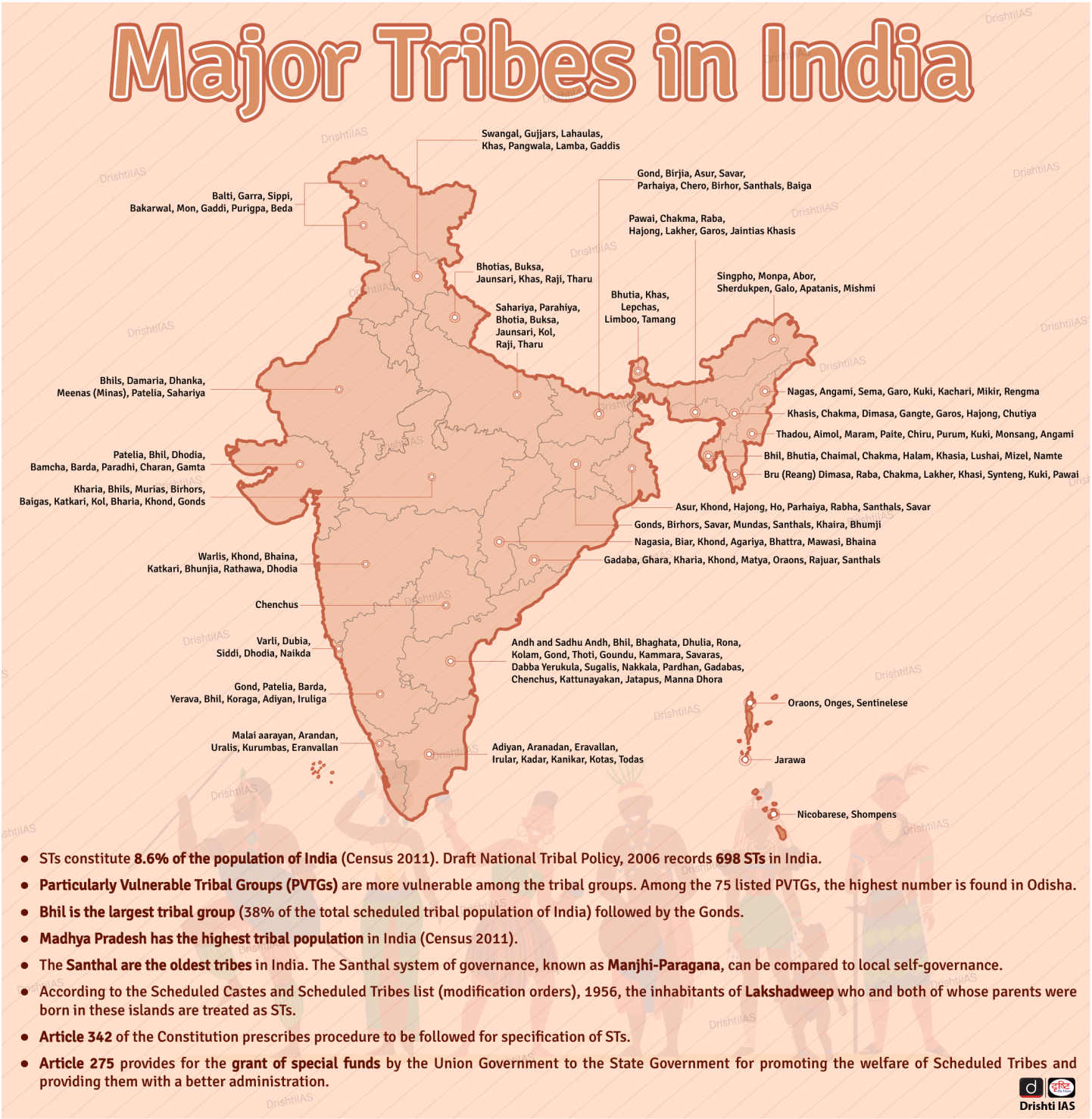
Major Tribes in India



- STs constitute **8.6% of the population of India** (Census 2011). Draft National Tribal Policy, 2006 records **698 STs** in India.
- **Particularly Vulnerable Tribal Groups (PVTGs)** are more vulnerable among the tribal groups. Among the 75 listed PVTGs, the highest number is found in Odisha.
- **Bhil is the largest tribal group** (38% of the total scheduled tribal population of India) followed by the Gonds.
- **Madhya Pradesh has the highest tribal population** in India (Census 2011).
- The **Santhal are the oldest tribes** in India. The Santhal system of governance, known as **Manjhi-Paragana**, can be compared to local self-governance.
- According to the Scheduled Castes and Scheduled Tribes list (modification orders), 1956, the inhabitants of **Lakshadweep** who and both of whose parents were born in these islands are treated as STs.
- **Article 342** of the Constitution prescribes procedure to be followed for specification of STs.
- **Article 275** provides for the **grant of special funds** by the Union Government to the State Government for promoting the welfare of Scheduled Tribes and providing them with a better administration.

Drishti IAS

Russia’s Nuclear-Powered Icebreaker

For Prelims: Arctic Council, Climate Change, Arctic Region, India's Arctic Policy.

For Mains: India’s Arctic Policy. Significance of Arctic for India.

Why in News?

Recently, Russia touted its Arctic power at a flag-raising ceremony and dock launch for two nuclear-powered icebreakers that will ensure year-round navigation in the Western Arctic.

What is the Significance of the Russian Icebreakers?

- **To Strengthen Russia’s Status as a Great Arctic power:**
  - Both icebreakers were laid down as part of Russia’s large-scale, systematic work to re-equip and replenish the domestic icebreaker fleet, to **strengthen Russia’s status as a “great Arctic power.”**
    - In the last two decades, Russia has reactivated several Soviet era Arctic military bases and upgraded its capabilities.
- **For Studying Arctic Region:**
  - For Russia, it is essential to study and develop the Arctic, **to ensure safe, sustainable navigation in this region, and to increase traffic along the northern sea route.**
- **Cut Down Time to Reach Asia:**
  - The development of this most important transport corridor will **allow Russia to more fully unlock its export potential** and establish efficient logistics routes, including to South East Asia.
  - For Russia, the opening of the Northern Sea Route will cut down time to reach Asia by up to two weeks compared to the current route via the Suez Canal

What is the Significance of the Arctic Region?

- **Economic Significance:**
  - The Arctic region has **rich deposits of coal, gypsum and diamonds** and also substantial reserves of zinc, lead, placer gold and quartz. **Greenland** alone possesses about a quarter of the world's rare earth reserves.
  - The Arctic already supplies the world with **roughly 10% of its oil and 25% of its natural gas,** mostly from onshore sources. It is also estimated to hold 22% of the Earth’s undiscovered oil and natural gas reserves.
- **Geographical Significance:** The Arctic **helps circulate the world's** ocean currents**,** moving cold and warm water around the globe.
  - Also, Arctic Sea ice acts as a **huge white reflector at the top of the planet,** bouncing some of the sun's rays back into space, helping keep the Earth at an even temperature.
- **Strategic Importance:**
  - The **Arctic is taking on greater strategic significance** due to **climate change**, as a shrinking ice cap opens up new sea lanes.
  - There has been a **race among Arctic states and near-arctic states to augment their capabilities** in a bid to be ready to capitalize on the melting Arctic.
    - **Eg:** North Atlantic Treaty Organization (NATO) has been conducting regular exercises in the region.
    - **China, which calls itself a near-Arctic state,** has also announced an ambitious plan for a polar silk route to connect to Europe.
- **Environmental Significance:**

- The Arctic and the **Himalayas,** though geographically distant, **are interconnected and share similar concerns.**
- The Arctic meltdown is **helping the scientific community to better understand the glacial melt in the Himalayas,** which has often been referred to as the 'third pole' and has the largest freshwater reserves after the North and South poles.

Where does India stand with respect to the Arctic?

- Since 2007, **India has an Arctic research programme** with as many as 13 expeditions undertaken till date.
- In March 2022, **India unveiled its first Arctic policy** titled: 'India and the Arctic: building a partnership for sustainable development'.
  - **The policy lays down six pillars**: strengthening India's scientific research and cooperation, climate and environmental protection, economic and human development, transportation and connectivity, governance and international cooperation, and national capacity building in the Arctic region.
- India is also one of the **13 Observers in the** Arctic Council**,** the leading intergovernmental forum promoting cooperation in the Arctic.
  - The Arctic Council is an intergovernmental body that promotes research and facilitates cooperation among Arctic countries on issues related to the environmental protection and sustainable development of the **Arctic region.**

What is the Arctic?

- The Arctic is a polar region located at the northernmost part of Earth.
- Land within the Arctic region has seasonally varying snow and ice cover.
- It consists of the Arctic Ocean, adjacent seas, and parts of Alaska (United States), Canada, Finland, Greenland (Denmark), Iceland, Norway, Russia, and Sweden.

Way Forward

- As the earth further heats up, which is more profound at the poles, **the race for the Arctic is set to accelerate which makes the Arctic the next geopolitical hotspot** with all interests converging on it – environmental, economic, political and military.
- India's Arctic Policy is timely and is likely to provide a direction to India's policy-makers on contours of India's engagement with the region.
- There is a **need to promote safe and sustainable resource exploration and development in the arctic region,** with efficient multilateral actions taking into account cumulative environmental impacts.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q. Consider the following countries: (2014)

1. Denmark
2. Japan
3. Russian Federation
4. United Kingdom
5. United States of America

Which of the above are the members of the 'Arctic Council'?

(a) 1, 2 and 3

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

Ans: (d)

Exp:

- The **'Arctic Council'** is the leading intergovernmental forum promoting cooperation, coordination and interaction among the Arctic States, Arctic indigenous communities and other Arctic inhabitants on common Arctic issues, in particular on issues of sustainable development and environmental protection in the Arctic.
- The **1996 Ottawa Declaration** established the 'Arctic Council'. The Declaration lists the following countries as members of the Arctic Council: Canada, the Kingdom of Denmark, Finland, Iceland, Norway, the Russian Federation, Sweden and the United States. **Hence, 1, 3 and 5 are correct.**
- Japan and United Kingdom are not the member states of the Arctic Council. However, they have been accorded with observer status. **Hence, 2 and 4 are not correct.**
- The Arctic Council's mandate, as articulated in the Ottawa Declaration, explicitly excludes military security.
- **Therefore, option (d) is the correct answer.**

Mains

Q.1 Why is India taking keen interest in the resources of the Arctic region? **(2018)**

Q.2 What is the economic significance of the discovery of oil in the Arctic Sea and its possible environmental consequences? **(2015)**

Source: TH

Constitution Day

For Prelims: Constitution of India, Constitution Day, Government of India Act 1935

For Mains: Drafting of the Indian Constitution, Key Features of the Constitution of India

Why in News?

Prime Minister of India launched **various new initiatives under the e-court project** including Virtual Justice Clock, JustIS mobile App 2.0, Digital court and S3WaaS Websites on Constitution Day**, 26th November 2022.**

What are the Initiatives under the E-Court Project?

- **Virtual Justice Clock** is an initiative to exhibit vital statistics of the justice delivery system at the Court level.
- **JustIS Mobile App 2.0** is a tool available to judicial officers for effective court and case

management by monitoring pendency and disposal of cases.
- **Digital court** is an initiative to make the court records available to the judge in digitised form to enable the transition to Paperless Courts.
- **S3WaaS Websites** is a framework to generate, configure, deploy and manage websites for publishing specified information and services related to district judiciary.

What is Constitution Day?

- It is celebrated on **26th November** every year.
- It is also known as **National Law Day.**
- On this day in 1949, the **Constituent Assembly of India formally adopted the Constitution of India** that came into force on 26th January 1950.
- The Ministry of Social Justice and Empowerment on 19th November 2015, notified the decision of the Government of India **to celebrate 26 November as 'Constitution Day'.**

How was the Constitution Framed?

- In 1934, **M N Roy** first proposed the idea of a constituent assembly.
- Under the Cabinet Mission plan of 1946, elections were held for the **formation of the constituent assembly.**
- The Constitution of India is framed by the Constituent Assembly. The Constituent Assembly of India appointed a number of committees to deal with different tasks related to the framing of the constitution.
- The **8 major committees** and their heads are mentioned below:
    - **Drafting Committee** – B. R. Ambedkar
    - **Union Power Committee** – Jawaharlal Nehru
    - **Union Constitution Committee** – Jawaharlal Nehru
    - **Provincial Constitution Committee** – Vallabhbhai Patel
    - **Advisory Committee on Fundamental Rights, Minorities and Tribal and Excluded Areas** – Vallabhbhai Patel
    - **Rules of Procedure Committee –** Rajendra Prasad
    - **States Committee (Committee for Negotiating with States)** – Jawaharlal Nehru
    - **Steering Committee** – Rajendra Prasad

What are the Key Facts about the Constitution of India?

- World's **lengthiest Constitution.**
- **Federal System** with **Unitary Features.**
- **Parliamentary Form of Government.**
- The framing of the Constitution took over **2 years, 11 months and 18 days.**
- The original copies of the Indian Constitution weren't typed or printed. They have been **handwritten** and are now kept in a helium-filled case within the library of the Parliament.
- **Prem Bihari Narain Raizada** had written the unique copies of the Constitution of India.
- Originally, the Constitution of India was **written in English and Hindi.**
- The **basic structure of the Indian Constitution** stands on the **Government of India Act, 1935.**
- The Constitution of India has also **borrowed some of its features** from a number of countries.

Indian Constitution Borrowed Features

1.	British Constitution	Parliamentary form of Government, Rule of Law, Law making procedure, Single Citizenship; Institution of Speaker, doctrine of pleasure tenure of civil servants.
2.	American Constitution	Judicial System, Fundamental Rights
3.	Canadian Constitution	Federal System with a strong central authority; Residual powers, Centre State Relation.
4.	Irish Constitution	Directive Principles, Election of the President of India
5.	Australian Constitution	Concurrent list; Freedom of Trade & Service within country
6.	Weimar Constitution	Emergency Provision
7.	Soviet Constitution	Five Year Plans; Fundamental duties
8.	Govt of India Act 1935	Office of the governor, powers of the federal jury.
9.	South African	Amendment of Constitution.

UPSC Civil Services Examination, Previous Year Questions (PYQ)

Prelims

Q. What was the exact constitutional status of India on 26th January, 1950? (2021)

(a) A Democratic Republic
(b) A Sovereign Democratic Republic
(c) A Sovereign Secular Democratic Republic
(d) A Sovereign Socialist Secular Democratic Republic

Ans: (b)

Exp:

- The Constituent Assembly on 26th November, 1949, adopted, enacted and gave citizens their own Constitution.
- The Constitutional status of India on 26th January,1950 was a Sovereign Democratic Republic as the words- Socialist and Secular were added to the Preamble by the 42nd Constitutional Amendment Act, 1976.
- Presently, the Preamble to the Indian Constitution defines India to be a Sovereign, Socialist, Secular and Democratic Republic.
- **Therefore, option B is the correct answer.**

Mains

Q. It would have been difficult for the Constituent Assembly to complete its historic task of drafting the Constitution for Independent India in just three years but for the experience gained with the Government of India Act, 1935. Discuss. **(2015)**

Source: PIB

Same-sex Marriage under the Special Marriage Act, 1954

For Prelims: Supreme Court, Special Marriage Act, 1954, LGBTQ+ community

For Mains: Issues Related to Transgenders, Special Marriage Act, 1954.

Why in News?

Recently, the **Supreme Court** has issued notice to the Centre and the **Attorney General for India** on a plea by two gay couples seeking recognition of same-sex marriage under the **Special Marriage Act, 1954.**

- As a result of several petitions, a two-judge bench headed by **Chief Justice of India D Y Chandrachud issued the notice.**
- The non-recognition of same-sex marriage amounted to **discrimination that struck at the root of dignity and self-fulfillment of** LGBTQ+ **couples.**

What are the Arguments of the Petitioners?

- The Act is ultra vires the Constitution to the extent it **discriminates between same-sex couples and opposite sex couples**, denying same-sex couples both legal rights as well as the social recognition and status that flows from marriage.
    - The Special Marriage Act of 1954 ought to apply to a marriage between any two persons, regardless of their gender identity and sexual orientation.
- If not, the Act, in its present form **should be declared violative of the** fundamental rights **to a dignified life and equality** as "it does not provide for solemnisation of marriage between same sex couple".
- The Act should **grant same sex couple the same protection** it allowed inter-caste and inter-faith couples who want to marry.
- There has been **insufficient progress by simply decriminalizing homosexuality; equality must extend to all spheres of life**, including the home, the workplace, and public places, for LGBTQ+ individuals.
    - Current population of LGBTQ+ are 7% to 8% of the population of the country.

What is the Legality of Same-Sex Marriages in India?

- The right to marry is **not expressly recognized either as a fundamental or constitutional right under the Indian Constitution.**
- Though **marriage is regulated through various statutory enactments,** its recognition as a fundamental right has only developed through judicial decisions of India's Supreme Court. Such declaration of law is binding on all courts throughout India under Article 141 **of the Constitution.**

What are the Views of Supreme Court on Same Sex Marriages?

- **Marriage as a Fundamental Right (Shafin Jahan v. Asokan K.M. and others 2018):**
    - While referring to **Article 16 of** Universal Declaration of Human Rights and the Puttaswamy case, the SC held that the right to marry a person of one's choice is integral to **Article 21** of the Constitution.
        - Article 16 **(2)** in the Indian constitution provides that there cannot be any discrimination on grounds only of religion, race, caste, sex, descent, place of birth, residence or any of them.
    - The **right to marry is intrinsic to the liberty which the Constitution guarantees as a fundamental right,** is the ability of each individual to take decisions on matters central to the pursuit of happiness. Matters of belief and faith, including whether to believe are at the core of constitutional liberty.
- **LGBTQ Community Entitled to all Constitutional Rights (Navjet Singh Johar and others v. Union of India 2018):**
    - The **SC held that members of the** LGBTQ community **"are entitled,** as all other citizens, to the full range of constitutional rights including the liberties protected by the

Constitution” and are entitled to equal citizenship and “equal protection of law”.

What is the Special Marriage Act (SMA), 1954?

- **About:**
  - Marriages in India can be **registered under the respective personal laws Hindu Marriage Act, 1955, Muslim Marriage Act, 1954, or under the Special Marriage Act, 1954.**
  - It is the **duty of the Judiciary to ensure that the rights of both the husband and wife are protected.**
  - The **Special Marriage Act, 1954 is an Act of the Parliament of India** with provision for civil marriage for people of India and all Indian nationals in foreign countries, irrespective of religion or faith followed by either party.
  - When a person solemnises marriage under this law, then the marriage is not governed by personal laws but by the Special Marriage Act.
- **Features:**
  - Allows people from two different religious backgrounds to come together in the bond of marriage.
  - Lays down the procedure for both solemnization and registration of marriage, where either of the husband or wife or both are not Hindus, Buddhists, Jains, or Sikhs.
  - Being a secular Act, it plays a key role in liberating individuals from traditional requirements of marriage.

Way Forward

- The LGTBQ community **needs an anti-discrimination law that empowers them to build productive lives and relationships irrespective of gender identity** or sexual orientation and place the onus to change on state and society and not the individual.
- Once members of the LGBTQ community “are entitled to the full range of constitutional rights”, it is beyond doubt that the fundamental right to marry a person of one’s own choice has to be conferred on same sex couples intending to marry. **More than two dozen countries have legalized same-sex marriage.**

Source: IE

Russia's Advanced Fuel Option for KKNPP

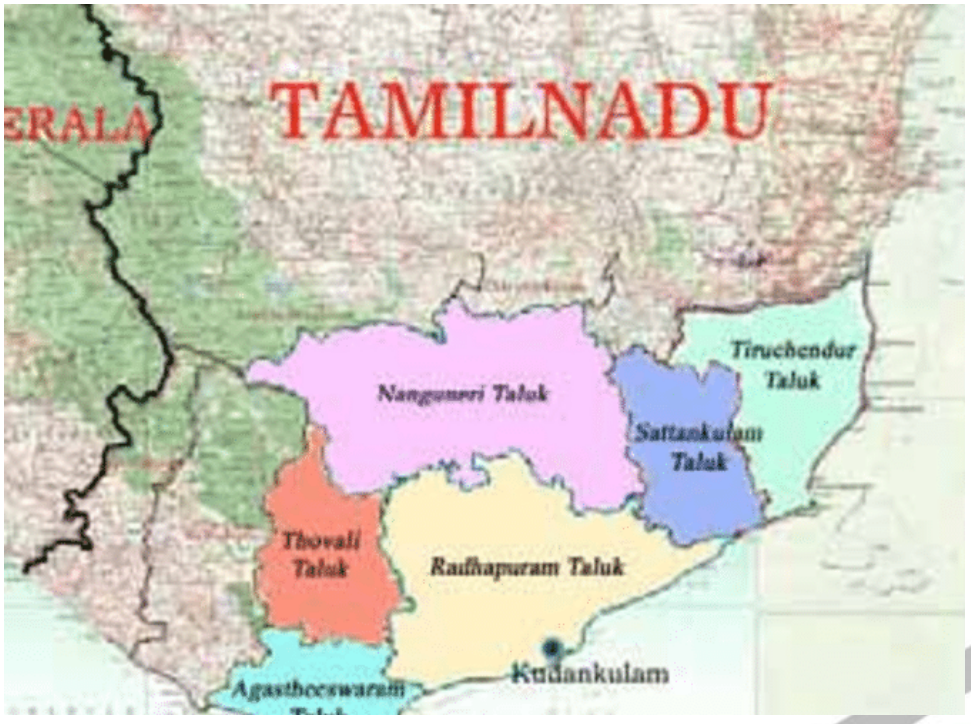
For Prelims: Nuclear Energy, Nuclear Plants of India

For Mains: Nuclear Energy, Significance of Nuclear Energy, Nuclear Plants of India

Why in News?

Recently, the **Russian state-owned** Nuclear Energy corporation **Rosatom** has offered a more **Advanced Fuel Option** to India’s **largest nuclear power station** at Kudankulam, Tamil Nadu.

- It will allow its **reactors to run for an extended two-year cycle** without stopping to load fresh fuel.



What did Russia Offer to India?

- **Update to KKNPP Reactors:**
  - Rosatom's nuclear fuel division, **TVEL Fuel Company,** is the current supplier of **TVS – 2 M fuel for the two VVER 1,000 MWe reactors,** generating power in the **Kudankulam Nuclear Power Project (KKNPP)**. This fuel has an 18-month fuel cycle, meaning that the reactor **has to be stopped for fresh fuel loading every one-and-a-half years.**
    - TVEL has now offered the more modern **Advanced Technology Fuel (ATF),** whose **fuel cycle is 24 months.**
- **Benefits of the Update:**
  - It will ensure **more efficiency, additional power generation** due to prolonged operation of the reactor and **sizable savings of the foreign exchange** needed to buy fresh fuel assemblies from Russia.

What is Nuclear Energy?

- **About:**
  - **Nuclear energy** comes from **splitting atoms in a reactor to heat water** into steam, **turn a turbine** and **generate electricity.**
  - Inside nuclear power plants, nuclear reactors and their equipment **contain and control the chain reactions, m**ost commonly fueled by **Uranium-235**, to produce heat through fission.
  - **Emissions from Nuclear Power Generation:**
    - Nuclear power is **zero-emission**. It has **no** greenhouse gases or air pollutants.
  - **Land Usage:**
    - According to US government data, a 1,000-megawatt nuclear plant requires 360 times less land than a similar-capacity wind farm and 75 times less land than solar plants.
- **Significance for India:**
  - **Availability of Thorium:**
    - India is the **leader of the new resource of nuclear fuel called Thorium**, which is considered to be the **nuclear fuel of the future.**
    - With the availability of Thorium, India has the **potential to be the first nation** to realise the dream of a fossil fuel-free nation.
  - **Cuts Import Bills:**
    - Nuclear energy will also **relieve the nation of about $100 billion annually**

which we spend on importing petroleum and coal.

- **Stable and Reliable Source:**
  - The **greenest sources of power** are definitely solar **and** wind.
    - But solar and wind power, despite all their advantages, **are not stable** and are **dependent excessively on weather** and sunshine conditions.
    - Nuclear power, on the other hand, provides a relatively clean, high-density source of reliable energy with an international presence.

What are India's Initiatives Regarding Nuclear Energy?

- India has consciously proceeded to explore the possibility of tapping nuclear energy for the purpose of power generation.
  - In this direction a **three-stage nuclear power programme** was formulated by **Homi Bhabha in the 1950s.**
- **The Atomic Energy Act, 1962** was framed and implemented with the set objectives of using two naturally occurring elements **Uranium** and **Thorium** as nuclear fuel in Indian Nuclear Power Reactors.
- In December, 2021, the Government of India informed **Parliament** about building ten indigenous **Pressurised Heavy Water Reactors (PHWRs)** to be set up in fleet mode and had granted **"in principle approval"** for 28 additional reactors, including 24 to be imported from France, the U.S. and Russia.
- In December, 2021, the Centre has given in-principle (first step) approval for setting up of **six nuclear power reactors at Jaitapur in Maharashtra.**
  - The Jaitpur Project is a key component of the **strategic partnership between India and France.**
  - **Jaitapur would be the world's most powerful nuclear power plant.** There would be **six state-of-the-art Evolutionary Power Reactors (EPRs)** with an installed capacity of **9.6 GW that will produce low carbon electricity.**
  - The six nuclear power reactors, which will have a capacity of 1,650 MW each, **will be set up with technical cooperation from France.**

How many Nuclear Power Plants does India have?

- Presently, India has **22 operating nuclear power reactors,** with an installed capacity of 6780 MegaWatt electric (MWe). Some major power plants are:
  - **Tarapur Atomic Power Station** (TAPS), in Maharashtra
  - **Rajasthan Atomic Power Station** (RAPS), in Rajasthan
  - **Madras Atomic Power Station** (MAPS), in Tamil Nadu
  - **Kaiga Generating Station** (KGS), in Karnataka
  - **Kudankulam Nuclear Power Station** (KKNPS), in Tamil Nadu
  - **Narora Atomic Power Station** (NAPS), in Uttar Pradesh
  - **Kakrapar Atomic Power Station** (KAPS), in Gujarat
- Among these, 18 reactors are **Pressurised Heavy Water Reactors (PHWRs)** and 4 are Light Water Reactors (LWRs).

UPSC Civil Services Examination Previous Year Questions (PYQ)

Prelims

Q1. The known forces of nature can be divided into four classes, viz., gravity, electromagnetism, weak nuclear force and strong nuclear force. With reference to them, which one of the following statements is not correct? (2013)

(a) Gravity is the strongest of the four
(b) Electromagnetism acts only on particles with an electric charge
(c) Weak nuclear force causes radioactivity
(d) Strong nuclear force holds protons and neutrons inside the nucleus of an atom

Ans: (a)

Q2. The function of heavy water in a nuclear reactor is to (2011)

(a) Slow down the speed of neutrons
(b) Increase the speed of neutrons
(c) Cool down the reactor
(d) Stop the nuclear reaction

Ans: (a)

Mains

Q1. With growing scarcity of fossil fuels, the atomic energy is gaining more and more significance in India. Discuss the availability of raw material required for the generation of atomic energy in India and in the world. **(2013)**

Q2. Give an account of the growth and development of nuclear science and technology in India. What is the advantage of fast breeder reactor programme in India? **(2017)**

Q3. With growing energy needs should India keep on expanding its nuclear energy programme? Discuss the facts and fears associated with nuclear energy. **(2018)**

Source: TH

National Milk Day

For Prelims: National Milk Day, White Revolution of India, Operation Flood, Animal Husbandry Infrastructure Development Fund (AHIDF), National Animal Disease Control Programme, Rashtriya Gokul Mission, National Artificial Insemination Programme, National Livestock Mission

For Mains: Role of dairy and livestock sector in Indian economy, Related issues and Initiatives taken to promote the sector.

Why in News?

Department of Animal Husbandry is **celebrating** National Milk Day **on 26th November 2022.**

- **National Gopal Ratna Awards 2022** are conferred as part of the celebrations.
- Animal Quarantine Certification Services are also to be inaugurated.
- June 1 is observed as **World Milk Day** every year.

What is National Milk Day?

- The day celebrates **the importance of milk in a person's life.** And to promote the **benefits related to the milk** & milk industry and **to create awareness among people about the importance of milk** and milk products.

- 26th November 2022 commemorates **101st birth anniversary of Dr. Verghese Kurien, the "Father of White Revolution in India".**
- **Dr. Verghese Kurien (1921-2012):**
  - He is known as the **'Father of White Revolution in India'.**
  - He **is famous for his** 'Operation Flood'**,** which is known as the **world's largest agricultural program.**
  - He established 30 institutions that are **run by various farmers and workers.**

  - He also played a key role in the **establishment and success of Amul Brand.**
  - Because of his efforts only, India **became the largest producer of milk in 1998,** surpassing the U.S.
  - He also helped manage the **Delhi Milk Scheme and corrected the prices. He also helped India become self-sufficient in** edible oils.
  - He was honoured with several awards, including the **Ramon Magsaysay Award (1963), Krishi Ratna (1986)** and World Food Prize **(1989).**
  - He is also the recipient of India's highest civilian awards- **Padma Shri** (1965), **Padma Bhushan (1966) and Padma Vibhushan (1999).**

What was White Revolution of India?

- **About:**
  - **Operation Flood** was launched on 13th January, 1970. It was the world's largest dairy development programme.
  - Within 30 years, the operation **helped double milk available per person in India,** making dairy farming India's largest self-sustainable rural employment generator.
  - The operation gave **farmers direct control over the resources they create, helping them direct their own development**. This was achieved not only by mass production, but by production by the masses. It is also now known as the **"White Revolution".**
- **Phases:**
  - **Phase I (1970-1980):** This phase was financed by the sale of butter oil and skimmed milk powder donated by the **European Union** through the World Food Program.
  - **Phase II (1981 to 1985):** During this phase, the number of milk sheds increased from 18 to 136, milk outlets were expanded to about 290 urban markets, a self-sustaining system was set up that included 4,250,000 milk producers spread across 43,000 village cooperatives.
  - **Phase III (1985-1996):** This phase enabled the dairy cooperatives to expand and gave a finishing touch to the programme. It also strengthened the infrastructure required to procure and market increasing volumes of milk.
- **Objectives:**
  - Increase milk production ("a flood of milk").
  - Increase rural incomes.
  - Reasonable prices for consumers.
- **Significance:**
  - It helped dairy farmers **direct their own development, placing control of the resources** they create in their own hands.
  - It has helped **India become the largest producer of milk** in the world in 2016-17.
  - Currently, India is the world's largest milk producer, with **22% of global production.**
- **Related Initiatives:**
  - **Animal Husbandry Infrastructure Development Fund (AHIDF)**
  - **National Animal Disease Control Programme**
  - **Rashtriya Gokul Mission**
  - **National Artificial Insemination Programme**
  - **National Livestock Mission**

UPSC Civil Services Examination, Previous Year Question (PYQ)

Mains

Q. Explain various types of revolutions, took place in Agriculture after Independence in India. How these revolutions have helped in poverty alleviation and food security in India? **(2017)**

Source: PIB

Life of Plastic

For Prelims: Plastic Waste, Types of Plastic Waste, Related Initiatives

For Mains: Plastic Waste, Types of Plastic Waste, Impact of Plastic Waste, Challenges in Plastic Waste Management, Government's Initiatives

Why in News?

Recently, the document titled **"The Plastic Life-Cycle"** has stated that **India is not collecting and recycling its polymer waste properly.**

- The document highlighted that **unless the entire life cycle of plastic**, from source to disposal, is not together considered as the root cause of the pollution it causes, **the problem is not going away.**

What is Plastic Waste?

- **About:**
  - Unlike **other forms of waste** like paper, food peels, leaves etc., **which are biodegradable** (capable of being decomposed by bacteria or other living organisms) in nature, plastic waste **because of its non-biodegradable nature** persists into the environment, for hundreds (or even thousands) of years.
- **Major Polluting Plastic Waste:**
  - **Microplastics** are small plastic pieces of **less than five millimeters** in size.
    - Microplastic includes **microbeads** (solid plastic particles of less than one millimeter in their largest dimension) that are used in **cosmetics and personal care products, industrial scrubbers,** microfibers used in textiles and virgin resin pellets used in plastic manufacturing processes.
    - Due to sun exposure and physical wear, large pieces of plastic that were not recycled break up to produce microplastics.
  - **Single-use plastic** is a disposable material that can be **used only once before it is either thrown away or recycled,** like plastic bags, water bottles, soda bottles, straws, plastic plates, cups, most food packaging and coffee stirrers are sources of single use plastic.
- **Issues Associated:**
  - **More Plastic Per Person:**
    - A little over 10,000 tonnes a day of plastic waste remains uncollected.
  - **Unsustainable Packaging:**
    - India's **packaging industry** is the biggest consumer of plastics.
    - A 2020 study on packaging in India projects a loss of almost 133 billion dollars worth of plastic material value over the next decade due to unsustainable

packaging.
        - Unsustainable packaging involves **general packaging through single use plastic.**
    - **Online Delivery:**
        - The popularity of **online retail and food delivery apps,** though restricted to big cities, is **contributing to the rise in plastic waste.**
        - India's biggest online delivery startups Swiggy and Zomato are each reportedly delivering about 28 million orders a month.
    - **Upsets the Food Chain:**
        - Polluting plastics can affect the **world's tiniest organisms**, such as **plankton.**
        - When these organisms become poisoned due to plastic ingestion, this causes problems for the larger animals that depend on them for food.

What are the Challenges Faced by India in Plastic Waste Management?

- **Management of plastic waste involves two distinct steps:**
    - Collection and recycling
    - End-of-life disposal.
    - **Both are not executed properly in India.**
- **Improper Implementation and Monitoring:**
    - The collection of plastic waste is the **responsibility of** local government bodies, producers, importers and brand owners.
        - However, plastic waste in India is collected mostly by ragpickers, rather than the authorities.
    - As high as 42% - 86% of the plastic waste in India flows through the informal sector to material recovery facilities operated by multinational corporations in partnership with local governments or otherwise.
    - The Indian government claims that the country is recycling 60% of its plastic waste. However, this is limited to specific types of polymers (plastics) like PET bottles.
    - As per a statistical analysis done by Centre for Science and Environment using Central Pollution Control Board (CPCB) 's data, **India is merely recycling (through mechanical recycling) 12% of its plastic waste.**
- **Burning of Waste:**
    - Close to 20% of plastic waste is channelised for end-of-life solutions like co-incineration, plastic-to-fuel and road making, which means India is burning 20% of plastic waste.

What is India Doing for Plastic Waste Management?

- **National Dashboard on Elimination of Single Use Plastic and Plastic Waste Management:**
    - India launched a nationwide awareness campaign on **Single Use Plastics on World Environment Day in June 2022.**
    - A mobile app for **Single Use Plastics Grievance Redressal** was also launched to empower citizens to check sale/usage/manufacturing of SUP in their area and tackle the plastic menace.
- **Plastic Waste Management Amendment Rules, 2022:**
    - It prohibits the manufacture, import, stocking, distribution, sale and use of several **single-use plastic items as of July 1, 2022.**
    - It has also mandated **Extended Producer Responsibility (EPR)** that incorporates circularity by making manufacturers of products responsible for collecting and processing their products upon the end of the products' lifetime.
- **India Plastics Pact:**
    - It is the first of its kind in Asia. The Plastics Pact is an **ambitious and collaborative initiative to bring stakeholders together** to reduce, reuse and recycle plastics within the material's value chain.
- **Mascot 'Prakriti':**
    - To spread awareness among masses about small changes that can be sustainably adopted in lifestyle for a better environment.
- **Project REPLAN:**

- **Project REPLAN (stands for REducing PLastic in Nature)** launched by **Khadi and Village Industries Commission (KVIC)** aims to reduce consumption of plastic bags by providing a more sustainable alternative.

What should be Our Approach Moving Forward?

- **Identifying Hotspots:**
  - Identifying **key hotspots of Plastic leakage** associated with production, consumption, and disposal of Plastic can assist governments in developing effective policies that address the plastic problem directly.
- **Designing Alternatives:**
  - Identifying **plastic items that can be replaced with non-plastic, recyclable, or biodegradable materials is the first step.**
  - Promoting the use of **Oxo-biodegradable plastics,** that are manufactured to be broken down by ultra-violet radiation and heat, more quickly than regular plastics.
- **Recycling through Technologies and Innovation:**
  - Waste is valuable and Waste is a resource, especially plastic. Recycling, especially plastic recycling, sets a system in place which creates a value chain for waste.
- **Circular Economy for Plastic Management:**
  - **Circular economy** can reduce material use, redesigns materials to be less resource intensive, and recaptures “waste” as a resource to manufacture new materials and products.
  - Circular economy can also contribute significantly to the achievement of sustainable development goals.

UPSC Civil Services Examination, Previous Year Questions (PYQ)

Q. Why is there a great concern about the ‘microbeads’ that are released into environment? (2019)

(a) They are considered harmful to marine ecosystems.
(b) They are considered to cause skin cancer in children.
(c) They are small enough to be absorbed by crop plants in irrigated fields.
(d) They are often found to be used as food adulterants.

Ans: (a)

Source: DTE

Rooftop Solar Installations

For Prelims: Schemes and Programmes for Achieving Renewable Energy Target

For Mains: India's achievements in renewable energy sector, India's renewables energy targets, challenges and initiatives taken to achieve it.

Why in News?

Rooftop solar capacity installations in India fell 29% to 320 megawatt (MW) in July-September 2022, according to Mercom Research India.

What are the Findings?

- **Cumulative Installations:**
  - At the end of Q3 2022, cumulative rooftop solar (RTS) installations **reached 8.3 GW.**
  - Gujarat became the **leading state with the highest rooftop solar installations,** followed by Maharashtra and Rajasthan.
  - The top 10 states accounted for **approximately 73% of cumulative rooftop solar installations.**
- **Decline in Installations:**
  - During January-September, the installations at 1,165 MW were also down 11% compared with 1,310 MW in the corresponding nine-month period of 2021.
- **Causes of Decline**:
  - Solar installations are trending down because **their costs have risen.**
  - The market is struggling **with supply issues because of the Approved List of Module and Manufacturers (ALMM)**, and installers are finding it a tough environment to operate in overall.

What is Rooftop Solar?

- **About:**
  - Rooftop solar is a photovoltaic **system** that has its electricity-generating solar panels mounted on the rooftop of a residential or commercial building or structure.
  - Rooftop mounted systems are small compared to ground-mounted photovoltaic power stations with capacities in the megawatt range.
  - Rooftop PV systems on residential buildings typically feature a capacity of about 5 to 20 kilowatts (kW), while those mounted on commercial buildings often reach 100 kilowatts or more.
- **Challenges:**
  - **Flip-Flopping Policies:**
    - Although many companies began using solar energy, flip-flopping (sudden real or apparent change of policy) policies remained a major hurdle, especially when it came to power distribution companies (discoms).
    - Industry executives point out RTS was becoming attractive for several consumer segments when discoms and state governments started tightening regulations for the sector.
      - India's **Goods and Service Tax (GST) Council** recently hiked the GST of many components of the solar system from 5% to 12%.
      - **It will increase RTS's capital cost by 4-5%.**
  - **Regulatory Framework:**
    - The growth of the RTS segment is highly dependent on the regulatory framework.
    - Slow growth has been primarily caused by the absence or withdrawal of state-level policy support for the RTS segment, especially for the business and industrial segment, which makes up the bulk of target consumers.
  - **Inconsistent Rules on Net and Gross Metering:**
    - Net metering regulations are one of the major obstacles facing the sector.
    - According to a report, Power ministry’s new rules that **excludes rooftop solar systems above 10 kilowatts (kW) from net-metering** would stall adoption of larger installations in India affecting the country’s rooftop solar target.
      - The new rules mandate net-metering for rooftop solar projects up to 10 kW and gross metering for systems with loads above 10 kW.
      - Net metering allows surplus power produced by RTS systems to be fed back into the grid.
      - Under the gross metering scheme, **state DISCOMS compensate consumers with a fixed feed-in-tariff for the solar power** supplied to the grid by the consumer.
  - **Low Financing:**

- The Union Ministry of New and Renewable Energy (MNRE) has advised banks to give loans for RTS at subsidised rates. However, nationalised banks hardly offer loans to RTS.
- Thus, many private players have come into the market that offer **loans for RTS at higher rates like 10-12%.**

What are the Schemes for Promoting Solar Energy?

- **Rooftop Solar Scheme:** To generate solar power by installing solar panels on the roof of the houses, the Ministry of New and Renewable Energy is implementing Grid-connected Rooftop Solar Scheme (Phase II).
    - It aims to achieve a cumulative capacity of 40,000 MW from Rooftop Solar Projects by 2022.
- **Kisan Urja Suraksha evam Utthaan Mahabhiyan**: The scheme covers grid-connected Renewable Energy power plants (0.5 – 2 MW)/Solar water pumps/grid connected agriculture pumps.
- **International Solar Alliance (ISA):** The ISA, is an Indian initiative that was launched by the Prime Minister of India and the President of France on 30th November 2015 in Paris, France on the side-lines of the Conference of the Parties (COP-21), with 121 solar resource rich countries lying fully or partially between the tropic of Cancer and tropic of Capricorn as prospective members.
- **One Sun, One World, One Grid:** It has been taken up under the technical assistance program of the World Bank. Its objective is to aid in developing a worldwide grid through which clean energy can be transmitted anywhere, anytime.
- **National Solar Mission (A part of National Action Plan on Climate Change)**.

Way Forward

- The RTS needs easy financing, unrestricted net metering, and an easy regulatory process. Public Financial Institutions and other key lenders could be mandated to lend to the segment.
- Some of the existing bank lines of credit could be adapted to meet the challenges of the Indian RTS segment, making it more attractive to developers in this area.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims

Q. With reference to solar power production in India, consider the following statements: (2018)

1. India is the third largest in the world in the manufacture of silicon wafers used in photovoltaic units.
2. The solar power tariffs are determined by the Solar Energy Corporation of India.

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:

- Silicon wafers are thin slices of semiconductor, such as a crystalline Silicon (c-Si), used for the fabrication of integrated circuits and, in photovoltaics, to manufacture solar cells. China is by far

the world's largest producer of Silicon, followed by Russia, the United States, and Brazil. India does not figure among the top five producers of Silicon and Silicon wafers. **Hence, statement 1 is not correct.**
- Solar tariffs are determined by the Central Electricity Regulatory Commission and not by Solar Energy Corporation of India. **Hence, statement 2 is not correct.**
- **Therefore, option (d) is the correct answer.**

Q2. 'Net metering' is sometimes seen in the news in the context of promoting the (2016)

(a) production and use of solar energy by the households/consumers
(b) use of piped natural gas in the kitchens of households
(c) installation of CNG kits in motor cars
(d) installation of water meters in urban households

Ans: (a)

Mains

Q. India has immense potential of solar energy though there are regional variations in its developments. Elaborate. **(2020)**

Source: TH

Indo-Pacific Regional Dialogue (IPRD-2022)

For Prelims: Indo-Pacific Regional Dialogue, Indian Navy, Foreign Direct Investment., rare earth metals, Foreign Direct Investment, Exclusive Economic Zones

For Mains: Significance of the Indo-Pacific

Why in News?

Recently, the fourth edition of Indo Pacific Regional Dialogue concluded in Delhi.

What is Indo Pacific Regional Dialogue (IPRD)?

- **About:**
  - IPRD is an **apex level international annual conference** of the Indian Navy.
    - In 2018, the initial conception of an IPRD was made.
    - With the exception of 2020, when it had to be postponed owing to the Covid-19, the event has been hosted annually since its initial year in 2018.
  - The **National Maritime Foundation (NMF)** is the Navy's knowledge partner and chief organizer of each edition of the event.
- **Theme for 2022:**
  - **Operationalising the Indo-Pacific Oceans Initiative**
- **Objectives:**
  - The IPRD **reviews the current geopolitics in the Indo-Pacific region** and identifies

opportunities, dangers, and problems that might be present.
    - IPRD remains crucial to its interests because one of the main goals of the NMF is to **conduct analyses of international relations and geopolitical factors** that are important to India strategically,

What is the Indo-Pacific Oceans Initiative (IPOI)?

- It was articulated by the Indian Prime Minister at the **14th** East Asia Summit (EAS) **in 2019.**
- It is a comprehensive and inclusive construct for regional cooperation that is focused on seven interconnected spokes or pillars:
    - Maritime Security
    - Maritime Ecology
    - Maritime Resources
    - Disaster Risk-reduction and Management
    - Trade-Connectivity and Maritime Transport
    - Capacity-building and Resource sharing
    - Science, Technology and Academic Cooperation

What is the Indo-Pacific Region?

- **About:**
    - Indo-Pacific is a recent concept. It was about a decade ago that the world started talking about the Indo-Pacific; its rise has been quite significant.
    - One of the reasons behind the popularity of this term is an understanding that the **Indian Ocean and the Pacific are a linked strategic theater.**
        - Also, the centre of gravity has shifted to Asia. The reason being maritime routes, the Indian Ocean and the Pacific provide the sea lanes. The majority of the world's trade passes through these oceans.
- **Significance**:
    - The Indo-Pacific region is **one of the most populous and economically active regions of the world** which includes four continents: Asia, Africa, Australia and America.
    - The dynamism and vitality of the region is self-evident, **60% of the world's population and 2/3rd of the global economic** output makes this region a global economic centre.
    - The region is also a **great source and destination for** Foreign Direct Investment. Many of the world's critical and large supply chains have an Indo-Pacific connection.
    - There are **vast reserves of marine resources in the Indian and Pacific Oceans** combined, including offshore hydrocarbons, methane hydrates, seabed minerals and **rare earth metals.**
        - Sizable coastlines and **Exclusive Economic Zones (EEZs)** provide littoral countries with competitive capabilities for exploiting these resources.
        - In turn, a number of the world's largest economies are located in the Indo-Pacific region, including India, U.S.A, China, Japan, Australia.

UPSC Civil Services Examination Previous Year Questions (PYQ)

Mains

Q. The new tri-nation partnership AUKUS is aimed at countering China's ambitions in the Indo-Pacific region. Is it going to supersede the existing partnerships in the region? Discuss the strength and impact of AUKUS in the present scenario. **(2021)**

Source: PIB