



## Environment Impact Assessment

**For Prelims:** EIA Notification 2006, United Nations Environment Programme

**For Mains:** Environment Impact Assessment

### Why in News?

The Ministry of Environment, Forests and Climate Change (MoEF&CC) has notified **amendments to the [Environmental Impact Assessment \(EIA\) Rules](#)**, making several exemptions to **gaining environmental clearance**.

- A new EIA Notification was promulgated by the MoEF&CC in 2006 to scrutinize all relevant information about a project or activity in order to assess (and accordingly mitigate) its potential adverse impacts on the ecology of a region. Amendments were made in 2016, 2020 and 2021.

### What is EIA Notification 2006?

- **Decentralisation of Project Clearances:** It classified the developmental projects in two categories:
  - **Category A** (national level appraisal): projects are appraised by Impact Assessment Agency (IAA) and the Expert Appraisal Committee (EAC).
  - **Category B** (state level appraisal): State Level Environment Impact Assessment Authority (SEIAA) and State Level Expert Appraisal Committee (SEAC) provide clearance to the Category B projects.
- **Introduction of Different Stages:** The Amendment introduced four stages into EIA Cycle; Screening, Scoping, Public hearing and Appraisal.
  - **Category A** projects require mandatory environmental clearance and thus they do not have to undergo the screening process.
  - **Category B** projects undergo a screening process and are further classified into B1 (Mandatorily requiring EIA) and B2 (Not requiring EIA).
- **Projects with Mandatory Clearance:** Projects such as mining, thermal power plants, river valley, infrastructure (road, highway, ports, harbours and airports) and industries including very small electroplating or foundry units are mandated to get environment clearance.

### What are the Exemptions?

- **Strategic and Defence Projects:**
  - Exempts highway projects of strategic and defence importance, which are 100 km from the **[Line of Control](#)**, among other locations, from an environmental clearance before construction.
    - Highway projects related to defence and strategic importance in border states are sensitive in nature and in many cases need to be executed on priority keeping in view strategic, defence and security considerations.

- The exemption to be accorded to highways of strategic importance **does away with the need for green clearance for construction of the controversial Char Dham project**, which includes widening of 899 km roads in ecologically sensitive areas of Uttarakhand to improve connectivity to Kedarnath, Badrinath, Yamunotri, and Gangotri shrines.
  - The case is presently being heard in Supreme Court, which has set up a high-powered committee to look into the matter.

- **Biomass Based Power Plants:**

- Thermal power plants up to 15 MW **based on biomass or non-hazardous municipal solid waste** using auxiliary fuel such as **coal, lignite or petroleum products up to 15%** have also been exempted — as long as the fuel mix is eco-friendly.

- **Ports and Harbour dealing in Fish:**

- Fish handling ports and harbours with less pollution potential compared to others, and caters to small fishermen, **are exempted from environmental clearance.**

- **Toll Plazas:**

- Toll plazas that need more width for installation of toll collection booths to cater to a large number of vehicles, and expansion activities in existing airports related to terminal building expansion without increase in the airport's existing area, rather than expansion of runways, etc., are two other projects exempted.

## What is the Environmental Impact Assessment?

- **About:**

- As per **UNEP (United Nations Environment Programme)** EIA is a tool **used to identify the environmental, social and economic impacts** of a project prior to decision-making.

- **Aim:**

- To **predict environmental impacts at an early stage** in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers.

- **Process:**

- **Screening:** First stage of EIA, which determines whether the proposed project, requires an EIA and if it does, then the level of assessment required.
- **Scoping:** This stage identifies the key issues and impacts that should be further investigated. This stage also defines the boundary and time limit of the study.
- **Impact analysis:** This stage of EIA identifies and predicts the likely environmental and social impact of the proposed project and evaluates the significance.
- **Mitigation:** This step in EIA recommends the actions to reduce and avoid the potential adverse environmental consequences of development activities.
- **Reporting:** This stage presents the result of EIA in a form of a report to the decision-making body and other interested parties.
- **Public hearing:** On completion of the EIA report, public and environmental groups living close to project site may be informed and consulted.
- **Review of EIA:** It examines the adequacy and effectiveness of the EIA report and provides the information necessary for decision-making.
- **Decision-making:** It decides whether the project is rejected, approved or needs further change.
- **Post monitoring:** This stage comes into play once the project is commissioned. It checks to ensure that the impacts of the project do not exceed the legal standards and implementation of the mitigation measures are in the manner as described in the EIA report.

**Source: IE**

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## GOAL 2.0

**For Prelims:** Goal Programme, Digital Technology, Pradhan Mantri Kaushal Vikas Yojana, eSkill India Portal, Samagra Shiksha

**For Mains:** Significance of Digital Empowerment for society of India, Related Government Initiatives

### Why in News?

Recently, **Ministry of Tribal Affairs and Meta (formerly Facebook)** have launched the second phase of the **GOAL Programme (GOAL 2.0)**.

### What do we know about the GOAL Programme?

- **GOAL (Going Online as Leaders)** was launched as a pilot project in **May 2020** and it was completed by **December 2021**.
- It aimed at **digital empowerment of tribal youth and women** through the concept of **mentor and mentee**.
- The programme is **fully funded** by Meta (Facebook India).
- Trainings were provided for **three pillars**:
  - Communication & Life Skills
  - Enabling Digital Presence
  - Leadership & Entrepreneurship

### What do we need to know about GOAL 2.0?

- **About:**
  - Goal 2 program will be **open to all people from tribal communities**.
    - In Phase-I, the digital mentorship was provided online by attaching one mentor to 2 mentees.
- **Objective:**
  - The program aims to upskill and digitally enable tribal youth via Facebook live sessions and **Meta Business Coach**, a digital learning tool.
  - There will be special focus on more than 10 lakh members of 50000 **Vandhan Self Help Groups**.
    - They will be **digitally trained** with regard to **market demand, packaging, branding and marketing of their products**.
  - The GOAL 2 will enable **maximum participation and percolation of benefits** of the training within the tribal youth with provision of **Chatbot**, need based **on line sessions** from Industry experts in different fields as per requirements from the mentees.
- **Agencies Involved:**
  - **The Ministry of Tribal Affairs in coordination with the Ministry of Electronics and Information Technology**, will be providing 6 digital classes in each of the 175 **Eklavya Model Residential Schools (EMRS)** selected under the program.
  - The project is being implemented by **The Education and Research Network**, which is an autonomous organization under the Ministry of **Electronics and Information Technology (MeITY)**.

### What are some other Initiatives for Skill Development?

- **Pradhan Mantri Kaushal Vikas Yojana (PMKVY):**
  - Under the **Skill India Mission**, the Ministry of Skill Development and Entrepreneurship (MSDE) is implementing the scheme.
  - Under **PMKVY 3.0**, focus has also been given for **skilling on digital technology** and **Industry 4.0**.

- **Sector Skill Councils (SSCs)** have also created job roles on new and emerging digital technologies and industry 4.0 skills like [Artificial Intelligence \(AI\)](#) and [Internet of Things \(IoT\)](#).
- **eSkill India Portal:**
  - [National Skill Development Corporation \(NSDC\)](#) under the aegis of the MSDE has initiated **online skilling** through eSkill India portal.
  - The platform offers learning opportunities on emerging technologies like [cybersecurity](#), [blockchain](#), [artificial intelligence](#) and [machine learning](#), [predictive modelling](#), [statistical business analytics](#), [cloud](#) and [Internet of Things](#) along with professional skills like **design thinking, project management and digital marketing**.
- **Samagra Shiksha:**
  - Under the **Vocational Education** component of '[Samagra Shiksha](#)', **National Skill Qualification Framework (NSQF)** compliant vocational courses are offered to the school students including **tribal Students from class 9<sup>th</sup> to 12<sup>th</sup>** in the schools covered under the scheme.
  - It consists of **Communication Skills, Self-Management Skills, Information and Communication Technology Skills, Entrepreneurship Skills and Green Skills**.

[Source: PIB](#)

## Digital Banks

**For Prelims:** Digital Banks' Differing from Digital Banking Units, Financial Inclusion, UPI

**For Mains:** Digital Banks and its Need, NITI Aayog Report on Digital Bank

### Why in News?

Recently, [NITI Aayog](#) has released a Report titled- '**Digital Banks: A Proposal for Licensing & Regulatory Regime for India**'.

- It suggested setting up Digital Banks and a **licensing and regulatory framework for such Banks**.

### What are the Findings of the Report?

- In recent years, India has made rapid strides in furthering [Financial Inclusion \(FI\)](#), catalysed by the [Pradhan Mantri Jan Dhan Yojana \(PMJDY\)](#) and [India Stack](#).
- However, **credit penetration remains a policy challenge**, especially for the nation's 63-million-odd MSME (Micro, Small and Medium Enterprises).
- The FI has been furthered by the [Unified Payments Interface \(UPI\)](#), which has witnessed extraordinary adoption.
  - UPI recorded over 4.2 billion transactions worth Rs 7.7 trillion in October 2021.
- The FI also **resulted in** [Direct Benefit Transfer \(DBT\)](#) through apps such as [PM-KISAN](#) and extending microcredit facilities to street vendors through [PM-SVANIDHI](#).
- India is at the **cusp of operationalizing its own open banking framework**.
- Creating a blueprint for digital banking regulatory framework and policy **offers India the opportunity to cement her position as the global leader** in Fintech at the same time as solving the several public policy challenges she faces.

## What are the Recommendations?

- Issue of a **restricted digital bank licence**, the license would be restricted in terms of volume/value of customers serviced and the like.
- Enlistment of the licensee in a **regulatory sandbox framework enacted by the Reserve Bank of India**.
- Issue of a **'full-scale' digital bank licence**, contingent on satisfactory performance of the licensee in the regulatory sandbox, including salient, prudential and technological risk management.

## What is Digital Bank and What is its Need?

- **Digital Bank:**
  - It will be defined in the [Banking Regulation Act, 1949](#), and shall have its own balance sheet and legal existence.
  - It will be **different from the 75 Digital Banking Units (DBUs)** -- announced by Finance Minister in [Union Budget 2022-23](#) -- which are being set up to push digital payments, banking and fintech innovations in underserved areas.
    - A DBU is a **specialised fixed point business unit** or hub housing certain minimum digital infrastructure for delivering digital banking products and services as well as servicing existing financial products and services digitally in self-service mode at any time.
  - Digital banks will be **subject to prudential and liquidity norms on a par with existing commercial banks**.
- **Need:**
  - **Credit Gap:**
    - The success India has witnessed on the payments front is yet to be replicated in meeting the credit needs of its micro, small and medium businesses.
    - The credit gap reveals a need for **leveraging technology effectively to cater to these needs and bring the underserved** further within the formal financial fold.
  - **Reliance on Digital channels:**
    - Banks and fintech businesses that offer digital banking services rely primarily on **digital channels that organically have high-efficiency metrics relative to incumbent commercial banks**.
    - This structural feature makes them a potentially effective channel through which policymakers can achieve social goals like empowering the under-banked small businesses, and enhancing trust among retail consumers.
  - **Neo-Bank Models Face Challenges:**
    - Existing partnership-based [neo-bank](#) models face several challenges, such as **revenue generation and viability**.
      - Neobanks don't have a bank license of their own but count on bank partners to provide bank licensed services.
    - They have **limited revenue potential**, high cost of capital, and offer products of only partner banks.

[Source: PIB](#)

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## Government Panel on MSP & Natural Farming

**For Prelims:** Natural Farming, Agricultural Marketing System, Commission for Agricultural Costs and Prices (CACP). Minimum Support Price (MSP)

**For Mains:** Natural Farming and Minimum Support Price (MSP)

## Why in News?

Recently, the Union Government set up a **committee headed by the former Union Agricultural secretary** to further look into the **issues of Minimum Support Price (MSP) and [Natural Farming](#)**.

## What was the Purpose of forming the Committee?

- It has been constituted as a follow-up to an announcement by Prime Minister when he had declared the government's intention to **[withdraw the three farm laws](#)**.
- The protesting farmers **had demanded a legal guarantee on MSP**, based on **Swaminathan Commission's 'C2+50% formula'**.
  - The Swaminathan Commission Report states that the **government should raise the MSP to at least 50% more than the weighted average cost** of production. It is also known as the C2+ 50% formula.
  - It includes the **imputed cost of capital and the rent on the land** (called 'C2') to give farmers 50% returns.
- This was in **addition to their demand for repeal of the three farm laws** — Farmers Produce Trade and Commerce (Promotion and Facilitation) Act, 2020; Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Act, 2020; and the Essential Commodities (Amendment) Act, 2020.

## What would be the Role of the Committee?

- **On MSP:**
  - It would discuss approaches to develop the **[Agricultural Marketing System](#)** in accordance with the changing needs of the country in order to ensure higher value to farmers through remunerative prices for their produce by leveraging domestic output and export.
  - To give suggestions to **make available MSP to farmers of the country** by making the system more effective and transparent.
  - To give suggestions on practicality to give more autonomy to **[Commission for Agricultural Costs and Prices \(CACP\)](#)** and measures to make it more scientific.
- **Natural Farming:**
  - It would give **suggestions for programmes and schemes** for value chain development, protocol validation, and research for future needs,
  - Also, push support for area expansion under the **Indian Natural Farming System** through publicity and through involvement and contribution of farmer organisations.
- **[Crop diversification:](#)**
  - It will **investigate, and map present cropping patterns** of agro-ecological zones in producer and consumer states.
  - Promote a **diversification policy approach** to varying the cropping pattern according to the changing needs of the country.

## What is MSP?

- **About:**
  - **Minimum Support Price (MSP)** is a form of **market intervention by the Government of India to insure agricultural producers against any sharp fall in farm prices**.
  - The minimum support prices are announced by the Government of India at the beginning of the sowing season for certain crops on the basis of the **recommendations of the Commission for Agricultural Costs and Prices (CACP)**.
  - Presently, the government announces minimum support prices for **23 crops**.
    - Crops covered by MSPs include:
      - 7 types of cereals (paddy, wheat, maize, bajra, jowar, ragi and barley),
      - 5 types of pulses (chana, arhar/tur, urad, moong and masur),

- 7 oilseeds (rapeseed-mustard, groundnut, soyabean, sunflower, sesamum, safflower, nigerseed),
- 4 commercial crops (cotton, sugarcane, copra, raw jute).

▪ **Objectives:**

- MSP is a price fixed by the Government of India to **protect the producer - farmers - against excessive falls in price during bumper production years.**
- The major objectives are to **support the farmers from distress sales** and to procure food grains for public distribution.
  - In case the market price for the commodity falls below the announced minimum price due to bumper production and glut in the market, government agencies purchase the entire quantity offered by the farmers at the announced minimum price.

▪ **Factors Considered for Fixing MSP:**

- The demand and supply of a commodity
- Its cost of production
- The market price trends (both domestic and international)
- Inter-crop price parity
- The terms of trade between agriculture and non-agriculture (that is, the ratio of prices of farm inputs and farm outputs)
- A minimum of 50% as the margin over the cost of production
- The likely implications of an MSP on consumers of that product

## What is Natural Farming?

▪ **About:**

- **Natural Farming** can be defined as **“chemical-free farming and livestock based ”**.
- Soundly grounded in agroecology, it is a **diversified farming system that integrates crops, trees, and livestock**, allowing the optimum use of functional biodiversity.
- It **holds the promise of enhancing farmers’ income while delivering many other benefits**, such as restoration of soil fertility and environmental health, and mitigating and/or reducing greenhouse gas emissions.
  - This farming approach was **introduced by Masanobu Fukuoka**, a Japanese farmer, and philosopher, in his 1975 book The One-Straw Revolution.

▪ **Advantages:**

- Actual physical work and labor have been reduced by up to 80% compared to other agricultural systems
- Improves soil quality
- Humus is created
- Water retention is improved, so it saves 60 to 80% of water
- Micro-climate around the plants
- Beneficial insects are attracted

## UPSC Civil Services Examination Previous Year Question (PYQ)

**Q. Consider the following statements: (2020)**

1. In the case of all cereals, pulses, and oil seeds, the procurement at Minimum Support Price (MSP) is unlimited in any State/UT of India.
2. In the case of cereals and pulses, the MSP is fixed in any State/UT at a level to which the market price will never rise.

**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

**Ans: D**

## Exp:

- The Government of India announces **Minimum Support Prices (MSP) for 23 major agricultural commodities** each year in both the crop seasons after taking into account the recommendations of the Commission for Agricultural Costs and Prices (CACP).
- CACP recommends MSP for twenty-two (22) crops and Fair & Remunerative Price (FRP) for sugarcane.
  - 7 cereals (paddy, wheat, maize, sorghum, pearl millet, barley and ragi),
  - 5 pulses (gram, tur, moong, urad, lentil),
  - 7 oilseeds (groundnut, rapeseed-mustard, soyabean, sesamum, sunflower, safflower, nigerseed), and
  - 4 commercial crops (copra, sugarcane, cotton and raw jute).
- The Department of Food & Public Distribution declares Fair and Remunerative Prices (FRP) for sugar.
- The overall procurement quantity should not normally exceed 25% of the actual production of the commodity for that particular year/season. Over and above the procurement limit of 25%, if any, prior approval of the Department of Agriculture (DAC) shall be required. **Hence, statement 1 is not correct.**
- The MSP is fixed by the Central government, based on the average of MSP proposals made by various states, some of which can be higher than the Centre's recommendation.
- While the proposals based on input costs vary from state to state, the MSP is fixed to avoid price inequity. When the market prices dip to a level that is below the MSP, the government agencies buy over the produce in order to protect the farmers. Thus market prices can rise above MSP. **Hence, statement 2 is not correct. Therefore, option (d) is the correct answer**

[Source: TH](#)

## India: Top Remittance Recipient

**For Prelims:** Remittance Receipt, Economic Survey, India's position at global remittance receipt level, WHO, World Report on the health of refugees and migrants

**For Mains:** Importance of remittances, Negative effects of Migration

## Why in News?

According to a report released recently by the [World Health Organisation](#) titled "World report on the health of refugees and migrants", India received **USD 87 billion in remittances in 2021.**

## What do we know about the Report?

- **About:**
  - The report is the first to offer a global review of **health and migration** and calls for urgent and concerted action to **support refugees and migrants** across the world to access [health care services](#) that are sensitive to their needs.
- **Findings:**
  - **Migration:**
    - It states that '**Globally, about one in eight people** are migrants.' (Total 1 billion



- are Migrants)
- From 1990 to 2020:
  - The total number of **international migrants** increased from **153 million to 281 million**.
    - About 48% of international migrants are **women** and some 36 million are **children**.
  - As of 2020, Europe and North America hosted the **greatest number** of international migrants, followed by northern Africa and western Asia.
  - More than **half of newly recognized refugees** during the first half of 2021 were from five countries:
    - Central African Republic
    - South Sudan
    - Syrian Arab Republic
    - Afghanistan
    - Nigeria
- **Remittance:**
  - In 2021 the **top five remittance recipients** (among low- and middle-income countries) **in current US dollars** were:
    - **India:** 83 billion
      - India's remittances **rose by 4.8% in 2021**. (Remittance in 2020 at USD 83 billion)
    - **China:** 53 billion
    - **Mexico:** 53 billion
    - **Philippines:** 36 billion
    - **Egypt:** 33 billion
  - As a share of **Gross Domestic Product (GDP)**, the top five remittance recipients in 2021 were smaller economies:
    - **Tonga:** 44%
    - **Lebanon:** 35%
    - **Kyrgyzstan:** 30%
    - **Tajikistan:** 28%
    - **Honduras:** 27%
  - In most other areas, remittances have also recovered strongly, registering growth of **5-10% in Europe and Central Asia, the Middle East and northern Africa, Southern Asia and sub-Saharan Africa**.
  - But at a slower pace of 1.4% in **Eastern Asia and the Pacific**, excluding China.

## What do we know about the Remittances?

- A remittance is **money sent to another party**, usually one in another country.
- The sender is typically an **immigrant** and the recipient a relative back home.
- Remittances represent **one of the largest sources** of income for people in **low-income and developing nations**.
  - It often exceeds the amount of **direct investment and official development assistance**.
- Remittances help families afford food, healthcare, and basic needs.
- India is the world's biggest recipient of remittances.
  - Remittances bolsters India's **foreign exchange reserves** and helps fund its **current account deficit**.

## What is the Significance of Remittances?

- Remittances **increase or maintain consumer spending** and soften the blow of **economic hardship**, such as during the **Covid-19 pandemic**.
- Remittances account for a large fraction of the **global movement of funds**.
  - Despite predictions that remittances would fall due to the Covid-19 pandemic (in part as a result of travel restrictions and the economic downturn), **remittances proved to be resilient**.
- Remittances are an "important and positive" **economic result of migration** for migrants

themselves and for family and friends remaining in their home countries.

- Remittances now stand at more than **threefold above official development assistance** and are **more than 50% higher than foreign direct investment, excluding in China.**

## What are Negative Effects of Migration?

### ▪ Brain Drain:

- The movement of skilled labour may result in a so-called **brain drain**, typically, from lower-income countries, and a **brain gain** in higher-income countries in a process known more generically as **brain circulation**.
  - Brain drain may **worsen** the availability of services, such as **health care**, if highly skilled **doctors and nurses leave lower income countries** seeking better economic opportunity.

### ▪ Left-behind Families:

- Migration affects not only people who move but also their **family and community members who remain**:
  - An estimated **193 million family members of migrant workers are left behind.**
- Migration of individuals to high income countries to undertake care jobs for the host population can create a **care deficit for their own families, especially for children and older people.**

### ▪ Discrimination & Xenophobia:

- Refugees and migrants may face **hateful treatment or attitudes**.
  - **Xenophobia** is the treatment of people as outsiders because of their **language, culture, appearance or place of birth.**
  - Xenophobia may expose refugees and migrants in host countries to discrimination, mistreatment or violence, and it has serious public health consequences.

### ▪ People Smuggling & Human Trafficking:

- While much migration occurs **without contravening laws or regulations**, a significant yet unmeasurable portion of migrants is **exploited by criminal networks**.
  - Although different in legal terms, **people smuggling and human trafficking** share **many similarities** in how they are carried out, and are sometimes hard to distinguish from each other.

[Source: ET](#)

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## Abort Mission for Gaganyaan

**For Prelims:** Abort Mission for Gaganyaan, ISRO, GSLV Low Earth Orbit, ISS

**For Mains:** Gaganyaan Mission and its Significance

## Why in News?

**Indian Space Research Organisation (ISRO)** will conduct **two unmanned 'Abort Mission'** in 2022 to **ensure crew safety during the Gaganyaan mission.**

- This is a part of **ISRO's roadmap for the country's first manned flight to space.**
- The first test vehicle for this purpose was **launched in September 2021.**

## Why Abort Mission Before Gaganyaan?

- The abort missions are **meant to test the systems that can help the crew escape from the spacecraft mid-flight in case of a failure.**
  - ISRO already conducted a pad abort test — where the crew can escape from the spacecraft in case of an emergency at the launch pad — in 2018.
- For the abort missions, ISRO has **developed test vehicles that can send the systems up to a certain height, simulate failure, and then check the escape system.**
  - Escape system is designed with **five “quick-acting” solid fuel motors with a high burn rate propulsion system**, and fins to maintain stability.
- The crew escape system **will separate from the crew module by firing explosive nuts.**
- ISRO's focus is **on perfecting the system that will launch and land Indians on missions to space and to protect the astronauts** if the mission fails.

## What is Gaganyaan Mission?

- **About:**
  - Gaganyaan is a mission by the [Indian Space Research Organisation \(ISRO\)](#).
  - Under the Gaganyaan schedule (to be launched in 2023):
    - Three flights will be sent into orbit.
    - There will be two unmanned flights and one human spaceflight.
  - The Gaganyaan system module, **called the Orbital Module** will have three Indian astronauts, including a woman.
  - It will circle Earth at a [low-earth-orbit](#) at an altitude of 300-400 km from earth for 5-7 days.
- **Payloads:**
  - The payload will consist of:
    - **Crew module:** Spacecraft carrying human beings.
    - **Service module:** Powered by two liquid propellant engines.
    - It will be equipped with emergency escape and emergency mission abort.
- **Launch:**
  - [GSLV Mk III](#), **also called the LVM-3** (Launch Vehicle Mark-3,) the three-stage heavy lift launch vehicle, will be used to launch Gaganyaan as it has the necessary payload capability.
- **Training in Russia:**
  - In June 2019, the Human Space Flight Centre of the ISRO and the Russian government-owned Glavkosmos signed a contract for the training, which includes Russian support in the selection of candidates, their medical examination, and space training.
    - The candidates will study in detail the systems of the Soyuz manned spaceship, as well as be trained in short-term weightlessness mode aboard the Il-76MDK aircraft.
    - The Soyuz is a Russian spacecraft. The Soyuz carries people and supplies to and from the space station.
    - The Il-76MDK is a military transport plane specially designed for parabolic flights of trainee astronauts and space tourists.

## What is the Significance of Gaganyaan Mission?

- **Enhancement of Science and Technology:**
  - It will help in enhancement of science and technology levels in the country and help inspire youth.
  - Gaganyaan will involve numerous agencies, laboratories, disciplines, industries and departments.
  - It will help in the development of technology for social benefits.
- **Improvement of Industrial Growth:**
  - It will help in the improvement of industrial growth.
  - Recently, the Government has announced a new organisation, IN-SPACe, part of reforms to increase [private participation in the space sector](#).
- **International Collaboration:**

- It will help in improving international collaboration.
- One [International Space Station \(ISS\)](#) put up by multiple countries may not be enough. Regional ecosystems will be needed and Gaganyaan will focus on regional needs: food, water and energy security.

## What are the other Upcoming Projects?

- **Chandrayaan-3 Mission:** India has planned a new moon mission named [Chandrayaan-3](#). It is likely to be launched in 2022.
- **Shukrayaan Mission:** The ISRO is also planning a mission to Venus, tentatively called Shukrayaan.
- **XpoSat:** Space observatory, XpoSat, designed to study cosmic x-rays.
- **Aditya L1 mission:** It will see an Indian spacecraft going 1.5 million kms away to the L1 or Lagrangian point between the Sun and Earth.
  - There are five Lagrangian points between any two celestial bodies where the gravitational pull of both the bodies on the satellite is equal to the force required to keep the satellite in orbit without expending fuel, meaning a parking spot in space.

[Source: IE](#)

## Synthetic Biology

**For Prelims:** Synthetic Biology, Applications of Synthetic Biology

**For Mains:** Biotechnology, Scientific Innovations & Discoveries

### Why in News?

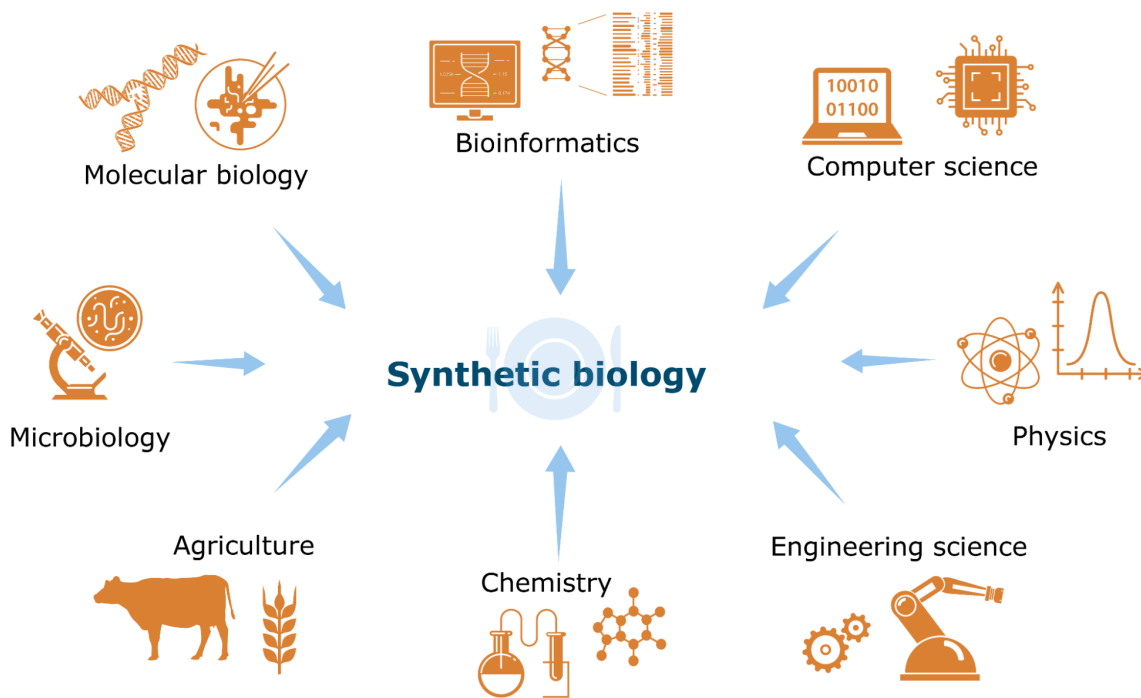
As per study by USA, due to [climate change](#) **one-third of all animal and plant species on the planet could face extinction by 2070.**

- Environmentalists consider **synthetic biology or 'synbio'** as a potential tool to preserve biodiversity and restore the natural ecosystem.

### What is Synthetic Biology?

- The term 'synthetic biology' was **first used by Barbara Hobomin in 1980**, to describe bacteria that had been genetically engineered using recombinant DNA technology.
- Synthetic biology **refers to the science of using genetic sequencing, editing, and modification to create unnatural organisms or organic molecules** that can function in living systems.
- Synthetic biology enables scientists to design and synthesise new sequences of DNA from scratch.
- The term was used to describe the synthesis of unnatural organic molecules that function in living systems.
- More broadly in this sense, the term has been used with reference to efforts to 'redesign life'.

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## What is the use of Synthetic Biology in Preserving Biodiversity and Ecosystem?

- This technology could be helpful in **use for sustainable production of bioenergy, drugs, and food.**
- Interesting application of synbio are its usage for the **capture of [carbon dioxide](#) from industrial emissions.**
  - Further, the captured gas is then **recycled to fuels using microorganisms.** Potentially, such transformations comprise benefits ranging from protecting threatened species to providing synthetic alternatives to wildlife products.
- This technology would help us resolve some of society's most imperative problems from infectious disease to drug development to sustainability.
- Its helping scientists find the right answers, faster and in a more efficient way and driving them towards the path of innovation.

## What are the Concerns related to Synthetic Biology?

- **Economic concerns:**
  - It can create a surge in the economy causing a shift towards biotechnology-based economies.
  - This will affect the rural economy and low-income tropical countries.
  - Natural products are usually grown and harvested in low-income countries, this could be displaced by advancements in synthetic biology
- **Environmental concerns:**
  - When a new species is created or when a species is intensely modified, the activity of species and their coexistence with other organisms is unpredictable.

## Way Forward

- To be able to reach the **UN Sustainable Development Goals**, there is a need to walk extra miles beyond reducing emissions.
- The need of the hour is to reinstate ecological balance and cut down pollution and plastic waste from our industrial processes and day-to-day activities.
- It's just a part of the solution to the most severe threats to the environment including reducing chemical and plastic pollution, and cling carbon dioxide from the environment, but we as an individual also need to fulfil our responsibility toward the environment.

## Euro - Dollar Parity

### Why in News?

Recently, the **Euro and the U.S. dollar reached parity**, meaning **one dollar could buy one euro in the foreign exchange market**.

- Since the beginning of the year, the euro has lost about 12% against the U.S. dollar and it is expected to lose more value going forward.

### What determines a Currency Exchange Rate?

- The price of any currency in a market economy is determined by **supply and demand**.
  - The **supply of a country's currency** in the **foreign exchange market** is determined by various factors such as **central bank policy and the local demand for imports and foreign assets**.
  - The **demand for a country's currency**, on the other hand, is determined by factors such as **central bank policy and the foreign demand for exports and domestic assets**.

### What are the factors behind Fall of the Euro?

- **Divergence in the monetary policies of the U.S. Federal Reserve and the European Central Bank** is the primary reason behind the euro's significant depreciation against the U.S. dollar.
- **Inflation** in the U.S. hit a four-decade high of 9.1% in June 2022 while inflation in the Eurozone reached its highest-ever level of 8.6% during the same month.
  - The U.S. Federal Reserve responded to the rising prices by **raising the interest rates** this year in order to **slow down U.S. money supply growth**.
  - The ECB, however, has been far less aggressive in tightening policy even though the inflation rate is as high as 22% in some European countries.
    - This has caused the **value of the euro to slide against the dollar** as currency traders witness, or at least expect, **the supply of euros in the market rising relative to the supply of dollars**.
- The value of the euro has been affected by the uncertainty in energy supplies in the wake of **Russia's invasion of Ukraine** and the ensuing actions against Russia.
  - Europe now has to **shell out more euros to import limited energy supplies**, which in turn has adversely affected the value of the euro against the U.S. dollar.

### How will Euro Dollar Parity Impact the Economy?

- **Business:**
  - Companies that **export outside the euro area benefit** from the euro's fall because their **prices become more competitive when converted into dollars**.
    - Vice Versa, companies that **import from outside in Euro will bear a loss** as they have to pay more Euros for the imports.
  - In the case of local craftsmen, who are dependent on raw materials and energy, but export little, the **weaker euro can lead to a veritable explosion in costs**.
- **Growth and Debt:**
  - The fall in the value of the euro **makes prices outside the single currency area more competitive**, theoretically providing a boost to the export of European goods and services abroad.
    - But the positive effect can be mitigated by the **rising prices of commodities in**

**the wake of the war in Ukraine**, particularly in export-oriented economies such as Germany.

- For countries that issue dollar-denominated debt, the decline in the value of the euro against the dollar pushes up the cost of debt repayment.

▪ **Central Bank:**

- By fuelling inflation, the euro's fall **could push the European Central Bank to raise interest rates more rapidly.**
  - It is preparing to tighten borrowing costs for the first time in 11 years in July 2022.

## UPSC Civil Services Examination, Previous Year Questions (PYQs)

**Q. Which one of the following groups of items is included in India's foreign-exchange reserves? (2013)**

**(a)** Foreign-currency assets, Special Drawing Rights (SDRs) and loans from foreign countries

**(b)** Foreign-currency assets, gold holdings of the RBI and SDRs

**(c)** Foreign-currency assets, loans from the World Bank and SDRs

**(d)** Foreign-currency assets, gold holdings of the RBI and loans from the World Bank

**Ans: (b)**

**Explanation:**

- Foreign Exchange Reserves are assets kept in reserve by a central bank in foreign currencies.
- According to RBI, Foreign Exchange Reserve in India includes:
  - Foreign Currency Assets
  - Gold
  - SDRs
  - Reserve Tranche Position with IMF
- **Therefore, option (b) is the correct answer.**

[Source: TH](#)

## Taranga Hill-Ambaji-Abu Road

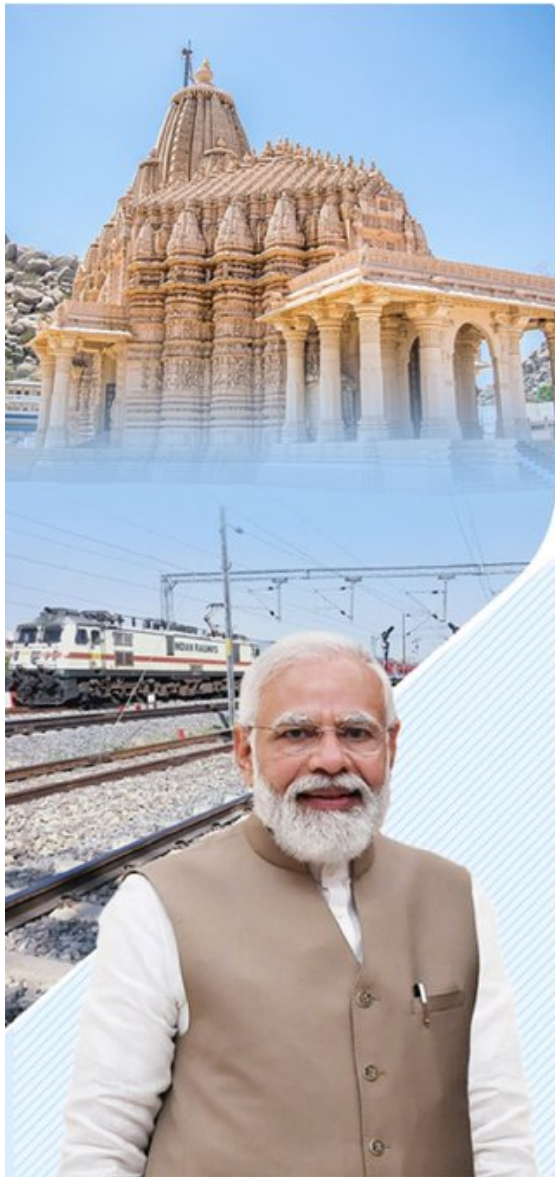
### Why in News?

Recently, the Cabinet Committee on Economic Affairs approved the construction of Taranga Hill-Ambaji-Abu Road new rail line.

### What are the Key Highlights of this Project?

- **About:**
  - The total length of the new rail line will be 116.65 kms.
  - The project will be completed by 2026-27, it will generate direct employment during construction for about 40 lakh man days.
  - The route will go via Rajasthan's **Sirohi district**, as well as Gujarat's **Banaskantha and Mahesana districts.**
- **Significance:**

- It would **enhance connectivity and improve mobility** leading to overall socio-economic development of the region.
- As it **connects the important pilgrimage sites** and hence, it **will facilitate easy travel to millions of devotees**.
- It would also **facilitate faster movement of agricultural and local goods**, further enhance connectivity between Gujarat and Rajasthan.
- It would provide **alternative route** for existing Ahmedabad-Abu Road railway line.



## GOVERNMENT APPROVES Taranga Hill-Ambaji-Abu Road New Rail Line Project

### Improving Connectivity & Mobility

- ✓ Famous pilgrimage center Ambaji, one of the 51 Shaktipeeths
- ✓ Connectivity to Ajitnath Jain Temple at Taranga Hill
- ✓ Easy access for millions of devotees
- ✓ Boost to religious tourism in Rajasthan & Gujarat

#NayiPatriNayiRaftaar

### What are the Pilgrimage sites?

- **Ambaji** is a famous pilgrimage temple site located in Gujarat, which is included in 51 Shaktipeeths.
  - It attracts millions of devotees from Gujarat as well as other parts of the country and abroad every year. Hence, this rail line will facilitate easy travel for these millions of devotees.
- Further, the devotees would visit the Ajitnath Jain temple (one of the 24 holy Jain Tirthankaras) at Taranga Hill would also be greatly benefitted by this connectivity.
  - This railway new line between Taranga Hill-Ambaji- Abu Road will connect these two important religious sports with railway's main network.

**Source: PIB**



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## Wastewater Surveillance for Covid-19

### Why in News?

Recently, a study has been carried out in Hyderabad and Bengaluru to check **waste-water based surveillance for Covid-19** as an efficient and foolproof way of collecting information about the virus.

### What do we need to know about the Study?

- The aim of this study was to **develop a protocol and standard operating procedures** for doing this, which the researchers hope to hand over to the industry, who can then act as service providers.
- The study in Hyderabad was carried out for a period of about a year and obtained data on a **population** size of about 2.5 lakh.
  - The researchers were able to spot the **temporal dynamics in the viral load in drainage water**, which was consistently high from July to November 2020.
  - A slight increase in February 2021 hinted at the **second wave** which set on in March 2021.
  - Samples were collected from Drain:
    - After observation, **the researchers found that most of the virus comes from faecal samples.**
- The group has also studied wastewater samples in Bengaluru.
  - They sampled the water from 28 **Sewage Treatment Plants (STPs)** dotted across the city.
    - In an STP, the water is collected throughout the day, treated and let out again. **So it has to be sampled before treatment.**

### What are the Advantages of Wastewater Surveillance?

- **Trends of increasing or decreasing viral load** can be gauged well before the waves take off.
- In **RT-PCR** on a single person's sample (where the test result can come quickly), it takes a couple of weeks to do the sequence analysis of the sample.
  - In wastewater surveillance, you are sequencing thousands of individuals' virus contributions.
- **New variants can be spotted** in advance, as can different viruses, such as those that cause **Dengue, Zika, or TB.**
  - This would help the **health department to be prepared** to deal with **epidemics.**
    - Studies can monitor **antimicrobial resistance** genes and point out to civic authorities as to which **antibiotics** are failing.
- Unlike other types of Covid-19 surveillance, wastewater surveillance does not depend on people having access to healthcare, people seeking healthcare when sick, or availability of Covid-19 testing.

**Source: TH**