



## India to become Asia's 2nd Largest Economy by 2030

**For Prelims:** Gross Domestic Product (GDP), Startups, Foreign Direct Investment (FDI), 'Make in India', National Policy on Electronics 2019 (NPE 2019)

**For Mains:** State of India's Economy associated concerns and related steps taken

### Why in News

According to the Information Handling Services (IHS) Markit report, **India is likely to overtake Japan as Asia's second-largest economy by 2030.**

- Currently, **India is the sixth-largest economy**, behind the U.S., China, Japan, Germany and the U.K.
- IHS Markit is a **global leader in information, analytics and solutions** for the major industries and markets that drive economies worldwide.

**Note:** The size of a nation's overall economy is typically **measured by its [Gross Domestic Product, or GDP](#)**, which is the value of all final goods and services produced within a country in a given year.

### Key Points

- **GDP Projection:**
  - In terms of value, the **size of the Indian economy stood at USD 2.7 trillion** in 2021, which is projected to grow to USD 8.4 trillion by 2030.
    - This boom is enough to overtake Japan, making India the second largest economy in the **Asia-Pacific region** by 2030.
  - **India's growth rate is projected to be 8.2% in 2021-22**, compared to a decline of 7.3% in the previous fiscal.
  - However, the momentum of the current **financial year**(FY) will continue in 2022-23 as well and India will achieve 6.7% growth.
- **Role of Different Sectors:**
  - The **manufacturing, infrastructure and services sector** along with the **[e-commerce sector](#)** have a big role to play in boosting India's growth rate.
  - Not only this, due to **increasing digitization, the e-commerce market** will become bigger in the coming times.
    - According to a report, 1.1 billion Indians will have internet by 2030, in 2020 this number was 500 million.
- **Growth Rate:**
  - Overall the future of the Indian economy looks strong and stable, making it the fastest growing country in the country for the next decade.
  - In the long term also, **technological developments like infrastructure sector and [startups](#)** will play a big role in sustaining India's rapid growth rate.
    - Being one of the **world's fastest-growing economies** will **make India one of**

**the most important long-term growth markets for multinationals** in a wide range of industries, including manufacturing industries such as autos, electronics and chemicals, and services industries such as banking, insurance, asset management, healthcare and information technology.

▪ **Middle Class Support:**

- India gets the most help from its vast middle class, which is its main consumer force.
  - Indian consumer spending will also double in the next decade. This could increase from USD1.5 trillion in 2020 to USD3 trillion in 2030.

▪ **FDI Inflows:**

- The large increase in [Foreign Direct Investment \(FDI\)](#) inflows to India that has been evident over the past five years is also continuing with strong momentum in 2020 and 2021.
- It is being **boosted by large inflows of investments from global technology Multinational Companies (MNCs)** such as Google and Facebook that are attracted to India's large domestic consumer market.

▪ **Current State of India's Economy:**

- India's **GDP** at current prices stood at USD 694.93 billion in the first quarter of FY22, as per the provisional estimates of gross domestic product for the first quarter of 2021-22.
- **India is the fourth-largest unicorn base** in the world with over 21 unicorns collectively valued at USD 73.2 billion.

## Government Initiatives for Boosting Economy

▪ **'Make in India' and the [National Policy on Electronics 2019 \(NPE 2019\)](#)**

▪ **[Production-linked Incentive Scheme \(PLI\)](#) in Various Sectors**

▪ **[Major Telecom Sector Reforms:](#)**

- Major telecom sector reforms have been approved in September 2021, which are expected to **boost employment, growth, competition, and consumer interests.**
- The rationalisation of adjusted gross revenue, the **rationalisation of bank guarantees (BGs), and the encouragement of spectrum sharing** are among the key reforms.

▪ **Deep Ocean Mission:**

- The Indian government approved the [Deep Ocean Mission \(DOM\)](#) in August 2021, with a budget outlay of Rs. 4,077 crore (USD 553.82 million) over the next five years.

▪ **Focus on Renewable Sources:**

- In order to generate energy, **India is focusing on [renewable sources.](#)** It plans to achieve 40% of its energy from non-fossil sources by 2030, up from 30% currently, and to increase its renewable energy capacity from to **[175 gigatonnes \(GW\) by 2022.](#)**
- In line with this, India and the United Kingdom jointly launched a **'[Roadmap 2030](#)'** in May 2021 to collaborate and combat climate change by 2030.

## Way Forward

- On one hand, the sectors like manufacturing and construction recovered steadily in 2021, on the other hand, low-skilled individuals, women, self-employed people, and small firms were left behind.
- **Infrastructure and manufacturing** are the two pillars that **should be used to push the growth structurally.**
  - However, **infrastructure building or revival of the investment cycle**, in general, would require the private sector to also start contributing.
  - The fundamentals for a revival in private corporate and households' is emerging with financial institutions, especially banks, in a better position, corporates deleveraging, and a low-interest rate regime.
- The recovery of the Indian economy in FY22 totally **depends on how steadily household incomes recover and activity in the [informal sector](#) and smaller firms normalise.**
- India should also **increase ease of business and ease of living** to enable the private sector to create wealth over a long period of time.
- **Participation of women** in the workforce is a key driver of India's growth. Therefore India should

increase women's participation in the workforce.

[Source: IE](#)

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## Uniform Civil Code

**For Prelims:** Uniform Civil Code, Article 44, Article 25, Article 14.

**For Mains:** Implications of Uniform Civil Code on Personal Laws.

### Why in News

Recently, the Ministry of Law and Justice said in response to a [PIL](#) filed in 2019 that the implementation of the **Uniform Civil Code (UCC)**, a directive principle under the Constitution (Article 44), is a matter of public policy and that no direction in this regard can be issued by the Court.

- The Centre has **requested the Law Commission of India (21<sup>st</sup>)** to undertake examination of various issues relating to UCC and to make recommendations thereof.

### Key Points

- **About:**
  - UCC is one that would provide for one law for the entire country, applicable to all religious communities in their personal matters such as marriage, divorce, inheritance, adoption etc.
  - Article 44 of the Constitution lays down that the state shall endeavour to secure a UCC for the citizens throughout the territory of India.
    - Article 44 is one of the Directive Principles of State Policy (DPSP).
    - DPSP as defined in Article 37, are not justiciable (not enforceable by any court) but the principles laid down therein are fundamental in governance.
- **Status of Uniform Codes in India:**
  - Indian laws do follow a uniform code in most civil matters such as [Indian Contract Act 1872](#), Civil Procedure Code, Transfer of Property Act 1882, Partnership Act 1932, [Evidence Act, 1872](#) etc.
  - States, however, have made hundreds of amendments and, therefore, in certain matters, there is diversity even under these secular civil laws.
    - Recently, several states refused to be governed by the [uniform Motor Vehicles Act, 2019](#).
- **Background:**
  - The origin of the UCC dates back to colonial India when the British government submitted its report in 1835 stressing the need for uniformity in the codification of Indian law relating to crimes, evidence, and contracts, specifically recommending that personal laws of Hindus and Muslims be kept outside such codification.
  - Increase in legislation dealing with personal issues in the far end of British rule forced the government to form the B N Rau Committee to codify Hindu law in 1941.
  - Based on these recommendations, a bill was then adopted in 1956 as the Hindu Succession Act to amend and codify the law relating to intestate or unwilled succession, among Hindus, Buddhists, Jains, and Sikhs.
    - However, there were separate personal laws for muslim, chirstian and Parsis.
  - In order to bring uniformity, the courts have often said in their judgements that the government should move towards a UCC.
    - The judgement in the [Shah Bano case](#) (1985) is well known.

- Another case was the Sarla Mudgal Case (1995), which dealt with issue of bigamy and conflict between the personal laws existing on matters of marriage.
- By arguing that practices such as **triple talaq** and polygamy impact adversely the right of a woman to a life of dignity, the Centre has raised the question whether constitutional protection given to religious practices should extend even to those that are not in compliance with fundamental rights.
- **Implications of Uniform Civil Code on Personal Laws:**
  - **Protection to Vulnerable Section of Society:**
    - The UCC aims to provide protection to vulnerable sections as envisaged by Ambedkar including women and religious minorities, while also promoting nationalistic fervour through unity.
  - **Simplification of Laws:**
    - The code will simplify the complex laws around marriage ceremonies, inheritance, succession, adoptions making them one for all. The same civil law will then be applicable to all citizens irrespective of their faith.
  - **Adhering to Ideal of Secularism:**
    - Secularism is the objective enshrined in the Preamble, a secular republic needs a common law for all citizens rather than differentiated rules based on religious practices.
  - **Gender Justice:**
    - If a UCC is enacted, all personal laws will cease to exist. It will do away with gender biases in existing laws.
- **Challenges:**
  - **Exceptions in Central Family Laws:**
    - The preliminary sections in all central family law Acts enacted by Parliament since Independence declare that they will apply to “the whole of India except the state of Jammu and Kashmir.”
      - A Second exception was added in 1968 in all these Acts, pronouncing that “nothing herein contained shall apply to the Renoncants in the Union Territory of Pondicherry.”
      - A third exception, none of these Acts applies in Goa, Daman and Diu.
      - A fourth exception, relating to the north-eastern states of Nagaland and Mizoram, emanates from Articles 371A and 371G of the Constitution, decreeing that no parliamentary legislation will replace the customary law and religion-based system for its administration.
  - **Communal Politics:**
    - The demand for a uniform civil code has been framed in the context of communal politics.
    - A large section of society sees it as majoritarianism under the garb of social reform.
  - **Constitutional Hurdle:**
    - **Article 25** of Indian constitution, that seeks to preserve the freedom to practise and propagate any religion gets into conflict with the concepts of equality enshrined under **Article 14** of Indian Constitution.

## Way Forward

- The government and society will have to work hard to build trust, but more importantly, make common cause with social reformers rather than religious conservatives.
- Rather than an omnibus approach, the government could bring separate aspects such as marriage, adoption, succession and maintenance into a UCC in stages.
- Need of the hour is the codification of all personal laws so that prejudices and stereotypes in every one of them would come to light and can be tested on the anvil of fundamental rights of the Constitution.

**Source: IE**

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## New Bridge: India & Nepal

**For Prelims:** Kali River, India-Nepal Treaty of Peace and Friendship of 1950, Dharchula Bridge.

**For Mains:** Significance and Challenges of India- Nepal Relations.

### Why in News

Recently, the Union Cabinet has cleared a plan to build a new bridge connecting India and Nepal over the [Mahakali river](#) and link **Dharchula in Uttarakhand with Nepal's Dharchula**.

### Key Points

#### ▪ About //



- The bridge will be completed **within three years**. It **will strengthen the relationship between the two countries**.
- India and Nepal **share unique ties of friendship and cooperation**.
- The construction of the bridge **will help people living in Dharchula in Uttarakhand and in the territory of Nepal**.

#### ▪ Mahakali River:

- It is also known as **Sharda river or Kali Ganga in Uttarakhand**.
- It joins **Ghagra river** in Uttar Pradesh, which is a tributary of Ganga.
- **River Projects:** Tanakpur hydro-electric project, Chameliya hydro-electric project, Sharda Barrage.

### India - Nepal Relations

#### ▪ Historical Ties:

- Nepal is an important neighbour of India and occupies **special significance in its foreign policy because of the geographic, historical, cultural and economic linkages/ties** that span centuries.
- India and Nepal **share similar ties in terms of [Hinduism](#) and [Buddhism](#)** with Buddha's birthplace Lumbini located in present day Nepal.
- The two countries not only share an open border and unhindered movement of people, but they also have close bonds through marriages and familial ties, popularly known as **Roti-Beti ka Rishta**.

- The India-Nepal [Treaty of Peace and Friendship of 1950](#) forms the bedrock of the special relations that exist between India and Nepal.
- Importance for India can be studied from two different angles: a) their **strategic importance for India's national security**, and b) their place in **India's role perception in international politics**.
- Rivers originating in Nepal feed the [perennial river systems](#) of India in terms of ecology and hydropower potential.
- **Trade and Economy:**
  - India is Nepal's **largest trade partner** and the largest source of foreign investments, besides providing transit for almost the entire third country trade of Nepal.
- **Connectivity:**
  - Nepal being a landlocked country, it is **surrounded by India from three sides and one side is open towards Tibet** which has very limited vehicular access.
  - India-Nepal has undertaken various **connectivity programs to enhance people-to-people linkages and promote economic growth** and development.
    - MOUs have been signed between both the governments for laying an electric rail [track linking Kathmandu with Raxaul in India](#).
    - India is looking to develop the inland waterways for the movement of cargo, within the framework of trade and transit arrangements, providing additional access to sea for Nepal calling it linking [Sagarmatha \(Mt. Everest\)](#) with [Sagar \(Indian Ocean\)](#).
- **Defence Cooperation**
  - Bilateral defence cooperation includes **assistance to Nepalese Army in its modernization** through provision of equipment and training.
  - The **Gorkha Regiments** of the Indian Army are raised partly by recruitment from hill districts of Nepal.
  - India from 2011, every year undertakes joint military exercise with Nepal known as [Surya Kiran](#).
- **Cultural**
  - There have been initiatives to promote people-to-people contacts in the area of art & culture, academics and media with different local bodies of Nepal.
  - India has signed three [sister-city agreements](#) for twinning Kathmandu-Varanasi, Lumbini-Bodhgaya and Janakpur-Ayodhya.
    - A sister city or twin town relationship is a form of legal or social agreement between two geographically and politically distinct localities.
- **Humanitarian Assistance**
  - Nepal lies in a sensitive ecological fragile zone which is prone to [earthquakes, floods](#) causing massive damage to both life and money, whereby it remains the biggest recipient of India's humanitarian assistance.
- **Multilateral Partnership**
  - India and Nepal share multiple multilateral forums such as BBIN (Bangladesh, Bhutan, India, and Nepal), [BIMSTEC](#) (Bay of Bengal Initiative for Multi Sectoral Technical and Economic Cooperation), [Non Aligned Movement](#), and [SAARC](#) (South Asian Association for Regional Cooperation) etc.
- **Issues & Challenges**
  - **China's Intervention:**
    - As a landlocked nation, Nepal depended for many years on Indian imports, and India played an active role in Nepal's affairs.
    - However, in recent years, Nepal has drifted away from India's influence, and China has gradually filled the space with investments, aid and loans.
    - China considers Nepal a key partner in its [Belt and Road Initiative](#) (BRI), and wants to invest in Nepal's infrastructure as part of its grand plans to boost global trade.
    - Rising Nepal and China cooperation can undermine Nepal's distinction of buffer state between India and China.
    - China on the other hand wants to avoid the formation of any Anti-China stance by the Tibetans living in Nepal.
  - **Border Dispute:**
    - The [issue erupted in November 2019](#) when Nepal had released a new political

map that claims Kalapani, Limpiyadhura and Lipulekh of Uttarakhand as part of Nepal's territory. The area of Susta (West Champaran district, Bihar) can also be noted in the new map.

## Way Forward

- India should negotiate diplomatically to resolve the boundary dispute with Nepal under the aegis of [International law on Trans-boundary Water Disputes](#). In this case, boundary dispute resolution between [India and Bangladesh should serve as a model](#).
- India should engage more proactively with Nepal in terms of people to people engagement, bureaucratic engagement as well as political interactions.
- Mere differences shall not turn into disputes and both the countries should resolve the issues peacefully.

[Source: IE](#)

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## Meeting Emission Norms: Coal-based Power Plants

**For Prelims:** Sulfur Dioxide Pollution and its impact, Central Pollution Control Board (CPCB).

**For Mains:** Need to focus on mitigating the hazards of air pollution in India.

## Why in News

According to the analysis by the **Centre for Science and Environment (CSE)**, a Delhi-based non-profit, **61% of the coal-based power plants** located near million-plus population cities, which have to meet their emission standards by December 2022, will miss their deadlines.

## Key Points

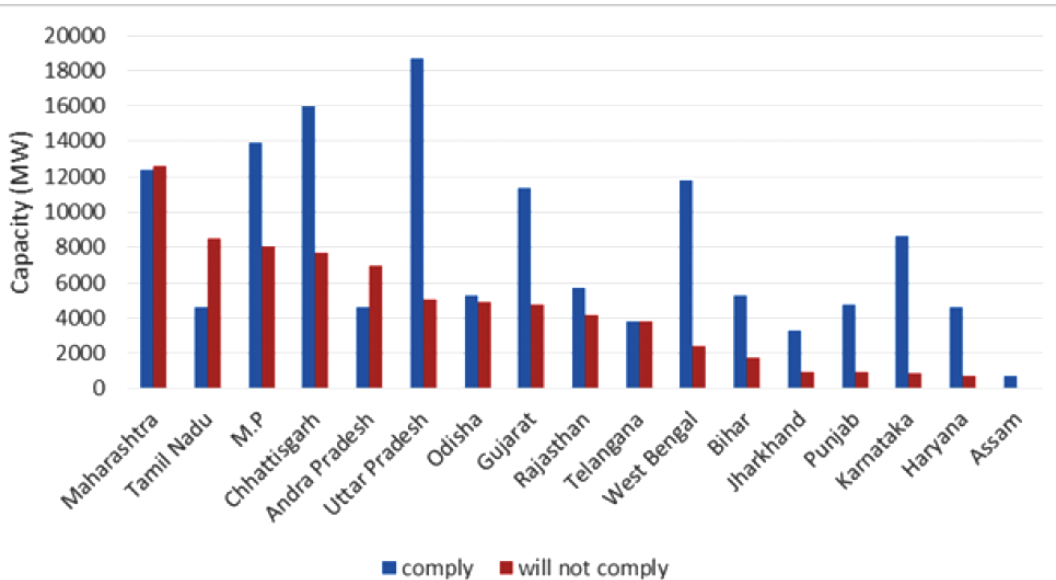
- **Background:**
  - The Ministry of Environment, Forest and Climate Change (MoEF&CC) **had in 2015 set new emission norms** and fixed a deadline to meet it.
  - **India initially had set a 2017 deadline** for thermal power plants to comply with emissions standards for installing **Flue Gas Desulphurization (FGD)** units that cut emissions of toxic sulphur dioxide.
  - This was later changed to **varying deadlines for different regions, ending in 2022**.
- **Categorisation of Power Plants:**
  - **Category A:**
    - The power plants which have to meet the December 2022 target are those which are located within **10 km radius of the National Capital Region (NCR) or cities having million-plus population**.
      - There are 79 coal-based power plants in this category as per a categorisation list of a task force, constituted by the [Central Pollution Control Board \(CPCB\)](#).
  - **Category B and C:**
    - 68 power plants have been put in **Category B (compliance deadline of December 2023)** and 449 in Category C (compliance deadline of December 2024).
      - The power plants which are **located within 10 km radius of critically polluted areas** or non-attainment cities fall under category B while the rest

others (75% of total) fall in category C.

▪ **CSE Analysis:**

◦ **Major Defaulters:**

- Maharashtra, Tamil Nadu, Madhya Pradesh, Chhattisgarh and Andhra Pradesh.
  - These defaulting stations are run largely by the respective state governments.
- At least 17 Indian states have coal-based thermal power stations. A state-wise comparison highlighted the following:
  - Except for Assam (AS), none of the other states among these 17 will 100% comply with the stipulated deadlines. This state has a 750-megawatt power station that makes it an insignificant per cent of total coal capacity.



▪ **State-run units on the wrong:**

- A majority of the **coal thermal power capacity that is likely to meet the norms** belongs to the **central sector followed by the private sector**.
  - Among the plants belonging to the state sector, some have floated the tender or at various stages of a feasibility study or simply have not framed any action plan to date.

▪ **Impact of Penalty Mechanism:**

- The **penalty imposed on non-compliant units** will be **more feasible to pay** rather than bearing the legalised cost of retrofit of pollution control equipment (FGD) to meet the new norms.
  - The April 2021 notification also introduced a penalty mechanism or environmental compensation for plants that will not meet the respective deadlines, in addition to revising the deadlines.
- The environmental compensation that will be levied too will **fail to act as deterrence for this expected non-compliance** as it is too meagre as compared to the cost of effective emission control by a coal thermal power plant.

## Sulfur Dioxide Pollution

▪ **Source:**

- The largest source of SO<sub>2</sub> in the atmosphere is the **burning of fossil fuels** by power plants and other industrial facilities.
- Smaller sources of SO<sub>2</sub> emissions include: **industrial processes** such as extracting metal from ore, **natural sources** such as volcanoes, and locomotives, ships and other vehicles and heavy equipment that burn fuel with a high sulfur content.

▪ **Impact: SO<sub>2</sub> can affect both health and the environment.**

- **Short-term exposures** to SO<sub>2</sub> can harm the human respiratory system and make breathing difficult. People with asthma, particularly children, are sensitive to these effects



of SO<sub>2</sub>.

- SO<sub>2</sub> emissions that lead to high concentrations of SO<sub>2</sub> in the air generally also lead to the formation of other sulfur oxides (SO<sub>x</sub>). SO<sub>x</sub> can react with other compounds in the atmosphere to form small particles. These particles contribute to **Particulate Matter (PM)** pollution.
  - Small particles may penetrate deeply into the lungs and in sufficient quantities can contribute to health problems.
- **India's Case:**
  - **India's sulphur dioxide (SO<sub>2</sub>) emissions** recorded a significant decline of approximately 6% in 2019 compared to 2018, the steepest drop in four years, according to a report from Greenpeace India and the Centre for Research on Energy and Clean Air (CREA).
    - However, India remained the **largest emitter of SO<sub>2</sub>**.
  - **Air Quality sub-index** has been evolved for eight pollutants (PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, SO<sub>2</sub>, CO, O<sub>3</sub>, NH<sub>3</sub>, and Pb) for which short-term (upto 24-hours) National Ambient Air Quality Standards are prescribed.

[Source: DTE](#)

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## PRASHAD Projects

**For Prelims:** PRASHAD Scheme, Swadesh Darshan scheme, Corporate Social Responsibility (CSR), Public-Private Partnership (PPP)

**For Mains:** Sustainable Tourism, Schemes for Promotion of Tourism

## Why in News

Recently, the Ministry of Tourism inaugurated various components of the “**Development of Govardhan, Mathura**” project under [PRASHAD Scheme](#).

- The government also allocated funds under the [Swadesh Darshan scheme](#) for strengthening Tourism infrastructure within the state of Uttar Pradesh through various spiritual circuits such as the **Ramayana** and [Buddha circuits](#).

## Key Points

- **PRASHAD Scheme:**
  - The ‘**National Mission on Pilgrimage Rejuvenation and Spiritual Augmentation Drive**’ (PRASAD) was launched by the **Ministry of Tourism** in the year **2014-15** with the objective of **holistic development of identified pilgrimage destinations**.
  - The name of the scheme was changed from **PRASAD to “National Mission on Pilgrimage Rejuvenation and Spiritual, Heritage Augmentation Drive (PRASHAD)”** in October 2017.
    - After the discontinuation of the **HRIDAY** scheme of the Ministry of Housing and Urban Development, the development of Heritage destinations was included in the **PRASAD Scheme, changing it to PRASHAD**.
  - Under the PRASHAD Scheme, **several religious cities/sites in have been identified for development** such as Amaravati and Srisailem (Andhra Pradesh), Kamakhya (Assam),

Parasuram Kund (Lohit District, Arunachal Pradesh), Patna and Gaya (Bihar), etc.

- **Implementation Agency:** The projects identified under this scheme shall be implemented through the identified agencies by the respective State/ Union Territory Government.
- **Funding Mechanism:** The Central Government provides 100% funding for the project components undertaken for public funding.
  - This scheme seeks to leverage the voluntary funding available for [Corporate Social Responsibility \(CSR\)](#) and the [Public-Private Partnership \(PPP\)](#) for improved sustainability of the projects under this scheme.
- **The objectives of the PRASHAD scheme are as follows:**
  - Harness **pilgrimage tourism** for its multiplier and direct effect on employment generation and economic development.
  - Follow **pro-poor tourism concept and community-based development** in the development of the pilgrimage destinations.
  - Leveraging **public expertise and capital**.
  - Enhance **tourist attractiveness sustainably** by developing world-class infrastructure in religious destinations.
  - Create awareness amongst the local communities about the importance of tourism for them in terms of improved living standards, increase in sources of income and overall development of the area.
  - Promote **local culture, arts, cuisine, handicrafts**, etc., to generate livelihood in the identified places.
- **Swadesh Darshan Scheme:**
  - Swadesh Darshan, a [Central Sector Scheme](#), was launched in 2014 -15 for the integrated development of theme-based tourist circuits in the country.
    - Under the scheme, **fifteen thematic circuits** have been identified- Buddhist Circuit, Coastal Circuit, Desert Circuit, Eco Circuit, Heritage Circuit, Himalayan Circuit, Krishna Circuit, North East Circuit, Ramayana Circuit, Rural Circuit, Spiritual Circuit, Sufi Circuit, Tirthankar Circuit, Tribal Circuit, Wildlife Circuit.
  - Under the scheme, the Ministry of Tourism provides Central Financial Assistance (CFA) to State Governments/Union Territory Administrations for infrastructure development of circuits.
  - This scheme is envisioned to synergise with other schemes like [Swachh Bharat Abhiyan](#), [Skill India](#), [Make in India](#) etc. with the idea of positioning the tourism sector as a major engine for job creation, driving force for economic growth, building synergy with various sectors to enable tourism to realise its potential.

## Other Government Schemes Related to Tourism

- [Adopt A Heritage Project](#)
- [Development of Iconic Tourist Sites](#)
- [DekhoApnaDesh](#)

[Source: PIB](#)

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## National Water Awards

**For Prelims:** National Water Awards , Initiatives to save water,Central Ground Water Board (CGWB).

**For Mains:** Need of conserving water, Government initiatives to save water.

## Why in News

Recently, **Uttar Pradesh bagged the first prize** for efforts towards water conservation in the [National Water Awards \(NWA\) 2020](#) organised by the [Ministry of Jal Shakti](#).

- Rajasthan and Tamil Nadu bagged the second and third prizes, respectively, **in the best state category**.

## Key points

- **About:**
  - The awards are organised by the Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti.
  - The Jal Shakti Ministry had launched the first **'National Water Award' in 2018**.
  - They **facilitate a good opportunity for the start-ups** as well as the leading organisations to engage with the senior policymakers on adopting the best water resources management practises in India.
  - They focus **on the good work and efforts made by individuals and organisations across the country**, and the government's vision for the path to **'Jal Samridh Bharat'**.
- **Objectives:**
  - To **motivate individuals/organisations who are doing commendable work** in the field of water resources conservation and management.
  - **To create awareness among the people about the importance of water** and encourage them to adopt the best water usage practises.
- **Opportunities Provided:**
  - **Start-ups, leading organisations and people** can engage, deliberate and strengthen existing partnerships on issues concerning water conservation and management activities.
- **Need for Water Conservation and Management:**
  - Depletion of water resources due to overuse and decline in water supplies due to climate change is **pushing India closer to the tipping point of water scarcity**.
  - Apart from these, several government policies especially **pertaining to agriculture resulted in over-exploitation of water**. These factors make India a **water-stressed economy**. In this context there is a need for water resource conservation and management.
  - India's current water requirement is estimated to be around 1,100 billion cubic metre per year, which is **projected to go up to 1,447 billion cubic metre by 2050**.
  - India constitutes **16 % of the world's population**, but the country has only **4% of the world's freshwater resources**. With the changing weather patterns and recurring droughts, India is water stressed.
    - According to the [Central Ground Water Board \(CGWB\)](#), with **230 billion metre cube of groundwater drawn out each year** for irrigating agricultural lands in India, many parts of the country are experiencing rapid depletion of groundwater.
    - The total estimated [groundwater depletion in India](#) is in the range of 122-199 billion metre cube.

## Related Initiatives

- [Mahatma Gandhi National Rural Employment Guarantee Act](#)
- [Jal Kranti Abhiyan](#)
- [Catch the Rain: National Water Mission](#)
- [NITI Aayog's Composite Water Management Index](#)
- [Jal Jeevan Mission](#)
- [Atal Bhujal Yojana](#)
- [Jal Shakti Abhiyan](#)

## Way Forward

- People tend to neglect the importance of water conservation because in most places it is free of cost or charged nominally, so **it is important for them to realise its importance and be aware of its degrading status.**
- **Initiatives** like National Water Awards, along with the other government initiatives **will help to create that awareness and motivate them to adopt the best water usage practises** which will help India in becoming 'Jal Samridh Bharat'.

[Source: PIB](#)

## MoU in the field of Disaster Management: India -Turkmenistan

**For Prelims:** Location of Turkmenistan and Central Asian Nations, TAPI Pipeline, Ashgabat Agreement.

**For Mains:** Significance of Central Asian countries for India and related challenges.

## Why in News

Recently, a **Memorandum of Understanding (MoU)** was signed between **India and Turkmenistan** on Cooperation in the field of **Disaster Management**.



## Key Points

### ▪ About:

- The MoU seeks to put in place a system whereby **both countries will benefit from the Disaster Management mechanisms** of each other.
- It will **help in strengthening the areas of preparedness**, response and capacity building in the field of Disaster Management.
- India currently has **bilateral or multilateral agreements, MoUs, joint declaration of Intent or Memorandums of Cooperation** in disaster management with Switzerland, Russia, Germany, Japan, Tajikistan, Mongolia, Bangladesh, Italy and [South Asian Association for Regional Cooperation \(SAARC\)](#).

### ▪ India -Turkmenistan Relations:

- Turkmenistan **shares borders** with Kazakhstan in the north, Uzbekistan in the north and North-east, Iran in the South and Afghanistan in the Southeast.
- **India's 'Connect Central Asia' policy 2012** envisages deeper mutual relations with the region and energy linkage is an important component of the policy.
- **India has joined the Ashgabat agreement**, which envisages setting up of an international transport and transit corridor linking central Asia with the Persian Gulf to significantly ramp up trade and investment.
- India considers the [TAPI pipeline](#) (Turkmenistan, Afghanistan, Pakistan and India) a '**key pillar**' in its economic relations with Turkmenistan.
- In 2015, **Hindi Chair was established in Azadi Institute of World languages, Ashgabat** where Hindi is being taught to university students.
- India provides training for Turkmen nationals under **ITEC (Indian Technical and Economic Cooperation) programme**.
- Turkmenistan **supports India's permanent position in the UN Security Council**.
- Turkmenistan is a USD 40 billion plus economy, but the bilateral trade with India is below its potential. India can increase its economic presence in Turkmenistan, particularly in the [Information and communication technologies \(ICT\) sector](#). This would help maintain the future balance of trade.
- Recently, the 3<sup>rd</sup> meeting of the [India-Central Asia Dialogue](#) was held in New Delhi.
  - It is a ministerial-level dialogue between India and the [Central Asian](#) countries namely [Kazakhstan](#), [Kyrgyzstan](#), [Tajikistan](#), Turkmenistan and Uzbekistan.

[Source: PIB](#)

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## Tracking Animals through e-DNA

### Why in News

According to some studies, [DNA floating in the air](#) (i.e. e-DNA) can boost biodiversity conservation efforts across the world.

### Key Points

#### ▪ About:

- Researchers from two teams have independently shown that **environmental DNA (e-DNA) can potentially identify and monitor terrestrial animals**.
  - **Animals shed DNA through their breath, saliva, fur or faeces** into the environment and these samples are called **e-DNA**.
- Airborne e-DNA sampling is a **biomonitoring method** that is rising in popularity among

biologists and conservationists as it provides abundant information.

▪ **Significance:**

- It can **help understand the composition of animal communities** and detect the spread of non-native species.
- This method will work with the current techniques to monitor endangered species after some fine-tuning.
  - Typically, **biologists observe animals in person or by picking up DNA from animals' footprints or faeces**, which demand extensive fieldwork.
  - Spotting animals can be challenging, especially if they inhabit inaccessible habitats.
- It can **aid in tracking long-distance migratory birds** and other birds' flying patterns. It can also capture **DNA from smaller animals including insects**.
  - Last year (2021), a proof-of-concept study used airborne e-DNA to monitor terrestrial insects.
- As wildlife ecosystems become rapidly and extremely chaotic owing to the alarming effects of **climate change**, terrestrial biomonitoring techniques are expected to adapt and progress rapidly for accurate and timely monitoring.

▪ **Related Initiatives:**

- **Global EDNA Project:** [UNESCO](#) launched the project to **study the vulnerability of species** to climate change at [Marine World Heritage Sites](#) in October 2021.

## DNA

- **DNA, short for deoxyribonucleic acid, is the hereditary material in organisms** that contains the biological instructions for building and maintaining them.
- The **chemical structure of DNA is the same for all organisms**, but differences exist in the order of the DNA building blocks, known as base pairs.
- Unique sequences of base pairs, particularly repeating patterns, provide a means to identify species, populations, and even individuals.

## e-DNA

- Environmental DNA (e-DNA) is **nuclear or mitochondrial DNA that is released from an organism into the environment**.
- **Sources of eDNA** include secreted feces, mucous, and gametes; shed skin and hair; and carcasses. eDNA **can be detected in cellular or extracellular** (dissolved DNA) form.
- **In aquatic environments, eDNA is diluted** and distributed by currents and other hydrological processes, but it only lasts about 7–21 days, depending on environmental conditions.
- Exposure to UVB radiation, acidity, heat, and endo- and exonucleases can degrade e-DNA.

[Source: DTE](#)

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## Maya Civilization

### Why in News

According to a new study the Maya civilization may have had access to nearly 500 **drought** resistant edible plants.

- The mystery behind Maya civilization's sudden fall from glory still eludes us. Scientists have long suspected that **drought pushed its people towards starvation.**
- The Maya people faced starvation because of their **dependence on drought-sensitive crops** such as corn, beans and squash.



## Key Points

### ▪ About:

- The Maya are an **indigenous people of Mexico and Central America** who have continuously inhabited the lands comprising modern-day Yucatan, Quintana Roo, Campeche, Tabasco, and Chiapas in Mexico and southward through Guatemala, Belize, El Salvador and Honduras.
- The Maya civilization **originated in the Yucatan Peninsula.** Known for its monumental architecture and an advanced understanding of mathematics and astronomy.
- The rise of the Maya began about 250 CE, and what is known to archaeologists as the Classic Period of Mayan culture **lasted until about 900 CE.** At its height, Mayan civilization **consisted of more than 40 cities, each with a population between 5,000 and 50,000.**
  - But then, suddenly, between 800 and 950 CE, many of the southern cities were abandoned. This period is called the collapse of the Classic Maya civilisations, puzzling modern-day scientists.

### ▪ Special Features:

- As early as 1500 BCE the Maya had settled in villages and had developed an agriculture based on the cultivation of **corn (maize), beans, and squash; by 600 CE cassava (sweet manioc)** was also grown.
- They began to build **ceremonial centres**, and by 200 CE these had developed into cities containing temples, pyramids, palaces, courts for playing ball, and plazas.

- The **ancient Maya quarried immense quantities of building stone** (usually limestone), which they cut by using harder stones such as chert. They practiced mainly slash-and-burn agriculture, but they used advanced techniques of irrigation and terracing. They also **developed a system of hieroglyphic writing and highly sophisticated calendrical and astronomical systems.**
- The Maya made paper from the inner bark of wild fig trees and wrote their hieroglyphs on books made from this paper. Those books are called **codices.**
- The Maya also developed an elaborate and beautiful tradition of **sculpture and relief carving.**
- **Architectural works and stone inscriptions** and reliefs are the chief sources of knowledge about the early Maya.

### Other Ancient Civilizations

- **The Incan Civilization-** Ecuador, Peru, and Chile
- **The Aztec Civilization-** Mexico
- **The Roman Civilization-** Rome
- **The Persian Civilization-** Iran
- **The Ancient Greek Civilization-** Greece
- **The Chinese Civilization-** China
- **The Ancient Egyptian Civilization-** Egypt
- **[The Indus Valley Civilization](#)**- Northeast Afghanistan to Pakistan and northwest India
- **The Mesopotamian Civilization-** Iraq, Syria, and Turkey

**[Source: DTE](#)**

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