management of national and global health risks.

SDG GOAL 4: QUALITY EDUCATION

- By 2030, **ensure that all girls and boys complete free, equitable and quality primary and secondary education** leading to relevant and Goal-4 effective learning outcomes
- By 2030, ensure that all girls and boys have **access to quality early childhood development**, care and preprimary education so that they are ready for primary education
- By 2030, ensure equal access for all women and men to **affordable and quality technical, vocational and tertiary education, including university**

- By 2030, **substantially increase the number of youth and adults who have relevant skills**, including technical and vocational skills, for employment, decent jobs and entrepreneurship
- By 2030, **eliminate gender disparities in education** and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations
- By 2030, ensure that **all youth and a substantial proportion of adults**, both men and women, achieve literacy and numeracy.
- By 2030, ensure that **all learners acquire the knowledge and skills needed** to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development
- **Build and upgrade education facilities** that are child, disability and gender sensitive and provide safe, nonviolent, inclusive and effective learning environments for all
- By 2020, substantially **expand globally the number of scholarships** available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries
- By 2030, substantially **increase the supply of qualified teachers**, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states.

SDG GOAL 5: GENDER EQUALITY

- **End all forms of discrimination** against all women and girls everywhere
- **Eliminate all forms of violence** against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation
- **Eliminate all harmful practices**, such as child, early and forced marriage and female genital mutilation
- **Recognize and value unpaid care and domestic work** through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate
- Ensure **women's full and effective participation and equal opportunities for leadership** at all levels of decision making in political, economic and public life.
- Ensure **universal access to sexual and reproductive health and reproductive rights** as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the **Beijing Platform for Action** and the outcome documents of their review conferences
- Undertake reforms to **give women equal rights to economic resources**, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws
- Enhance the **use of enabling technology**, in particular information and communications technology, to promote the empowerment of women
- Adopt and strengthen **sound policies and enforceable legislation for the promotion of gender equality** and the empowerment of all women and girls at all levels.

SDG GOAL 6: CLEAN WATER AND SANITATION

- By 2030, achieve **universal and equitable access to safe and affordable drinking water** for all.
- By 2030, achieve **access to adequate and equitable sanitation and hygiene for all** and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

- By 2030, **improve water quality by reducing pollution**, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
- By 2030, **substantially increase water-use efficiency** across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
- By 2030, **implement integrated water resources management at all levels**, including through transboundary cooperation as appropriate
- By 2020, **protect and restore water-related ecosystems**, including mountains, forests, wetlands, rivers, aquifers and lakes
- By 2030, **expand international cooperation and capacity-building support to developing countries** in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
- **Support and strengthen the participation of local communities** in improving water and sanitation management



SOCIAL JUSTICE

Social justice refers to a political and philosophical theory that focuses on the concept of fairness in relations between individuals in society and equal access to wealth, opportunities, and social privileges. Other definitions are:

- *"Social justice may be broadly understood as the fair and compassionate distribution of the fruits of economic growth."*
- *"Social justice is the view that everyone deserves equal economic, political and social rights and opportunities. Social workers aim to open the doors of access and opportunity for everyone, particularly those in greatest need."*
- *"Social justice encompasses economic justice. Social justice is the virtue which guides us in creating those organized human interactions we call institutions. In turn, social institutions, when justly organized, provide us with access to what is good for the person, both individually and in our associations with others. Social justice also imposes on each of us a personal responsibility to work with others to design and continually perfect our institutions as tools for personal and social development."*

History and Evolution of Social Justice

- The concept of social justice first arose in the **19th century during the Industrial Revolution** as attempts were made to promote more egalitarian societies and reduce the exploitation of certain marginalized groups due to the vast disparity between the rich and poor at the time.
- Social justice initially focused on issues such as the **distribution of capital, property, and wealth** due to the extreme levels of inequality and economic distress prevalent at the time, resulting from the European social class structure.
- Today, social justice has shifted towards a **stronger emphasis on human rights and improving the lives of disadvantaged and marginalized groups** that have historically faced discrimination in society. Many of these groups have been discriminated against on the basis of factors such as sex, age, wealth, ethnicity, heritage, social status, religion, and others. Social justice often leads to efforts to redistribute wealth to some of the underprivileged groups through providing income, jobs, and education support and opportunities.

Five Principles of Social Justice: There are five main principles of social justice that are paramount to understanding the concept better. Namely, these are access to resources, equity, participation, diversity, and human rights.

1. Access to Resources

- **Access to resources is an important principle of social justice** and refers to the extent to which different socioeconomic groups receive equal access to give everyone an equal start in life. Many societies offer a multitude of resources and services for their citizens, such as healthcare, food, shelter, education, and recreational opportunities, but there often exists unequal access to such services.
- For example, individuals from wealthy households among the upper and upper-middle classes are often better able to afford to attend good schools and access post-secondary education, which leads to a greater chance of obtaining jobs with higher income in the future, while those from the lower classes face fewer opportunities. It, in turn, limits access to education for future generations and continues the cycle of facing disadvantages.

2. Equity

- Equity refers to how individuals are given tools specific to their needs and socioeconomic status in order to move towards similar outcomes. It contrasts with equality, where everyone is offered the same tools to move towards the same outcome.
- As such, often, things that are equal are not equitable due to the more advanced needs of some individuals and groups. Social justice, integrated with addressing equity issues, might include advancing policies that provide support to overcome systemic barriers.

3. Participation

- Participation refers to how everyone in society is given a voice and opportunity to verbalize their opinions and concerns and have a role in any decision-making that affects their livelihood and standard of living.
- Social injustice occurs when a small group of individuals makes decisions for a large group, while some people are unable to voice their opinions.

4. Diversity

- Understanding diversity and appreciating the value of cultural differences are especially important because policymakers are often better able to construct policies that take into consideration differences that exist among different societal groups. It is important to recognize that some groups face more barriers in society, and by considering the inequities, policymakers and civil servants will be in a stronger position to expand opportunities for marginalized or disadvantaged groups.

- Discrimination in employment on the basis of factors, such as race, gender, ethnicity, sex, age, and other characteristics are constant issues in society, and enforcing policies to countermand discriminatory practices are one way in which diversity is taken into consideration.

5. Human Rights

- Human rights are one of the most important principles of social justice and form a foundational part of the concept. Human rights and social justice are certainly interrelated, and it is impossible for one to exist without the other.
- Human rights are fundamental to societies that respect the civil, economic, political, cultural, and legal rights of individuals and governments, organizations, and individuals must be held responsible if they fail to ensure the upholding of these rights. They are extremely important in many societies and are recognized internationally through institutions, such as the International Criminal Court and the United Nations Human Rights Council.



ONE NATION ONE RATION CARD

- One Nation One ration card (ONORC) will help in providing grains, rice and wheat flour at subsidised rates for the **economically weaker section of the nation**.
- With this conversion of a regular ration card to the One Ration Card, all beneficiaries and cardholders can purchase subsidised food from any Public Distribution Shop all over the country.
- This ration card has been launched in all states and Union Territories in the country and 20 states have already agreed to implement this scheme in their state.

Purpose of the One Nation One Ration Card

- In the country, around 80 crore beneficiaries are entitled to receive subsidised food and grain under the National Food Security Act 2013. However, for the 80 crore beneficiaries, only 23 crore ration cards have been issued in all the states and Union Territories of the country.
- Previously, with the ration card, a beneficiary could only purchase subsidised food and grain from the PDS (Public Distribution System) which was assigned to them in their locality. Due to this, there have been many issues faced by the migrants who shift to other cities for work. However, by converting their existing ration card to ONORC, he or she can purchase subsidised food from any FPS shop in any locality and in any city.

Benefits of the One Nation One Ration Card

- ONORC has been in the works since April 2018. The conversion of the regular ration card to the One Nation One Ration Card is expected for all beneficiaries in all states and Union Territories by 2021.
- The major benefit of the One Nation One Ration Card is that the people who are eligible to receive subsidised food grain can do so from any FPS shop in any city. With many of the people migrating to different cities and the previous inability to purchase food grain in any other city, the One Ration card can help the livelihood of migrant workers all over the country.

Some of the other benefits of the ONORC are:

- Under the ONORC, all the beneficiaries from one state can get their share of rations in other states where the ration card was originally issued. Any recipient can use their ration cards at any PDS shop across the country. ONORC is aimed at providing universal access to PDS food grains for migrant workers.
- Apart from this, ONORC will also give the beneficiaries the opportunity to choose their own dealer. With many cases of misallocation, the beneficiary can switch to another FPS shop instantly, if there is any case of foul play.
- This scheme will be beneficial for women and other groups, since social identity and other contextual factors will provide them with a strong backdrop in accessing PDS.

- The ONORC will also help achieve the target set under **SDG 2: Ending hunger by 2030**. It also aims to address the poor state of hunger in India, where India has been ranked 102 out of 117 countries in the Global Hunger Index.
- The procedure of portability of ration cards to One Ration Card.
- According to the Finance Minister, the portability procedure of the ration card to the One Ration card is aimed to be done on intra-state as well as an inter-state basis. The portability of the ration cards inter-state as well as intra-state will be done online through various portals assigned for the same.
- The Integrated Management of Public Distribution System (IMPDS) will provide the technology platform for the portability of inter-state ration cards. This will enable migrant workers to purchase food grains from any FPS across the country. The **Annavitran portal** will be the other website which will contain the information and data for the distribution of food through the E-POS system and devices within the state.
- The Annavitran portal will help the families of the migrant workers and migrants themselves to avail the benefits of the Public Distribution System within their state but outside their district as well. The migrant worker can buy his or her share of food grain as per their entitlement under the National Food Security Act, the family of the migrant workers can avail subsidised food grain from their ration dealer in their hometown.



GENDER BUDGETING

- GB is concerned with **gender sensitive** formulation of legislation, programmes and schemes; allocation of resources; implementation and execution; audit and impact assessment of programmes and schemes; and follow-up corrective action to address gender disparities.
- A powerful tool for achieving gender mainstreaming so as to ensure that benefits of development reach women as much as men.
- Does not seek to create a separate budget but **seeks affirmative action to address specific needs of women**.
- Monitors expenditure and public service delivery from a gender perspective.
- Entails dissection of the Government budgets to establish its gender differential impacts and to ensure that gender commitments are translated in to budgetary commitments.

The Five-Step Framework for Gender Budgeting

1. **Step 1:** An analysis of the situation for women and men and girls and boys (and the different sub-groups) in a given sector.
2. **Step 2:** An assessment of the extent to which the sector's policy addresses the gender issues and gaps described in the first step.
3. **Step 3:** An assessment of the adequacy of budget allocations to implement the gender-sensitive policies and programmes identified in step 2.
4. **Step 4:** Monitoring whether the money was spent as planned, what was delivered and to whom.
5. **Step 5:** An assessment of the impact of the policy/ programme/scheme and the extent to which the situation described in step 1 has changed.

Rationale Behind Gender Budgeting

- According to the 2011 census, women account for 48 per cent of the total population of the country.
- Women face disparities in access to and control over services and resources.
- Bulk of the public expenditure and policy concerns are in "gender neutral sectors".
- Implications on women in the above sectors are not recognised or identified.
- Gender responsive budgets policies can contribute to achieving the objectives of gender equality, human development and economic efficiency.

Gender Budgeting in India

- Gender Budget Statement (GBS) was first introduced in the **Indian Budget in 2005-06**. This GB Statement comprises two parts–

1. **Part A** reflects Women Specific Schemes, i.e. those which have 100% allocation for women.
2. **Part B** reflects Pro Women Schemes, i.e. those where at least 30% of the allocation is for women.

- India's gender budgeting efforts stand out globally because they have not only influenced expenditure but also revenue policies (like differential rates for men and women in property tax rates and reconsideration of income tax structure) and have extended to state government levels.
- Gender budgeting efforts in India have encompassed four sequential phases: **(i) knowledge building and networking, (ii) institutionalizing the process, (iii) capacity building, and (iv) enhancing accountability.**
- Gender budgeting in India is not confined to an accounting exercise. The gender budgeting framework has helped the gender-neutral ministries to design new programs for women.
- Gender Budgeting Cells (GBC) as an institutional mechanism have been mandated to be set up in all Ministries/Departments.
- GBCs conduct gender based impact analysis, beneficiary needs assessment and beneficiary incidence analysis to identify scope for re-prioritization of public expenditure and improve implementation etc.

Shortcomings

- Not only has the magnitude of the gender budget as a proportion of the total expenditure of the Union Budget decreased, the budgetary allocations for promoting gender equality and women's empowerment have also shown a decline.
- There are only a few "big budget" women exclusive schemes of the Ministry of Women and Child Development (MWCD) like the Nirbhaya Fund and the Beti Bachao Beti Padhao campaign.
- Lack of dedicated human resources to implement the interventions identified by the GBCs.
- Monitoring remains one of the weakest links in the GRB work with no designated mechanism for monitoring it at the national level.
- Assumptions behind reporting allocations under Part B of the GBS remain questionable.

Way Forward

- An assessment of gender responsive budgeting in India reveals a mixed picture.
- There are number of positive developments, such as changes in select planning and budgeting processes and creation of gender budget cells.
- However, restricted reach of GB and stagnant or even declining allocations for the gender agenda are stumbling blocks.
- The adoption of the GB should be accompanied by multifaceted and interrelated improvements to budgets in general and the gender sensitivity of budgets.
- There needs to be shift from mere "reporting" of gender allocations to "purposive planning" with wider participation of women.



ASPIRATIONAL DISTRICTS' PROGRAMME

- Aspirational Districts are those districts in India, that are **affected by poor socio-economic indicators.**
- These are aspirational in the context, that **improvement in these districts can lead to the overall improvement in human development in India.**
- The 115 districts were identified from 28 states, at least one from each state.
- At the Government of India level, the programme is anchored by NITI Aayog. In addition, individual Ministries have assumed responsibility to drive the progress of districts.
- The objective of the program is to **monitor the real-time progress of aspirational districts.**

- ADP is based on **49 indicators** from the 5 identified thematic areas, which focuses closely on improving people's **Health & Nutrition, Education, Agriculture & Water Resources, Financial Inclusion & Skill Development, and Basic Infrastructure**.
- With States as the main drivers, ADP seeks to focus on the strength of each district, identify low-hanging fruits for immediate improvement, measure progress, and rank districts.
- The broad contours of the programme are:
 - **Convergence** (of Central & State Schemes) which brings together the horizontal and vertical tiers of the government.
 - **Collaboration** (of Central, State level 'Prabhari' Officers & District Collectors) which enables impactful partnerships between government, market and civil society.
 - **Competition** among districts driven by a spirit of the mass movement, it fosters accountability on district governments.
- The Aspirational Districts Programme (ADP) is one of the largest experiments on outcomes-focused governance in the world.

Impact of ADP

- **Decentralization of Development:** ADP focuses on outcomes, that enables local experimentation based on a firm appreciation of ground realities.
- **Inclusive approach:** The delta ranking of the Aspirational Districts combines the innovative use of data with pragmatic administration, keeping the district at the locus of inclusive development.
- Through ADP government seeks to uplift those districts which have shown relatively lesser progress in achieving key social outcomes.
- **Improved Implementation:** Spurred by competition based on outcomes, local governments target their efforts and improve programme implementation and design.
- For Example, Health outcomes in ADP saw an increase in registering pregnant women into the health system, institutional delivery of babies and anti-diarrheal treatment, etc.

Challenges Associated with ADP

- ADP is affected by the issue pertaining to insufficient budgetary resources.
- ADP is implemented by multiple ministries which leads to a lack of coordination.
- Data High-quality administrative data is critical to improving programme implementation and design at the local level.
- The Delta ranking itself is largely focused on assessing quantity (that is, coverage of access) rather than quality.
- On-time delivery of textbooks in schools are part of the ranking index, However, textbook delivery may or may not be a problem in districts.
- Also, the quality of education in India is in a dismal condition, as highlighted by the ASER report.

Way Forward

- A more simplified ranking index is needed with few but carefully chosen output and outcome measures which can more clearly signal national development targets.
- Financial autonomy to local governments should be provided.
- Independent surveys can be used to validate administrative data; this will help improve data quality.
- Building each district's internal capacity to produce reliable and actionable data, and promoting a culture of data use, can be made a priority for the ADP.

SECURITY

(Internal and External)



UNITED NATIONS SECURITY COUNCIL

- UNSC primary responsibility is the **maintenance of international peace and security.**
- The Security Council originally consisted of 11 members—five permanent members (the Republic of China [Taiwan], France, the Soviet Union, the United Kingdom, and the United States) and six nonpermanent members elected by the UN General Assembly for two-year terms. An amendment to the UN Charter in **1965 increased council membership to 15**, including the **original five permanent members and 10 nonpermanent members.**
- Among the permanent members, the People's Republic of China replaced the Republic of China in 1971, and the Russian Federation succeeded the Soviet Union in 1991.
- The nonpermanent members are generally chosen to achieve equitable representation among geographic regions, with five members coming from Africa or Asia, one from eastern Europe, two from Latin America, and two from western Europe or other areas. Five of the 10 nonpermanent members are elected each year by the General Assembly for two-year terms, and five retire each year. The presidency is held by each member in rotation for a period of one month.
- **Each member has one vote.** On all “procedural” matters—the definition of which is sometimes in dispute—decisions by the council are made by an affirmative vote of any nine of its members.
- **Substantive matters**, such as the investigation of a dispute or the application of sanctions, also require **nine affirmative votes**, including those of the five permanent members holding veto power. In practice, however, a permanent member may abstain without impairing the validity of the decision. A vote on whether a matter is procedural or substantive is itself a substantive question. Because the Security Council is required to function continuously, each member is represented at all times at the United Nations headquarters in New York City.
- The composition of the Security Council has been a contentious matter, particularly since the end of the Cold War. Critics have argued that the Security Council and its five permanent members reflect the power structure that existed at the end of World War II, when much of the world was under colonial rule. Reform efforts have remained elusive but have centered on efforts to make the work of the Security Council more transparent and on demands by important non-permanent members, such as **Brazil, Germany, India, and Japan (the so-called G-4)**, to **obtain permanent membership**—or at least have special status within the Security Council. One proposal put forward by the G-4 countries was to increase the membership of the Security Council to 25 seats by adding six new permanent members, including one each for themselves and two for Africa.



- Any state—even if it is not a member of the UN—may bring a dispute to which it is a party to the attention of the Security Council. When there is a complaint, the council first explores the possibility of a peaceful resolution. International peacekeeping forces may be authorized to keep warring parties apart pending further negotiations (see United Nations Peacekeeping Forces). If the council finds that there is a real threat to the peace, a breach of the peace, or an act of aggression (**as defined by Article 39 of the UN Charter**), it may call upon UN members to apply diplomatic or economic sanctions. If these methods prove inadequate, the UN Charter allows the Security Council to take military action against the offending nation.
- In addition to several standing and ad hoc committees, the work of the council is facilitated by the Military Staff Committee, Sanctions Committees for each of the states under sanctions, Peacekeeping Forces Committees, and an International Tribunals Committee.

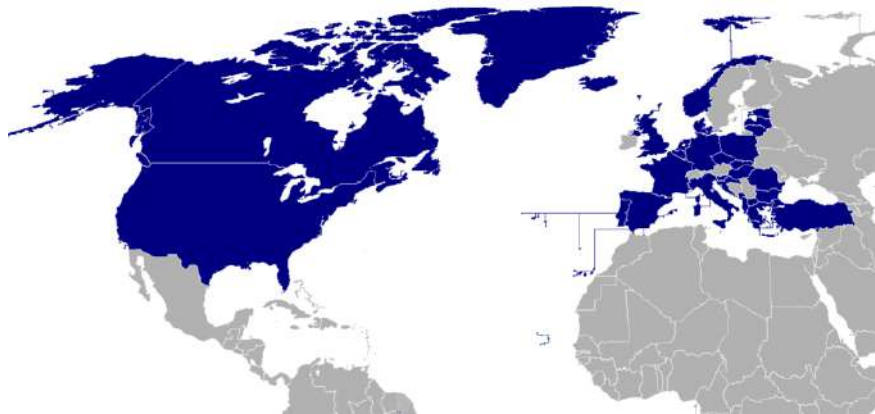


NORTH ATLANTIC TREATY ORGANIZATION

- North Atlantic Treaty Organization (NATO) is a military alliance that was established by the **North Atlantic Treaty (also called the Washington Treaty) of April 4, 1949**.
- It sought to create a counterweight to Soviet armies stationed in central and eastern Europe after World War II.
- At present, NATO has **30 members**. In 1949, there were 12 founding members of the Alliance: Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom and the United States. The other member countries are: Greece and Turkey (1952), Germany (1955), Spain (1982), the Czech Republic, Hungary and Poland (1999), Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia and Slovenia (2004), Albania and Croatia (2009), Montenegro (2017) and North Macedonia (2020).

Historical Background

- After World War II in 1945, western Europe was economically exhausted and militarily weak (the western Allies had rapidly and drastically reduced their armies at the end of the war), and newly powerful communist parties had arisen in France and Italy.
- By contrast, the Soviet Union had emerged from the war with its armies dominating all the states of central and eastern Europe, and by 1948 communists under Moscow's sponsorship had consolidated their control of the governments of those countries and suppressed all non-communist political activity. What became known as the **Iron Curtain**, a term popularized by Winston Churchill, had descended over central and eastern Europe. Further, wartime cooperation between the western Allies and the Soviets had completely broken down. Each side was organizing its own sector of occupied Germany, so that two German states would emerge, a democratic one in the west and a communist one in the east.
- In **1948**, the United States launched the **Marshall Plan**, which infused massive amounts of economic aid to the countries of western and southern Europe on the condition that they cooperate with each other and engage in joint planning to hasten their mutual recovery. As for military recovery, under the **Brussels Treaty** of 1948, the United Kingdom, France, and the Low Countries—Belgium, the Netherlands, and Luxembourg—concluded a collective-defense agreement called the **Western European Union**. It was soon



recognized, however, that a more formidable alliance would be required to provide an adequate military counterweight to the Soviets.

- By this time Britain, Canada, and the United States had already engaged in secret exploratory talks on security arrangements that would serve as an alternative to the United Nations (UN), which was becoming paralyzed by the rapidly emerging Cold War. In March 1948, following a virtual communist coup d'état in Czechoslovakia in February, the three governments began discussions on a multilateral collective-defense scheme that would enhance Western security and promote democratic values. These discussions were eventually joined by France, the Low Countries, and Norway and in April 1949 resulted in the **North Atlantic Treaty**.

Article 5 of the North Atlantic Treaty

- *an armed attack against one or more of them in Europe or North America shall be considered an attack against them all; and consequently they agree that, if such an armed attack occurs, each of them, in exercise of the right of individual or collective self-defense recognized by Article 51 of the Charter of the United Nations, will assist the Party or Parties so attacked by taking forthwith, individually and in concert with the other Parties, such action as it deems necessary, including the use of armed force, to restore and maintain the security of the North Atlantic area.*
- NATO invoked Article 5 for the first time in 2001, after the September 11 attacks on World Trade Center in New York City

Article 6 of the North Atlantic Treaty

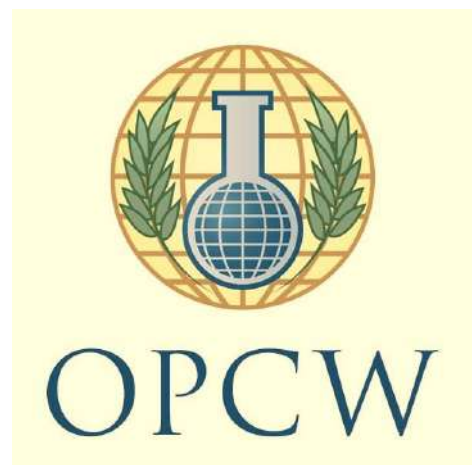
- *defines the geographic scope of the treaty as covering "an armed attack on the territory of any of the Parties in Europe or North America." Other articles commit the allies to strengthening their democratic institutions, to building their collective military capability, to consulting each other, and to remaining open to inviting other European states to join.*



OPCW

- Organisation for the Prohibition of Chemical Weapons (OPCW), international organization **established by the Chemical Weapons Convention (adopted 1992, entered into force 1997)** to implement and enforce the terms of the international treaty, which prohibits the use, stockpiling, or transfer of chemical weapons by signatory states.
- The OPCW was awarded the Nobel Peace Prize in 2013.
- When the convention entered into force in 1997, the OPCW was formally established as an autonomous and independent organization working toward a world free of chemical weapons. According to the OPCW website, the Chemical Weapons Convention prohibits the "development, production, acquisition, stockpiling, retention, transfer, or use of chemical weapons" and has four key provisions:

- Destroying all existing chemical weapons under international verification by the OPCW;
- Monitoring the chemical industry to prevent new weapons from re-emerging;
- Providing assistance and protection to members of the convention against chemical threats; and
- Fostering international cooperation to strengthen implementation of the convention and promote the peaceful use of chemistry.



- Based in The Hague, Netherlands, 192 Member States have joined the OPCW, representing about 98% of the world's population, as well as 98% of the global chemical industry.
- The OPCW has an official working relationship with the United Nations to foster cooperation on matters of mutual concern.
- The OPCW's work involves a number of activities, including supporting and verifying the destruction of chemical weapons, inspecting facilities that formerly produced chemical weapons, and investigating allegations of the use of chemical weapons.
- The OPCW also plays an important role in strengthening international security by creating tools and methods for defining and detecting chemical weapon agents, as well as monitoring emerging technologies of potential concern.
- Since the creation of the OPCW more than two decades ago, approximately 96% of state-declared chemical weapon stockpiles around the world have been destroyed.



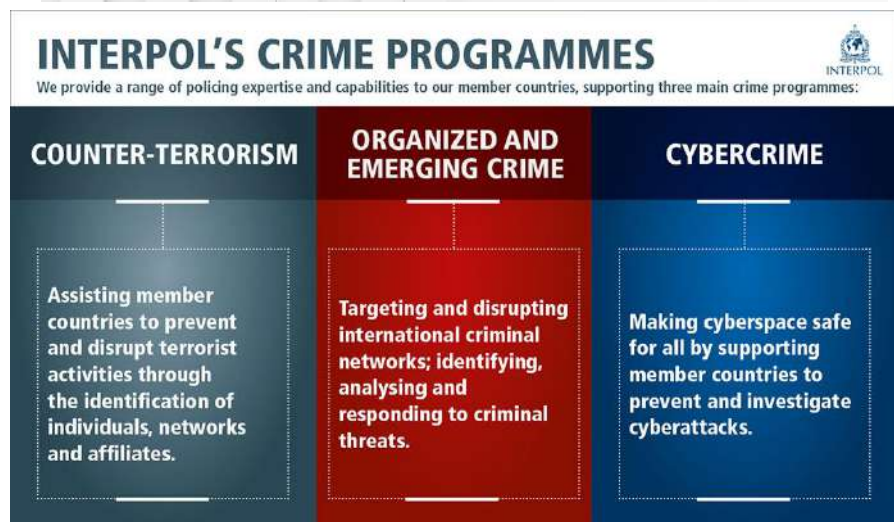
INTERPOL

- International Criminal Police Organization is an inter-governmental organization. It has 194 member countries, and it helps police in all of them to work together to make the world a safer place.
- To do this, it enables them to share and access data on crimes and criminals, and offers a range of technical and operational support.
- The General Secretariat



coordinates day-to-day activities to fight a range of crimes. Run by the Secretary General, it is staffed by both police and civilians and comprises a headquarters in Lyon, a global complex for innovation in Singapore and several satellite offices in different regions.

- In each country, an INTERPOL National Central Bureau (NCB) provides the central point of contact for the General Secretariat and other NCBs. An NCB is run by national police officials and usually sits in the government ministry responsible for policing. In India, the NCB is CBI.
- The General Assembly is the governing body and it brings all countries together once a year to take decisions.
- **Headquarters:** Lyon, France

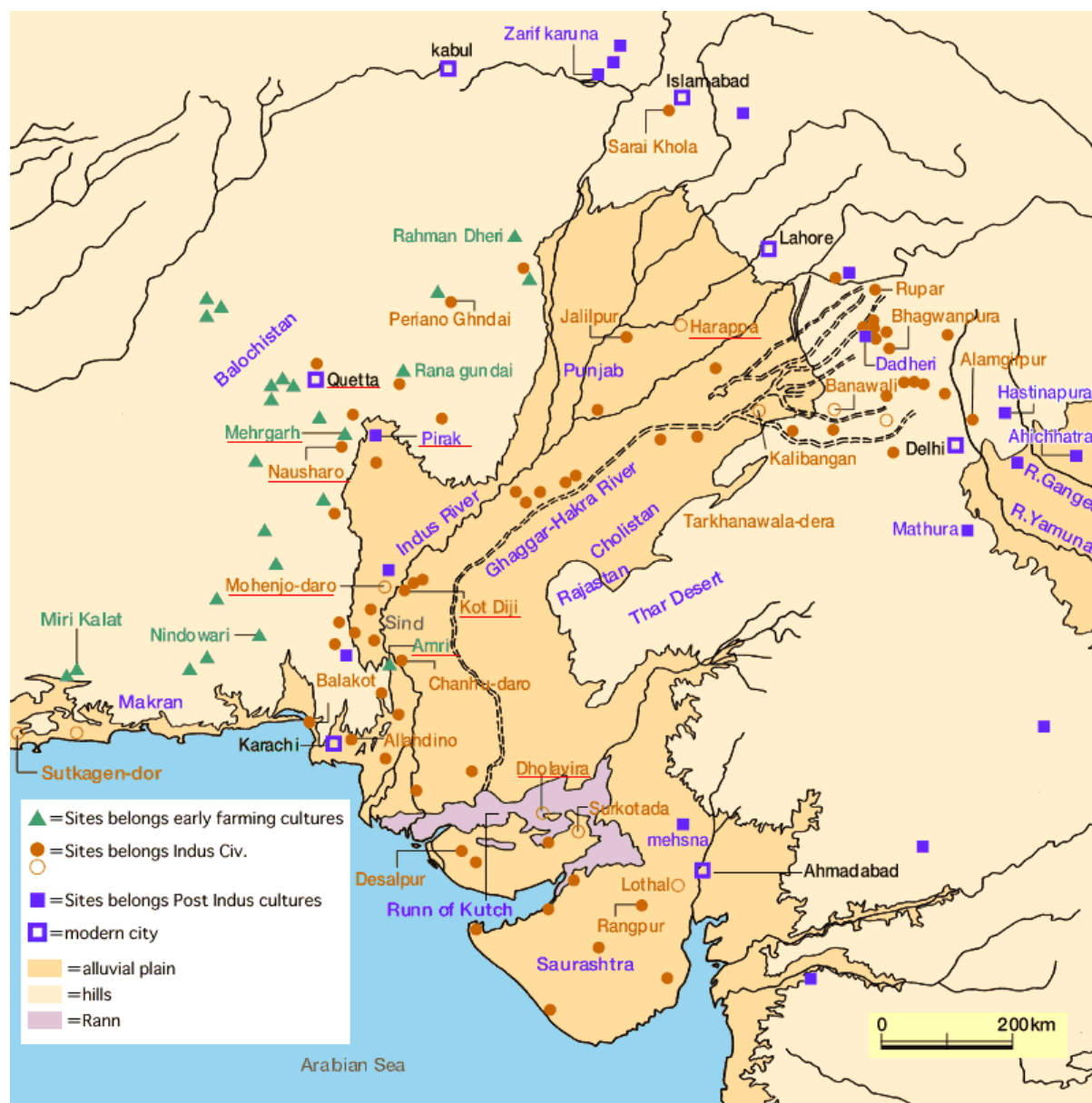


HISTORY AND CULTURE

(Ancient; Medieval and Modern)



INDUS VALLEY CIVILISATION SITES



Site	Location	River	Findings
Harappa	Punjab-Pakistan	Ravi	Fortified wall , R-37 cemetery, Copper Chariot with canopy, Evidence of pre-Harappan to mature Harappan stage, Workmen's quarter , Copper specimen of bullock cart
Mohenjo-daro	Sindh-Pakistan	Indus	Great Granary, A small fragment of cotton, Bronze dancing girl, Well known for the Great Bath

Kalibangan	Rajasthan	Ghaggar	Mud-brick fortification , Evidence of earliest datable earthquake, Discovery of a plough field
Chanhu-Daro	Sindh-Pakistan	Indus	A manufacturing site during the Harappan period
Banawali	Haryana	Saraswati	Pre -Harappan and Harappan sites, Remain of streets and drains
Suktagendor	Baluchistan	Dasht	Trade point between Harappa and Babylon situated on natural rock
Lothal	Gujarat	Bhogawa	A coastal site, Dockyard built with brick, Pottery with the painting of 'clever fox'
Surkotada	Gujarat	--	Flourishing urban centers, Fossils remain of horses
Rangpur	Gujarat	Bhandar	Plant remains (rice, millets and possibly bajara)
Rakhigarhi	Haryana	--	Well planned city
Dholavira	Gujarat	--	Unique water management, Largest Harappan inscription, use of fire-altars



EDICTS OF ASOKA

- The Edicts of Ashoka are **33 inscriptions** engraved on pillars, large stones, and cave walls by Ashoka the Great (268-232 BCE), the third king of the Mauryan Empire (322-185 BCE) of India.
- One set, the so-called **Major Rock Edicts**, are consistent in their message that the people should adhere to the concept of Dhamma, defined as “right behavior”, “good conduct” and “decency toward others”.
- The edicts were inscribed throughout Ashoka's realm which included the areas of modern-day Afghanistan, Bangladesh, India, Nepal, and Pakistan and most were written in **Brahmi Script** (though one, in Afghanistan, is also given in Aramaic and Greek). The edicts are comprised of:

- Minor Rock Edicts
 - Minor Pillar Edicts
 - Major Rock Edicts
 - Major Pillar Edicts.
- It is thought there were originally many Pillar Edicts (each between 40 and 50 feet high and weighing up to 50 tons each). These were topped with capitals of lions (facing in four directions), bulls, and horses.
- The four-facing lion capital was adopted as the national emblem of India following its independence in 1947.
- The **Minor Rock Edicts and Minor Pillar Edicts deal with Ashoka's early reign**, the **Major Pillar Edicts treat the end of his reign**, while the **Major Rock Edicts address Ashoka's vision of peaceful existence** through Dhamma.
- The Major Rock Edicts are the most famous of them all and include Edict 13 which describes the dramatic turning point in Ashoka's life following the Kalinga War.
- The purpose of the edicts was not only to instruct the people in Dhamma but to show Ashoka's contrition over his earlier behavior and his commitment to peace through Buddhist principles.
- After his conversion to Buddhism, Ashoka lived his faith, encouraged others to live theirs – whatever form their belief took – and sent missionaries to other countries (such as China, Greece, Sri Lanka, and Thailand) to peacefully introduce people to Buddhist concepts.

- In doing so, Ashoka transformed the minor philosophical-religious sect of Buddhism into a world religion.
- Ashoka's empire fell not even 50 years after his death, and his edicts were forgotten afterwards.
- The pillars fell and were buried, and the Brahmi Script of the rock edicts had been neglected so that, finally, they could no longer be read. It was not until the 19th century CE that the British scholar and orientalist **James Prinsep** (1799-1840 CE) deciphered the script, identified Ashoka as the king referenced as **Devanampiya Piyadassi** ("Beloved of the Gods" and "Gracious of Mien") in the edicts, and brought the king's remarkable story to light.



INDO-GREEKS

- After the decline of the Mauryas, northern India was split into several kingdoms. In the Magadha region, the **Sungas** came to power in about 185 BC. After that, the **Kanvas** came to power who were defeated by the **Satavahanas** originally from the Deccan. Northwest India was constantly under attack from powers in

Central Asia and northwest. The **Indo-Greek or the Graeco-Indian Kingdom** has established around 180 BC when the Graeco-Bactrian king Demetrius invaded the Indian subcontinent.

Indo-Greeks: Initial presence

- After Alexander invaded the northwest part of the subcontinent, one of his generals, **Seleucus Nicator**, founded the Seleucid Empire.
- In Seleucus's conflict with the mighty Chandragupta Maurya, he ceded large parts to the west of the Indus, including the Hindu Kush, present-day Afghanistan and Balochistan to the Mauryan king.
- After this, **Megasthenes** was sent to reside at Chandragupta Maurya's court. Other Greek residents at Mauryan courts were **Deimachus** and **Dionysius**.
- Greek populations lived in the north-western part of the Mauryan Empire as evident from Ashoka's edicts.
- **Mauryas also had departments to take care of foreigners** like Yavanas (Greeks) and Persians.
- In ancient Indian sources, **Greeks were called Yavanas (Sanskrit) and Yonas (Pali)**.

Indo-Greek Kingdom

- The Indo-Greek kingdom was ruled by over 30 Hellenistic (Greek) kings in the northwest and north India from the 2nd century BC to the beginning of the first century AD.
- The kingdom started when **Graeco-Bactrian king Demetrius (son of Euthydemus I)** invaded India around 180 BC. He conquered southern Afghanistan and parts of Punjab.
- The Indo-Greek kings imbibed Indian culture and became political entities with a mix of Greek and Indian culture.
- For about 25 years, the Indo-Greek kingdoms were under the **Euthydemid rule**.
- Many coins have been unearthed of these kings and most of the information we get about them is from these coins. Coins have been found with Indian and Greek inscriptions. Many coins have been found with images of Indian deities also. The Indo-Greek kings did this to perhaps placate the population most of whom were not Greeks.
- The civil wars among the many Bactrian kings after the death of Demetrius facilitated the independent kingdom of **Apollodotus I** who, in this way, can be regarded as the first proper Indo-Greek king (whose rule was not from Bactria).
- His kingdom included Gandhara and western Punjab.
- Most of the Indo-Greek kings were Buddhists and Buddhism flourished under their rule.
- Greek influence is mostly seen in art and sculpture, particularly the **Gandhara School of art**.

Indo-Greek Rulers – Menander I (165 BCE- 145 BCE)

- Menander I Soter was also known as Minedra, Minadra, or Milinda (in Pali).
- He was initially a king of Bactria. His empire extended from Kabul river valley in the west to the Ravi River in the east, and from Swat valley in the north to Arachosia (Helmand in Afghanistan).
- According to some Indian sources, he went as far as Rajasthan and Pataliputra.
- He converted to Buddhism and patronised the faith.
- He died in 130 BC and was succeeded by his son Strato I.
- The Milinda Panha (composed around 100 BC) records a dialogue between Milinda and the Buddhist sage Nagasena. Originally written in Sanskrit, only the Pali version is available now. In the work, Milinda is described as a wise, learned, and able king. At the end of it, Milinda accepts Buddhism and converts.

Coins of Indo-Greeks

- Coins circulated to the north of Hindu Kush region during the rule of Indo-Greeks.
- There was gold, silver, copper and nickel coins.
- The coins had Greek legends.

- The Indo-Greek coins had royal portraits on the obverse and greek deities (Zeus, Apollo, and Athena) on the reverse.
- Coins circulated to the south of Hindu Kush region during the rule of Indo-Greeks.
- There were silver and copper coins (mostly in square shape).
- Indian weight standards were followed in the making of these coins.
- They had bilingual inscriptions – Greek and Kharoshthi.
- On the obverse of the coin, royal portraits were present and on the reverse, religious symbols (mostly Indian in inspiration) were present.

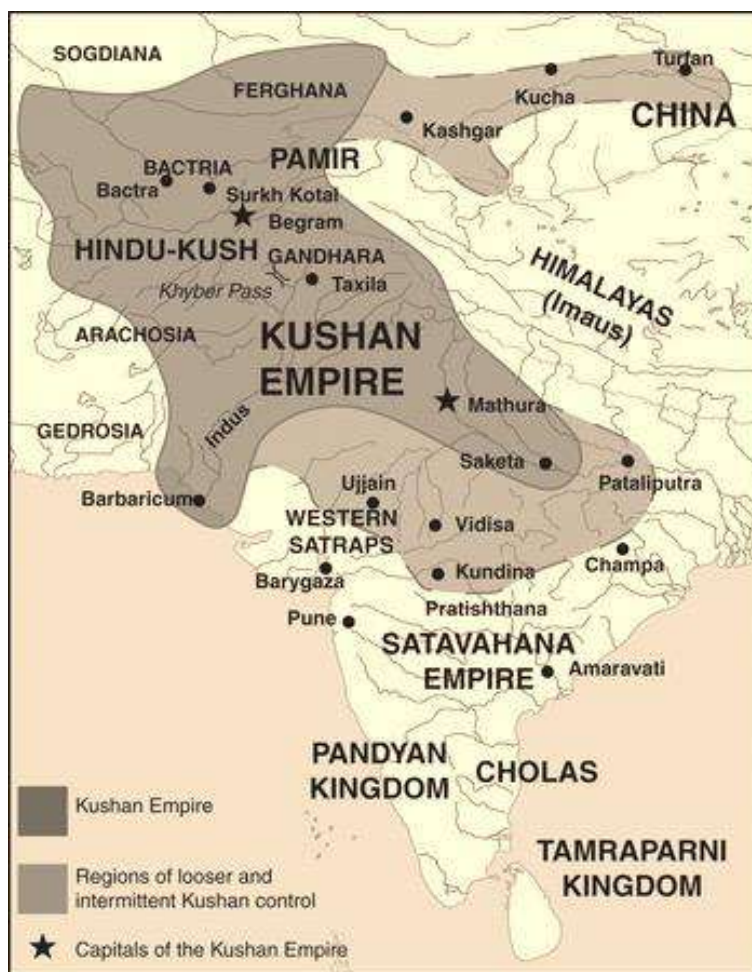
Decline of the Indo-Greek Kingdom

- The last Indo-Greek king was **Strato II**. He ruled the Punjab region until 55 BC, some say until 10 AD.
- Their rule ended with the invasions of the **Indo-Scythians (Sakas)**.
- It is believed that Greek people lived for several centuries more in India under the Indo-Parthians and the Kushans.



KUSHAN DYNASTY

- Kushan dynasty, Kushan also spelled Kusana, descended from the **Yuezhi**, a people that ruled over most of the northern Indian subcontinent, Afghanistan, and parts of Central Asia during the first three centuries of the Common Era.
- The Yuezhi conquered Bactria in the 2nd century BCE and divided the country into five chiefdoms, one of which was that of the Kushans (Guishuang). A hundred years later the Kushan chief **Kujula Kadphises** secured the political unification of the Yuezhi kingdom under himself.
- Under **Kaniska I** (flourished 1st century CE) and his successors, the Kushan kingdom reached its height. It was acknowledged as one of the four great Eurasian powers of its time (the others being China, Rome, and Parthia).
- The Kushans were instrumental in spreading **Buddhism** in Central Asia and China and in developing **Mahayana Buddhism and the Gandhara and Mathura schools of art**.
- The Kushans became affluent through trade, particularly with Rome, as their large issues of gold coins show. These coins, which exhibit the figures of Greek, Roman, Iranian, Hindu, and Buddhist deities and bear inscriptions in adapted Greek letters, are witness to the



toleration and to the syncretism in religion and art that prevailed in the Kushan empire. After the rise of the Sāsānian dynasty in Iran and of local powers in northern India, Kushan rule declined.

- The Kushans fostered a mixed culture that is best illustrated by the variety of deities—Greco-Roman, Iranian, and Indian—invoked on their coins.
 - At least two major stylistic divisions can be made among artifacts of the period: imperial art of Iranian derivation and Buddhist art of mixed Greco-Roman and Indian sources. The best examples of the former are gold coins issued by the seven Kushan kings, the Kushan royal portraits (e.g., the Kanishka statue), and princely portraits found at Surkh-Kotal in Afghanistan. The style of Kushan artworks is stiff, hieratic, and frontal. Anatomy and drapery are stylized in the early period, and they are in stark contrast to the second style, which is typified by the Gandhara and Mathura schools of Kushan art.
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MULTIPLE CHOICE QUESTIONS

(50 MCQs)

Q1. Which of the following statements correctly defines the term "Recession"?

- a) It is defined as the situation in the economy, which is marred by a negative growth rate of GDP for two or more successive quarters.
- b) It is defined as the situation in the economy, which is marred by a negative growth rate of GDP for four or more successive quarters.
- c) It is defined as the situation in the economy, which is marred by a negative growth rate of GDP for six or more successive quarters.
- d) It is defined as the situation in the economy, which is marred by a negative growth rate of GDP for ten or more successive quarters.

Q2. The Consolidated Fund of India is a fund in which

- (a) All taxes collected by Union as well as state governments are deposited.
- (b) All money received by or on behalf of the Government of India is deposited.
- (c) The Union as well as state governments make equal contribution to this fund and out of this, all charged expenses are met.
- (d) Savings of the Union and state governments are deposited to meet unforeseen expenses.

Q3. Consider the following statements w.r.t. Animal Welfare Board of India (AWBI):

- 1. It is established under Wild Life Protection Act, 1972.
 - 2. It is established under the Ministry of Ministry of Fisheries, Animal Husbandry and Dairying.
 - 3. Rukmini Devi Arundale was its first chairperson.
- Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 3 only
- (c) 2 and 3 only
- (d) All of the above

Q4. Consider the following statements:

- (1) Gibraltar Strait separates the Iberian Peninsula and Morocco.
- (2) It is the only outlet of the Mediterranean Sea to the Atlantic Ocean.

- (3) Catalonia region is located in Southern Spain.

Which of the statements given above is/are correct?

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

Q5. Which of the following states border the state of Telangana?

- 1) Maharashtra
- 2) Karnataka
- 3) Chhattisgarh
- 4) Odisha

Select the correct answer using the codes given below:

- (a) 1, 2 and 3.
- (b) 1, 3 and 4
- (c) 2, 3 and 4
- (d) All of the above

Q6. South Sudan touches which of the following set of countries?

- a) Sudan, Central African Republic, Uganda and Chad.
- b) Sudan, Ethiopia, Kenya, Uganda, Central African Republic and Zaire.
- c) Sudan, Ethiopia, Kenya, Uganda, Tanzania and Central African Republic.
- d) Ethiopia, Kenya, Uganda, Tanzania and Zaire.

Q7. Which among the following has the maximum number of national parks?

- (a) Andaman and Nicobar Islands
- (b) Arunachal Pradesh
- (c) Assam
- (d) Meghalaya

Q8. Which among the following International agencies publishes the "World Digital Competitiveness" report?

- (a) World Economic Forum
- (b) UNCTAD
- (c) World Bank
- (d) International Institute for Management and Development (IMD)

Q9. Which among the following factors may possibly lead to depreciation in the value of Rupee?

1. Increase in Exports
2. Outflow of FPIs
3. Decrease in remittances

Select the correct answer using the code given below:

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

Q10. Ten Degree Channel is situated between-

- a) Little Andaman and South Andaman
- b) Little Nicobar and Great Nicobar
- c) Middle Andaman and North Andaman
- d) Little Andaman and Car Nicobar

Q11. Consider the following statements regarding the Indus Valley Civilization:

- (1) The people of this civilization worshipped trees.
- (2) Animals were also worshiped and many of them are represented on seals. The most important of them is the one-horned animal unicorn.
- (3) There was no social differentiation in this civilization.

Which of the statements given above is/are correct?

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

Q12. Which of the following statements about Sir Syed Ahmad Khan are correct?

- (1) He fought against medieval obscurantism and advocated a rational approach towards religion.
 - (2) He asked for a reinterpretation of the Quran in the light of reason to suit the new trends of the time.
 - (3) He founded a modern school, at Aligarh in 1875, which became the Muhammadan Anglo-Oriental College in 1877 and later a full-fledged university.
 - (4) He founded the Muhammadan Educational Conference in 1886 as a general forum for spreading liberal ideas among the Muslims.
- Select the correct answer from the codes given below:

- a) 1, 2 and 3

- b) 2, 3 and 4
- c) 1, 2 and 4
- d) All of the above

Q13. The ecological foot print is a measure of ecological impact of

- (1) consumption of food, forest products and other resources.
- (2) deforestation
- (3) land use for roads, buildings, power plants and garbage dumps.

Which of the above statements is/are true?

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

Q14. The Kaladan Multimodal Transport Project connects

- a) Tripura with Bangladesh
- b) Manipur with Myanmar
- c) Assam with Bangladesh
- d) Mizoram with Myanmar

Q15. Consider the following statements:

1. The evidence of the furrowed field during the Harappan age has come from Kalibangan.
2. The stone was not used in the buildings and houses during Harappan age.

Which of the above statement/s is/are correct?

- a. 1 only
- b. 2 Only
- c. Both 1 and 2
- d. Neither 1 nor 2

Q16. Which of the following ecosystems is considered to be most biologically diverse of all ecosystems?

- (a) Wetlands
- (b) Estuaries
- (c) Rain forests
- (d) Shallow sea

Q17. Which of the following passes lies on the Ladakh range?

- (a) ZojiLa
- (b) Banihal
- (c) Photu La
- (d) Khardung La

Q18. India and USA have signed which of the following foundational defence agreements?

1. GSOMIA (General Security of Military Information Agreement)

2. COMCASA (Communications Compatibility and Security Agreement)

3. BECA (Basic Exchange and Cooperation Agreement)

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 only
- (d) 1,2 and 3

Q19. Which of the following is/are the members of the Indo-Pacific trilateral dialogue?

- 1. India
- 2. USA
- 3. Japan

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 only
- (d) 1,2 and 3

Q20. CAATSA law restricts defence trade with which of the following countries?

- 1. Iran
- 2. Russia
- 3. North Korea

Select the correct answer using the code given below:

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

Q21. With reference to PM Shram Yogi Mandhan Scheme, consider the following statements:

- 1. It provides for monthly pension of Rs 3,000 per month to the unorganized workers after attaining age of 60 years.
- 2. It is implemented by Ministry of Finance.

Which of the statements given above is/are correct?

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

Q22. The Serum Institute of India (SII) has partnered with which of the following organisations to produce Oxford COVID vaccine: -

- a. Sanofi Pasteur
- b. Johnson and Johnson
- c. GAVI
- d. AstraZeneca

Q23. Which of the following sequences correctly represent the order of countries from North to South?

- (a) Myanmar, Sri Lanka, Maldives, Indonesia
- (b) Myanmar, Sri Lanka, Indonesia, Maldives
- (c) Maldives, Sri Lanka, Myanmar, Indonesia
- (d) Myanmar, Indonesia, Sri Lanka, Maldives

Q24. Which among the following criteria is/are adopted by the 15th Finance Commission for the horizontal distribution of taxes among the states?

- 1. Population (1971 Census)
- 2. Income Distance
- 3. Population (2011 Census)
- 4. Tax Effort
- 5. Demographic performance

Select the correct answer using the code given below:

- (a) 1, 2 and 4 only
- (b) 1, 2, 3 and 4 only
- (c) 2, 3, 4 and 5 only
- (d) 2, 3 and 4 only

Q25. Consider the following statements about black carbon:

- 1. India is the largest emitter of the black carbon in the world.
- 2. Black carbon is formed when there is complete combustion of carbon.
- 3. Black carbon can cause change in rainfall by influencing the weather pattern.

Which of the statements given above is/are correct?

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

Q26. The Bhitarkanika National Park, a unique ecosystem, and which is highly dynamic and at the same time fragile, is located in

- a) Andhra Pradesh
- b) Madhya Pradesh
- c) West Bengal

d) Odisha

Q27. The city of 'Marrakech' is situated in

- a) Brazil
- b) South Korea
- c) Morocco
- d) Sudan

Q28. The National Commission for Backward Classes is a

- a) quasi-judicial body
- b) statutory body
- c) constitutional body
- d) government committee

Q29. The phrase "big whack", used in the field of astronomy, refers to

- a) The collision which not only created Earth's moon, but may have also knocked Earth over on its side.
- b) The collision which scooped out planet Mercury from Earth.
- c) The phase in Earth's development when a massive meteor shower is said to have created depressions which today are filled with water, and deposits, of which continents today are composed.
- d) The collision which slowed down Earth's rotation from a rapid rate of rotation once every two hours to the present rate, which is considered to be a prime reason for life to have evolved.

Q30. The 'Survey of India' is the national survey and mapping organisation of the country under the

- a) Department of Science and Technology
- b) Department of Space
- c) Ministry of Information and Broadcasting
- d) Ministry of Statistics and Programme Implementation

Q31. 'The Economic History of India' was authored by

- a) Dadabhai Naoroji
- b) Romesh Chandra Dutt
- c) Mahadev Govind Ranade
- d) Surendranath Banerjee

Q32. In which of the following countries, Mangdechhu hydel project, is situated?

- a) Bhutan
- b) Nepal
- c) Myanmar
- d) Thailand

Q33. The River Sutlej originates near Lake Rakshastal in Tibet, and then enters India at Shipki La Pass, located in the state of

- a) Himachal Pradesh
- b) Jammu and Kashmir
- c) Uttarakhand
- d) Uttar Pradesh

Q34. 'Equal Justice and Free Legal Aid' constitutes which of the following parts of the Indian Constitution?

- a) Fundamental Rights only
- b) Directive Principles of State Policy
- c) Fundamental Duty
- d) Preamble

Q35. The Department of Industrial Policy and Promotion (DIPP) comes under

- a) Ministry of Corporate Affairs
- b) Ministry of Finance
- c) Ministry of External Affairs
- d) Ministry of Commerce and Industry

Q36. Which institution provides GDP advance estimate to the government for budget presentation?

- a) National Accounts division
- b) Central Statistical Organisation
- c) Economic Statistics Division
- d) National Sample Survey Office

Q37. The Sykes-Picot Agreement was a secret agreement between the United Kingdom and France to divide their spheres of influence and control in

- a) Western Africa
- b) South-East Asia
- c) Western Asia
- d) Northern Africa

Q38. The Farzad gas field is situated in:

- a) UAE

- b) Iraq
- c) Saudi Arabia
- d) Iran

Q39. The National Green Tribunal Act, 2010 was enacted under India's Constitutional provision of-

- a) Article 21
- b) Article 20
- c) Article 22
- d) Article 151

Q40. Rojava' is known as

- a) Iraqi Kurdistan
- b) Syrian Kurdistan
- c) Turkish Kurdistan
- d) Jordanian Kurdistan

Q41. The 'Luzon Strait' separates

- a) Taiwan and Hainan
- b) Taiwan and China
- c) Taiwan and South Korea
- d) Taiwan and Philippines

Q42. The European Union was established under its current name in 1993 following the

- a) Berlin Treaty
- b) Maastricht Treaty
- c) Treaty of Vienna
- d) Treaty of Bonn

Q43. The 'Rome Statute' is associated with

- a) International Criminal Court
- b) International Court of Justice
- c) UNCLOS
- d) One-China Principle

Q44. Which of the following is the majority tribe in Manipur?

- a) Pangal
- b) Kuki
- c) Naga
- d) Meitei

Q45. The Scheduled Tribes in India are notified under Article

- a) 312 of the Constitution
- b) 123 of the Constitution
- c) 141 of the Constitution
- d) 342 of the Constitution

Q46. Counter-cyclical measures' is a concept that is most often associated with which one of the following economists?

- a) Adam Smith
- b) Thomas Robert Malthus
- c) John Maynard Keynes
- d) Bertrand Russell

Q47. Chillai-Kalan' is

- a) a violent dust storm which blows during winter in the Thar.
- b) a harsh winter period in Kashmir.
- c) a peculiar weather phenomenon observed annually in Arunachal Pradesh when hailstones, rain and snow fall at the same time.
- d) a toy craft.

Q48. In the world of finance and business, a 'Unicorn' refers to

- a) a start-up with a stock market valuation of more than \$1 billion.
- b) an environment-friendly start-up with a stock market valuation of more than \$100 million.
- c) an investor who sells his stock in a start-up the moment its value begins to plummet.
- d) a start-up firm which specializes in keeping a lookout for takeovers.

Q49. Riven Ken is a tributary of

- a) River Yamuna
- b) River Ganga
- c) River Godavari
- d) River Mahanadi

Q50. Dikrong River is the tributary of

- (a) Teesta
- (b) Sutlej
- (c) Brahmaputra
- (d) Beas



ANSWERS

1.	Ans. a)	26.	Ans. d)
2.	Ans. b)	27.	Ans. c)
3.	Ans. c)	28.	Ans. b)
4.	Ans. b)	29.	Ans. a)
5.	Ans. d)	30.	Ans. a)
6.	Ans. b)	31.	Ans. b)
7.	Ans. a)	32.	Ans. a)
8.	Ans. d)	33.	Ans. a)
9.	Ans. c)	34.	Ans. b)
10.	Ans. d)	35.	Ans. d)
11.	Ans. d)	36.	Ans. b)
12.	Ans. d)	37.	Ans. c)
13.	Ans. d)	38.	Ans. d)
14.	Ans. d)	39.	Ans. a)
15.	Ans. c)	40.	Ans. b)
16.	Ans. a)	41.	Ans. d)
17.	Ans. d)	42.	Ans. b)
18.	Ans. a)	43.	Ans. a)
19.	Ans. d)	44.	Ans. d)
20.	Ans. d)	45.	Ans. d)
21.	Ans. a)	46.	Ans. c)
22.	Ans. d)	47.	Ans. b)
23.	Ans. a)	48.	Ans. a)
24.	Ans. c)	49.	Ans. a)
25.	Ans. c)	50.	Ans. c)

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(TEST RELEASE SCHEDULE)

RAPID PRACTICE TEST (RPT)

January - Polity

- 10th January- Polity RPT 1
- 17th January- Polity RPT 2
- 24th January- Polity RPT 3
- 31st January- Polity RPT 4

February - Economy

- 7th February- Economy RPT 1
- 14th February- Economy RPT 2
- 21st February- Economy RPT 3
- 28th February- Economy RPT 4

March - Geography and Environment

- 7th March- G&E RPT 1
- 14th March- G&E RPT 2
- 21st March- G&E RPT 3
- 28th March- G&E RPT 4

April - History and Culture

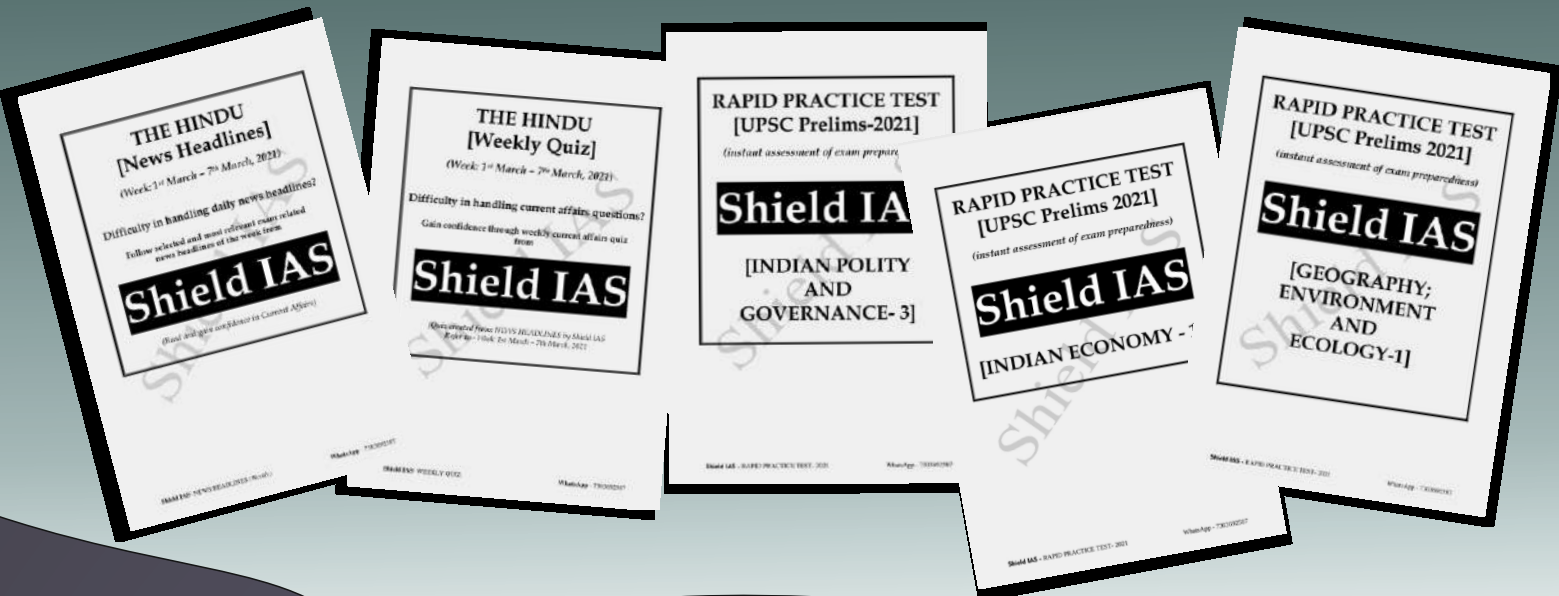
- 4th April- History & Culture RPT 1
- 11th April- History & Culture RPT 2
- 18th April- History & Culture RPT 3
- 25th April- History & Culture RPT 4

FULL LENGTH TEST (FLT)

May - Current Affairs (FLT)

- 2nd May- Current Affairs FLT 1
- 9th May- Current Affairs FLT 2
- 16th May- Current Affairs FLT 3
- 23rd May- Current Affairs FLT 4
- May & June- General Studies FLT**

- 30th May- General Studies FLT 1
- 6th June- General Studies FLT 2
- 13th June- General Studies FLT 3
- 20th June- General Studies FLT 4



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