



7 PM COMPILATION

1st to 14th October, 2021

Features of 7 PM compilation

- ❖ Comprehensive coverage of a given current topic
- ❖ Provide you all the information you need to frame a good answer
- ❖ Critical analysis, comparative analysis, legal/constitutional provisions, current issues and challenges and best practices around the world
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India and Outer Space: Issues & Challenges – Explained, pointwise

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India and Outer Space: Issues & Challenges – Explained, pointwise**Introduction**

The recent India-US joint statement issued in Washington highlighted plans to finalise a **Space Situational Awareness Memorandum of Understanding** that will help in sharing of data and services towards ensuring the long-term sustainability of outer space activities by the end of the year. When signed, the agreement with the US on SSA will be the **first of its kind for India**. Washington has agreements with more than two dozen countries on SSA.

Apart from that, the US and Indian delegations have also discussed a US initiative called the **Artemis Accords** — that seek to develop norms for activity in the Moon and other planetary objects. Though these collaborations improve India's outer space capabilities, India is still not unleashed its full potential and lag behind many developed countries and China.

What is Space Situational Awareness (SSA)?

Space situational awareness (SSA) involves monitoring the movement of all objects — natural (meteors) and man-made (satellites) — and tracking space weather. International cooperation on space situational awareness is similar to the agreements on maritime domain awareness — that facilitate sharing of information on a range of ocean metrics.

What is outer space?

Outer space, also simply called space, refers to the relatively empty regions of the universe outside the atmospheres of celestial bodies.

It is used to distinguish it from airspace (and terrestrial locations). Outer space begins about 100 km above the Earth (Kármán line), where the shell of air around our planet disappears. With no air to scatter sunlight and produce a blue sky, space appears as a black blanket dotted with stars.

Contrary to the popular understanding, outer space is not completely empty (i.e. a perfect vacuum) but contains a low density of particles, predominantly hydrogen and helium gases, as well as electromagnetic radiation, dust and cosmic rays.

The rationale behind India's interest in outer space

Delhi's new strategic interest in outer space is based on a recognition of the following parameters:

First is the centrality of emerging technologies in shaping the 21st-century global order.

The **second** is about the urgency of writing new rules for the road to peace and stability in outer space.

Third, in the future, outer space is going to be a location for **lucrative business opportunities** like space tourism, energy etc.

Fourth, space will gradually evolve into a critical factor in **shaping the military balance** of power on the earth. Hence, there is growing competition among states. For example, many countries including India have developed anti-Satellite (ASAT) missiles.

Read more: [Successful anti-satellite missile test puts India in an elite club](#)

Fifth, the **dramatic expansion of Chinese space capabilities**: At present, China is investing heavily in space infrastructure designed to secure both economic and military advantages. This has given a new urgency for outer space cooperation. Democratic powers are looking to come

together to secure their national interests as well as promote sustainable order in the skies above.

The new emphasis on space cooperation is also a part of a much larger technology agenda outlined by India and its Quad partners.

What is the present scenario of the global space industry?

The size of the global space economy has grown rapidly. It is estimated to be around \$450 billion and is expected to grow to \$1.4 trillion by the end of this decade.

Though India launched its space programme in the 1960s and has built impressive capabilities against great odds over the decades, it still remains a laggard in realising its full potential. At present, India has barely a **2% share** of the \$440 billion global industry.

New opportunities are emerging from innovative uses of space-based earth observation to manufacturing specialised products in gravity-free environments, space tourism, and possible mining of the Moon and other celestial bodies.

What are the challenges to India's progress in outer space?

i). India's space programme remains primarily a governmental enterprise. The rest of the world has moved to letting the private sector run even larger parts of the space programme. India is not an exception to state monopolies in the space sector in the 20th century.

The sophisticated nature of technologies involved, the military implications, and the international prestige associated with them meant that the state-led the space sector around the world.

Although the government did announce some reforms in encouraging private sector activity in 2020, the Department of Space and its agencies **continue to exercise paternalistic control**.

ii). There is also a **lack of data** around this rising sector. There is no way of gauging how many jobs are being created in the country in this field, the sector's contribution to GDP, number of engineers employed, exports to other countries, amount of taxpayer money within the system, or even evidence that these things are improving, which will help with the policymaking.

iii). Lack of institutional support: Facilitated by a conducive ecosystem, the developed economies like US, China and Russia use the **private sector** for complex operations beyond manufacturing support, such as sending crew and supplies to the International Space Station. For instance, NASA awards a part of its annual budget to invest in and work with private players.

iv). There is **no specific comprehensive legislation** that governs the current ecosystem, and private players are hard-pressed for governmental funding as well as conducive policy options in the country.

v). Lack of expertise: Experts highlight that the Department of Space doesn't have people specialising in space policy who can assist in the framing of space legislations in India. Even if private players can fly, they will have to be monitored centrally, as it's done everywhere else. So these policy suggestions need to be assessed within the government by those who understand the funding, the sector and the industry. The department is not equipped to do that right now.

What is the way forward?

First, India needs space legislation that will provide a sustainable framework for space commerce, even though critics say a space bill under consideration by the government does not go far enough.

Second, encourage the involvement of the private sector. For instance, Three important private organisations (Virgin Galactic, Blue Origin, and SpaceX) made huge investments in space projects and providing innovative ways to explore outer space.

Read more: [Space tourism spinoffs](#)

Third, India needs to come up with a sensible regulatory framework to catch up with the rapidly changing commercial dynamic in outer space.

Fourth, As commercial and military activity in outer space grows, the 20th-century agreements like the [Outer Space Treaty](#) and **the Moon Treaty (1979)** need reinforcement and renewal.

Conclusion

Though India has taken several steps, the scale of the challenges and opportunities in outer space demand more urgent and sweeping reform. This can only be mandated by the highest political level. Back in 2015, PM's speech on the Indian Ocean focused national attention on maritime affairs. India could do with a similar intervention on outer space today.

Pandora Papers and Illegal offshore investments from India – Explained, pointwise**Introduction**

A few years after the release of the Panama Papers, a new exposé, Pandora Papers has burst into the news. The papers reveal complex web of offshore dealings by wealthy individuals around the world, creating Illegal offshore investments.

There are names of at least **380 persons of Indian nationality** in the Pandora Papers. This shows how the rich, the famous and the notorious safeguard their investments — cash, shareholdings, real estate, art, aircraft, and yachts — from creditors and law enforcement agencies.

What are the Pandora Papers?

The Pandora Papers sourced by the **International Consortium of Investigative Journalists (ICIJ)** feature people from various walks of life, ranging from sports and entertainment to public affairs and business; some who are already under the state scanner for hidden assets.

The papers consist of as many as **12 million documents** belonging to **14 global corporate services firms** which set up about 29,000 **off-the-shelf companies** and **private trusts** in obscure tax jurisdictions.

The trusts and shell companies have been set up in **tax havens** like Samoa, Belize, Panama, and the British Virgin Islands, or in Singapore or New Zealand which offer relative tax advantages, or even South Dakota in the US.

Read more: [Explained: Why do the Pandora Papers matter?](#)

In India, the **Centre** has ordered a **multi-agency probe** into the offshore secrets of wealthy elites unravelled in the Pandora Papers. The complex ownership structures and ringfencing of wealth in the records will be **scrutinised by a group headed by the chairman of the Central Board of Direct Taxes (CBDT)**.

What are the previous such leaks exposing illegal offshore investments from India?

Mauritius Leaks, 2019: The data of 200,000 documents were leaked. **One-fourth of those disclosed** in the Mauritius leaks **had India as their only country or one of the countries** of business activity.

Paradise Papers leaks, 2017: These are around **13 million leaked files** from offshore service providers and company registries obtained by a **German newspaper**. India **ranked 19th** in terms of the number of names that feature in the papers.

Panama Papers, 2016: These are 11.5 million files from the database of the world's fourth-biggest offshore law firm, **Mossack Fonseca**. The data revealed offshore links to many wealthy individuals. Over 500 Indians, including high-profile actors and businessmen, were exposed in the Panama papers.

Note: India recovered Rs 20,352 crore from the investigations following the leaks of Panama Papers.

Swiss leaks or HSBC Leaks, 2015: These are secret documents from HSBC's Swiss private banking arm. They come from over 200 countries, with a total balance of over \$100 billion. The leaks exposed 1,195 Indian HSBC clients.

Note: Indian government investigations found undisclosed income of Rs 8,465 crore in Swiss leaks and levied taxes and a penalty worth Rs 1,294 crore.

According to GoI, the leaks have been used to check for possible tax evasion and the last two leaks have resulted in the detection of undisclosed income of Rs 20,352 crore.

How Indian government is curbing illegal offshore investments and tax evasions?

International Collaborations

India is proactively engaging with foreign governments to facilitate and enhance the exchange of information under the **Double Taxation Avoidance Agreements (DTAAs)/Tax Information Exchange Agreements (TIEAs)**. For instance, at present, India has double tax avoidance treaties with **more than 80 countries** around the world.

Further, India is also a **member of various international conventions** like the Multilateral Convention on Mutual Administrative Assistance in Tax Matters, United Nations Convention against Corruption, Financial Action Task Force etc.

Apart from that, India also takes part in the OECD/G20 Inclusive Framework on [Base Erosion and Profit Shifting](#) (BEPS).

Common Reporting Standards: In 2009, G20 leaders pledged to root out banking secrecy. Later, in 2013 the foundation was laid for common reporting standards that led to an automatic exchange of information between countries and information sharing on request. Today, 110 jurisdictions are signatories to the standard, India is also a signatory. Through 4,200 bilateral exchange relationships, they have exchanged 84 million pieces of information uncovering \$107 billion in tax revenue.

Apart from that, [India is open to participate and engage in discussions](#) about the [Global Minimum Corporate Tax](#) structure which aims to curb tax evasion by MNCs.

National initiatives

Legislative actions: These include legislations such as the [Foreign Exchange Management Act](#), the [Prevention of Money Laundering Act](#), the **Black Money (Undisclosed Foreign Income and Assets) and Imposition of Tax Act**, the [Prevention of Corruption Act](#) and the [Income-Tax Act](#) to deal with offshore illegal investments and tax evasions from India.

Investigative agencies such as the [Central Board of Direct Taxes \(CBDT\)](#), [Central Bureau of Investigation \(CBI\)](#), [Enforcement Directorate \(ED\)](#), etc are also looking into tax evasions and illegal offshore investments from India.

Other actions: Apart from that, the government also introduced an **Income declaration scheme** to encourage voluntary disclosure of black money and offshore investments. Under the scheme, the person indulging in illegal offshore investments can avoid prosecution after paying a fine of 50% on the undisclosed income.

The income tax department is implementing 'Project Insight' which will monitor high-value transactions within India and from India to abroad to curb black money.

The government also formed a **Special Investigation Team under Justice M B Shah** to curb black money and illegal offshore investments.

What are the challenges in curbing illegal offshore investments?

Difficulty in tracking the investments: Offshore trusts offer enhanced secrecy to businesspersons, due to their complex structures. Businesspersons set up private offshore trusts to project a degree of separation from their personal assets. This way, Businesspersons insulate the assets from tracking and taxing them from source countries like India.

Challenges in prosecuting illegal investments: Tax Haven countries have long been associated with their financial secrecy laws that allow the creation of anonymous accounts while prohibiting the disclosure of financial information.

So, the Income-Tax Department in India cannot get the details from the financial investigation agency or international tax authority in offshore jurisdictions. This makes prosecuting these offshore investments even harder than identifying them.

Tax laws and treaties are long and complex: The global laws are divided up between the world's 320 national and sub-national jurisdictions. So, the possibilities of exploiting loopholes are almost limitless.

Unrestrained capital flows: With globalisation and the liberalisation of the global economy, countries offer excessive capital flows between nations to boost the economy. While capital can move across borders without restraint, a small portion of that money will always be available to those who want to keep their wealth out of the hands of legal or tax authorities.

Lack of comprehensive enforcement agencies: Separate wings of law enforcement agencies deal with tax evasion and illegal offshore investments from India. They lack coordination, lack of skills to handle the issue holistically.

How to curb illegal offshore investments better?

Faster implementation of Global Minimum Corporate Tax: The recent meeting of G7 countries resulted in the adoption of a 15% [Global Minimum Corporate Tax \(GMCT\)](#). This has to be implemented globally to reduce tax evasion and encourage information sharing between various offshore tax jurisdictions.

Revisiting the capital account convertibility by nations that opened capital accounts: If governments want to address tax avoidance rather than apply endless Band-Aids, then their decision to permit capital account convertibility will have to be revisited.

UN Convention against corruption: India can try an alternate route instead of signing Double Taxation Avoidance Agreements. India can demand offshore illegal investments as **proceeds of crime and corruption**, mentioned under the UN Convention against corruption. This will make an obligation for the foreign countries to provide bank details and other investment details.

Implementing the recommendations of SIT: The Special Investigation Team (SIT) on black money in its fifth report suggested amending the **Black Money (Undisclosed Foreign Income and Assets) and Imposition of Tax Act, 2015**. The report recommended incorporating the provision that **"undisclosed foreign income and assets would vest in the Union of India"**.

"The person who is holding the said property outside the country shall have to prove that it was acquired legally and/or held after obtaining necessary permission from the RBI,". The government can implement the recommendation.

Amendments to Indian Laws and regulations: Laws such as FEMA, FERA can be amended to curb tax evasions and illegal offshore investments.

Imposing deterrent punishments in a time-bound manner without judicial delay will send a definite message to all illegal offshore investors in India. For that, more technological advancement and an **Integrated Taxpayer Data Management System (ITDMS)** for 360-degree profiling is needed to recognise the defaulters in time.

Further, India also has to **provide domestic and international training to the personnel of the Law enforcement agencies**.

A holistic and all-around attack from within and outside the country is the need of the hour. India should quickly take up appropriate reforms at home that will aid in curbing tax evasions and illegal offshore investments. Further, India can engage in bilateral and multilateral mechanisms to deal with the issue.

Terms to Know:

- [International Consortium of Investigative Journalists](#)

Are Smog towers effective? – Explained, pointwise**Introduction**

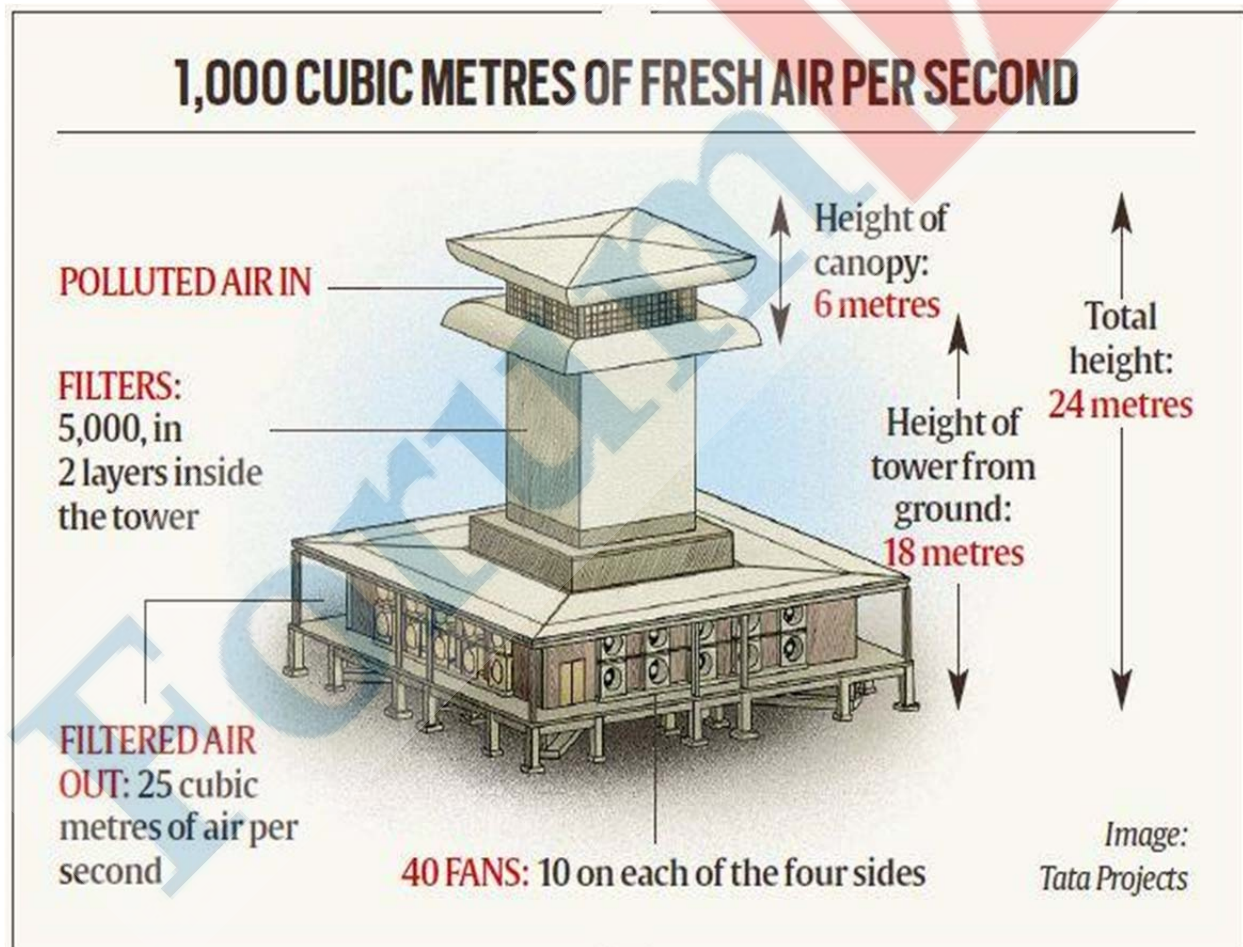
Two new smog towers have been recently inaugurated in Delhi. Bengaluru and Chandigarh have also installed smog towers this year. Further, Mumbai's clean air plan also indicates a financial requirement of ₹25 crore for installing air filtration units at major traffic intersections in the city.

While these efforts indicate that governments are taking cognisance of air pollution, criticism has also been levelled against using quick technological fixes instead of proven solutions to combat air pollution.

Let's examine the issue in detail.

What is a smog tower?

A smog tower is a structure designed as a large or medium scale air purifier to reduce air pollution.



It is fitted with multiple layers of air filters and fans at the base to suck the air. After the polluted air enters the smog tower, it is purified by the multiple layers before being re-circulated into the atmosphere. Smog towers work on the principle of HEPA filtration or air

ionisation technology to remove PM2.5 particles. That is, air flowing through a smog tower passes through a filter to provide clean air coming out of it.

What are the harmful effects of smog?

Smog causes multiple health problems, such as difficulty in breathing, irritation in the eyes, asthma, reduced immunity to lung infections, and colds that can be fatal in children. The ozone in the smog also inhibits growth in plants. It can cause widespread damage to crops and forests, and the haze reduces visibility. When inhaled, smog irritates our airways, increasing the risk of serious heart and lung diseases. These health risks are the reason why many cities monitor smog levels.

What is the scale of air pollution in India?

As per the University of Chicago's Air Quality Life Index (AQLI) report,

- India is the most polluted country in the world, with **more than 480 million people or about 40% of its population** living in the Indo-Gangetic plains in the north where pollution levels regularly exceed those found anywhere else in the world by an order of magnitude.

According to a new report released jointly by UK-based non-profit Clean Air Fund,

- Air pollution in India has caused **losses of up to Rs 7 lakh crore** (\$95 billion) annually

According to the World Health Organization (WHO),

- India has **six of the top 10 most polluted cities in the world**, with Delhi on the top of the list.

A 2020 study in The Lancet found

- There were 1.67 million deaths in India attributable to air pollution in 2019, including almost 17,500 in Delhi.

What are some issues with the smog towers?

- **No scientific evidence:** Delhi government claims that the newly installed smog tower in Connaught Place could reduce air pollution levels by 80%. But there is no scientific evidence of smog towers or any other outdoor air filtration units improving air quality in cities. The smog tower installed in China's Xi'an and another one installed in Beijing did not prove to be effective and were not scaled up.

- **Smog towers give citizens a false sense of complacency and assurance**, making them feel they are getting air of better quality. This false belief encourages polluting behaviour, as no cost is being imposed on polluters.

- **Adds to the pollution:** A huge number of filters are used in smog towers. Over time these clogged filters find their way to our already overburdened landfills and end up being burnt, thus adding to the pollution.

- **Benefits limited to a specific area:** The benefits at the surface might be somewhat greater. But cities aren't sealed boxes, and they have a constant inflow of pollution that needs continuous removal. In other words, only areas located directly downwind of a chimney releasing clean air will see the benefits.

What has been the global experience?

China– China made a minor show of a 7-metre high anti-smog tower erected in Beijing. It promised to use green energy to clean up 70% of the locality's breathable particles. However,

the **concept was trashed by experts** for its lack of efficacy in a megacity. So, China's policy focus shifted to clamping the emissions and reforestation efforts such as great green wall.

Los Angeles– It took similar measures and is now focusing on improving energy efficiency.

What is the way forward?

i). The **data** on the effectiveness of the newly installed smog towers **should be made available publicly** for independent evaluation. The government should install calibrated continuous air quality monitors within a 1 km radius of these towers to allow the public to oversee the efficacy and efficiency of this tower.

ii). A better engineering solution to control air pollution is by controlling the emissions at the sources. For example, we can control the emissions in vehicle exhaust by using filters for particles and catalytic converters for gases.

Further, governments must ramp up investments in proven solutions to reduce air pollution.

Policymakers should expand monitoring of air pollution in areas with limited or no air quality monitoring and strengthen forecasting capacity across cities. Of the 132 cities in the country that currently don't meet the National Ambient Air Quality Standards, 75 do not have a single real-time monitoring station. For areas with no monitoring infrastructure, alternatives like low-cost air quality monitors in combination with satellite observations should be explored to plug the existing data gaps.

Cities should strengthen their air quality forecasting systems by collaborating with scientific institutions that are transparent about their approach and findings. These forecasts should be used in rolling out preventive measures such as travel restrictions, pausing commercial activities or encouraging working from home, on anticipated high pollution days.

– **City-level emission inventories must be updated periodically.** Until last year, over 75% of our city clean air plans did not contain vital information on emissions from different polluting sources. This data is critical to identify key sources of air pollution and design effective clean air plans as per the local context. While several academic institutions carry out emission inventory and source apportionment studies, these studies should not become a one-time exercise.

– **Targeted efforts must be made to improve air quality for urban slum dwellers** who have no access to clean cooking energy and use biomass and other polluting fuels for their cooking needs leading to increased household emissions.

Coal crisis in India – Explained, pointwise**Introduction**

India is staring at a coal crisis as it faces an acute coal shortage. Coal supplies in major plants across the country are at critically low levels. On an average, most power stations had only 3-4 day's of coal. This is way lower than the government guidelines which recommends supplies of at least 2 weeks.

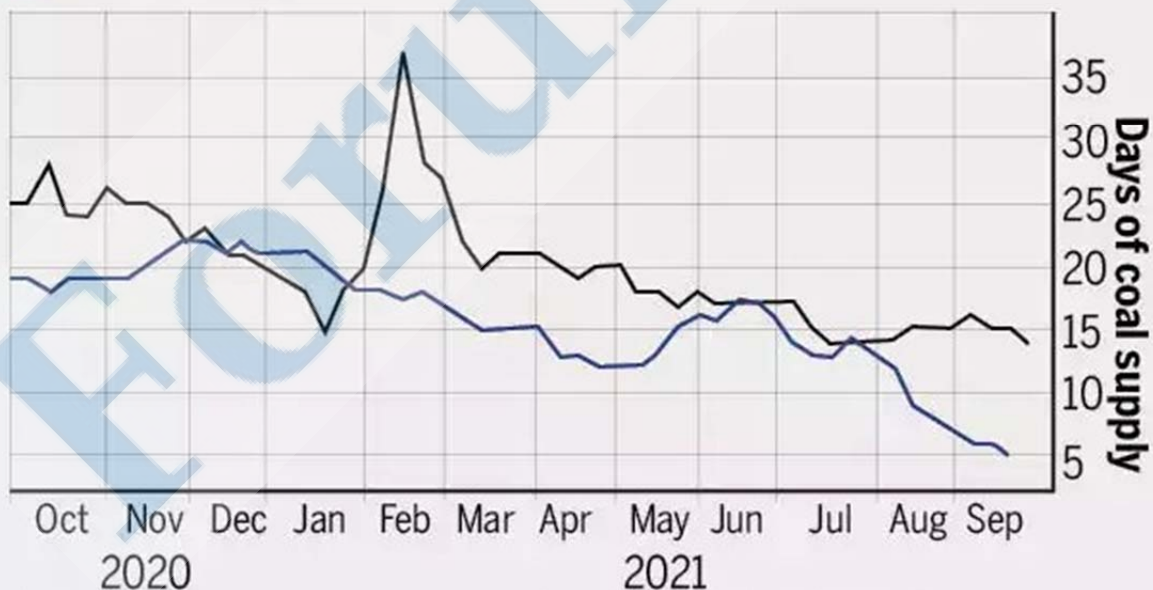
The shortage of coal is more acute in the non-pithead plants or the plants which are located far off from the coal mines. Such plants account for 98 of the 108 plants that have reached critical level of stocks i.e. under 8 days.

While experts are worried over the crisis, the government on the other hand is of the opinion that rising demand for energy is a positive signal as it means that more households are able to afford electricity, and industries are getting back to pre-pandemic levels.

Low on coal

Power plant inventories are shrinking in china and India

■ China 6 large power generator average
■ India average



Sources: China coal resources; central Electricity Authority of India

Source: TOI

Let us have a detailed look at the issue.

India's coal reserves

India is the **2nd largest producer and consumer** of coal in the world after China.

There has been a growth of 5.37% in the total estimated coal reserves during the year 2020 over the last year.

The top three states with the highest coal reserves in India are **Jharkhand, Odisha, Chhattisgarh**, which accounts for approximately **70%** of the total coal reserves in the country. Majority of the produced coal is consumed for **electricity generation**.

India's coal fired thermal power plants account for 54% of India's 388 GW installed generation capacity, Renewable energy (101 GW), Gas (25GW), hydropower (46GW) and nuclear energy account for the rest.

What are the reasons behind the shortage?

Coal crisis is being ascribed to the following reasons:

i). Rise in electricity demand due to the economic revival after the lifting of curbs: Power consumption in the last two months alone jumped by almost 17%, compared to the same period in 2019.

ii). With a delayed and scattered monsoon, **coal production was also impacted** at CIL's mines from July onwards. Moreover, heavy rains in September impacted coal production especially in central and eastern India due to severe flooding in mines. This has also impacted certain key logistic routes.

iii). A spike in imported coal prices by more than 40%: China, the biggest consumer and producer of coal, is facing a severe shortage. Therefore, it has effectively put restrictions on the export of coal and is competing for imported coal in the international market. This has led to thermal coal prices and freight costs soaring in the international market, witnessing over a 100% increase this year.

Hence, power plants in India that usually rely on imports are now heavily dependent on Indian coal, adding further pressure to already stretched domestic supplies.

iv). Inadequate stocks at power projects: Power plants used their coal stocks and did not replenish them. They even did not adhere to the CEA guidelines of stocking the coal for 22 days.

v). Lower generation from other fuel sources.

vi). Non-payment of coal dues: Power tariffs are set by the respective states in India and are among the lowest in the world. State-run distribution companies have absorbed higher input costs to keep tariffs steady. This has left many such companies deeply indebted, with cumulative liabilities running into billions of dollars. The companies' strained balance sheets have consistently triggered delayed payments to power producers, often affecting cash flows and disincentivising further investment in the electricity generation sector.

vii). Also, as part of the largest global household electrification drive through the Saubhagya scheme, **the electricity load shot up**.

viii). Inadequate mining exploration by CIL and non-CIL entities: Legacy of nationalisation and the long monopoly of government-owned Coal India Limited has resulted in inadequate exploration and mining of the mineral leading to shortage of coal. The production has stagnated and stands at 600 MT for the past three years.

A number of mines were allocated to entities other than CIL. These mines have not augmented coal production. Non-CIL coal production fell from 128 MT in 2019-20 to 120 MT in 2020-21.

-As a major reform, the government has **ended Coal India's monopoly over the commercial production of domestic coal in early 2020**. Since then, some coal blocks have been auctioned for commercial use, but it will take time for these blocks to start producing. This is because several clearances have to be obtained before commencing production.

ix). Ideology also has a big role to play in this crisis. In India, coal imports have been traditionally high. Under its atmanirbharta drive, the government has voiced concerns on this issue and asked generators to be more self-reliant. Coal dependency came down over time, which also coincided with a lower phase of economic growth. The same has happened in China where the government has taken the greening concept seriously and asked coal producers to control production and power generators and move over to other greener fuels. This has made coal producers less willing to increase investment.

x). Lack of enthusiasm and participation in the auctions because coal is no longer seen as a fuel of the future.

What is the global scenario?

The supply crunch is being faced not just by India but by China and Europe as well.

– **China:** The foremost consumer of coal globally is in the grip of a severe shortage of both coal and electricity. Power cuts and blackouts were being experienced by a majority of the areas. Many factories have also shut production temporarily, adding to the problems of an already slowing economy.

– **Europe:** In the European Union energy costs have skyrocketed. European governments are trying to shield residential and small business customers from the full force of increasing energy prices on utility bills through price caps, rebates and tax cuts.

What is the likely impact of coal shortage?

The coal shortage problem is very serious as it affects power supply, which is the backbone of all economic activity.

i). Delay in economic recovery: Electricity shortages faced by industry could delay India's economic recovery as businesses might be forced to downscale their production.

ii). Inflationary impact: If coal shortage continues and if companies start importing expensive coal then the cost would be passed down to consumers. This would result in an inflationary impact on the top of already high retail inflation.

iii). Impact on steel: Increase in coal prices will have an impact on steel, the price of which may also go up due to this unprecedented rise. Steel players use coal as fuel to produce power to run plants and produce steel through the directly reduced iron (DRI) route.

iv). Rise in spot prices of power: Spot prices of power sold through the Indian Energy Exchange jumped more than 63% year-on-year in September to average Rs 4.4 (\$0.06) a kilowatt hour and were as high as Rs 13.95.

v). Impact on outcome of COP26 at Glasgow: The great hope was that the success of renewable energy in recent years would allow for countries to speed up their transition away from high-emissions fossil fuels — particularly coal. It is hard to see how the news of an economic recovery being hampered by a coal shortage in the two biggest engines of global growth will aid in achieving consensus at Glasgow.

What can be done to improve the situation?

Short term:

– **Ramping up production:** The government has said it is working with state-run enterprises to ramp up production and mining to reduce the gap between supply and demand. Moreover, with the monsoon on its way out and winter approaching, the demand for power usually falls. So, the mismatch between demand and supply may lessen to some extent.

– **Sourcing coal from captive mines:** The Centre amended rules to allow 50% sale of coal from captive mines. It will be applicable to both private and public sector captive mines. With this amendment, the government has paved the way for releasing of additional coal in the market by greater utilisation of mining capacities of captive coal and lignite blocks. Availability of additional coal will ease pressure on power plants and will also aid in import-substitution of coal.

Captive mines are operations that produce coal or minerals solely for the company that owns them and under normal conditions are not allowed to sell what they produce to other businesses.

– **Penalty mechanism:** To avoid a situation where payment defaults of a state lead to supply crisis, the power ministry is devising a penalty for power generation companies (gencos)/states which do not pay Coal India Ltd on time.

– Govt might also decide to **divert supplies away from industrial users** — like aluminum and cement makers — to prioritise power generation.

– **Coal fuelled power generation plants under the corporate insolvency resolution process** can be allowed to commence operations immediately, regardless of the stage of the proceedings at NCLT. This will save the coal transport time and quantity limitations in coal transportation to non-pit head coal plants.

– **Funds for CIL:** CIL, which had reserves of around ₹ 35,000 crore in 2015, now appears to be strapped for funds, especially cash flows as power generating companies (GENCOs) owe more than ₹ 20,000 crore to CIL. Funds will have to be arranged for the expansion of existing mines as well as the opening of new ones. For this the following needs to happen:

i). The Union Government should stop squeezing more funds out of CIL as it has done during the past few years by way of dividends to balance its own Budget

ii). Govt should consider providing cash to CIL against the dues owed by GENCOs.

Long term:

These short-term fixes may help to get India through the current coal crisis, but long term measures are required.

– **Working with states to boost coal production:** CIL should focus on mining. Officers from the Union Government should go down to the States, convey a value proposition and sit with State-level officers to resolve issues related to land acquisition and forest clearances.

– **Non- CIL production will have to be augmented.**

– There was an **inter-ministerial Coal Project Monitoring Group (CPMG)**, which was set up in 2015 to fast-track clearances, that became dormant. This will need to be revived.

– **The financial crisis that is brewing in the power sector needs to be addressed.** GENCOs are yet to receive more than ₹ 2,00,000 crore from distribution companies. They, in turn, owe more than ₹ 20,000 crore to CIL. There is, hence, a serious cash crunch though most of these entities show profit in their balance sheets.

– **An opportunity to transition towards gas:** Lastly, the current crisis affords an opportunity to India to push strongly towards this cleaner alternative. India produces 28.6 billion cubic metres (bcm) but the price differential between coal and gas has been steadily narrowing. For

the 105 bcm of natural gas India plans to import annually by 2030, the country has already built regasification infrastructure at the ports. It has 39.5 mtpa of capacity, good for 2026, and an additional 30 mtpa is on course to become operational by 2023.

The current coal crisis is a wake-up call for India and the time has come to reduce its over-dependence on coal and more aggressively pursue a renewable energy strategy.

ForumIAS

Malaria Vaccine and India's Malaria burden – Explained, pointwise

Introduction

The new vaccine “**RTS,S/AS01 (RTS.S)**” with its trade name “**Mosquirix**” was endorsed by the **World Health Organisation** (WHO) recently. This is the first and only Malaria vaccine to have shown the capability of significantly reducing malaria, and life-threatening severe malaria, in tests done on young African children.

WHO's recommendation is based on the advice of two of its global advisory bodies, one for immunization and the other for malaria. The decision is significant as the strategic delivery of the vaccine just prior to the high malaria transmission season can optimize impact and markedly reduce mortality, especially when combined with other recommended malaria control interventions.

What is the Mosquirix vaccine?

It has been developed by the British pharmaceutical company GlaxoSmithKline in partnership with the PATH Malaria Vaccine Initiative.

The vaccine acts against **P. falciparum**, the most deadly malaria parasite globally, and the most prevalent in **Africa**. It targets a protein called circumsporozoite in Plasmodium falciparum. It is a **recombinant protein vaccine**, which includes DNA from more than one source.

The vaccine is **formulated with an adjuvant called AS01**. It is designed to prevent the parasite from infecting the liver, where it can mature, multiply, and infect red blood cells, which can lead to disease symptoms.

The malaria vaccine should be provided in a schedule of 4 doses in children from 5 months of age for the reduction of malaria disease and burden.

More than 800,000 children in **Ghana, Kenya, and Malawi** have been vaccinated, and are benefiting from the vaccine as part of a pilot program.

However, it offers **no protection against P vivax malaria**, which is prevalent in many countries outside Africa.

What other vaccines are in the development phase?

R21/Matrix M is in the trial phase. It is a modified version of Mosquirix and has been developed by researchers at the University of Oxford. It is expected that this vaccine will be the first to reach WHO's goal of at least 75% efficacy.

What is Malaria?

It is caused by the bite of the **female Anopheles mosquito** (vector) if the mosquito itself is infected with a malarial parasite.

There are **five kinds of malarial parasites** — Plasmodium falciparum, Plasmodium vivax (the commonest one), Plasmodium malariae, Plasmodium ovale, and Plasmodium knowlesi.

[Click here to know more about the malarial parasites](#)

After entering the human body, parasites initially multiply within the liver cells and then attack the Red Blood Cells (RBCs) resulting in their rupture.

Symptoms of malaria include fever and flu-like illness, including shaking chills, headache, muscle aches, and tiredness. But, it is **preventable and curable**.

Why it took so long to develop the Malaria vaccine?

The complexity of the malaria-causing parasites' life cycle: This cycle includes mosquitoes, human liver, and human blood stages, and subsequent antigenic variations of the parasite. According to research, these parasites are able to hide inside human cells to avoid being recognized by the immune system.

Challenges with Models and reality: The most common mouse models of malaria **employ rodent-specific parasite species**. The immune response patterns observed in these models are not fully transferable to humans.

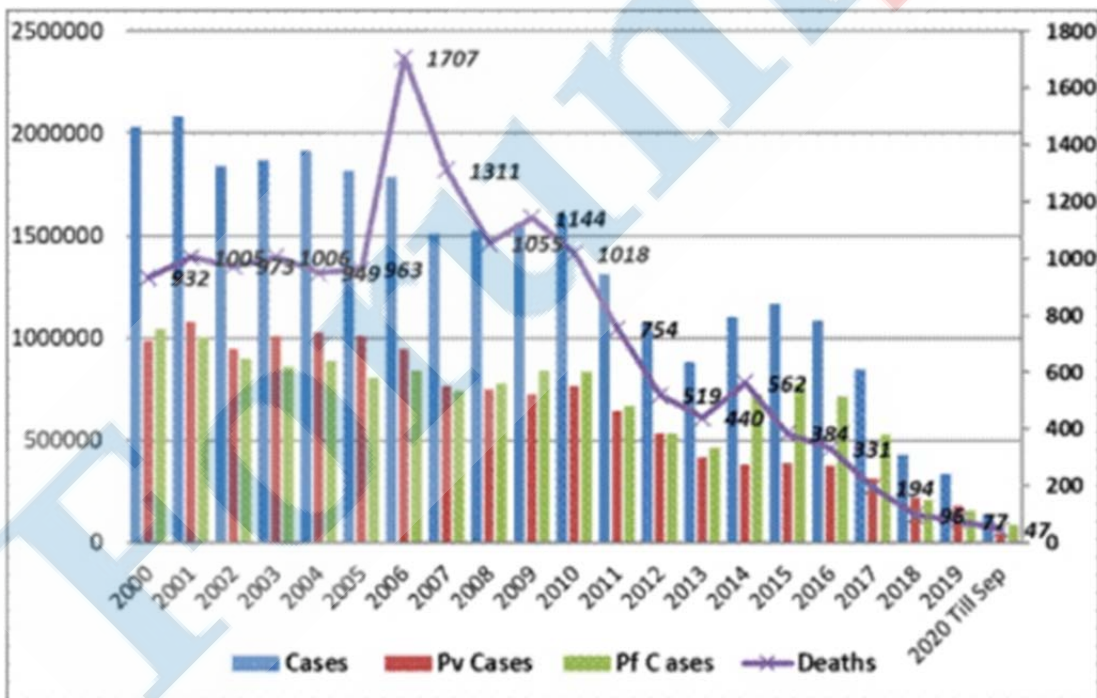
Lack of Funding: Malaria affects mostly low and middle-income countries, which lack infrastructure and finance. Vaccine manufacturers have very little incentive for malaria vaccines and continued targeting vaccines for industrialized world markets. Even it did not receive the same kind of attention as other diseases as HIV/AIDS.

What is the impact of Malaria on the global level and India?

Global disease burden

According to WHO, it claims over 4 lakh lives every year. Children aged under five years accounted for 67% of all malaria deaths globally. It is most endemic in **Africa**, with **Nigeria, Congo, Tanzania, Mozambique, Niger** and **Burkina Faso** together accounting for over half the yearly deaths.

Disease burden in India



Source: PIB

India is also one of the worst affected countries by malaria. Although there is a decrease in death cases now (93 deaths in 2020 from 1,018 in 2010) the infection rate continues to be in millions. The burden has been reduced through interventions such as antimalarial drugs, mosquito nets and insecticides:

According to the [World Malaria Report 2020](#), cases of Malaria in India dropped from about 20 million in 2000 to about 5.6 million in 2019.

What are the global and national initiatives to curb Malaria?

Global Initiatives

E-2025 Initiative: The E-2020 initiative was launched by WHO in 2017. Building on the successes of the E-2020, WHO has launched the E-2025 initiative. As part of this initiative, WHO has identified 25 countries that have the potential to eliminate malaria within a 5-year timeline.

The countries will receive **technical and on-the-ground support** from WHO and its partners, in their work towards the target of zero malaria. In return, the countries will **audit their elimination programs** annually, participate in elimination forums, conduct surveillance assessments, and share malaria case data periodically.

High Burden to High Impact (HBHI): It was launched by WHO in 11 high malaria burden countries, including **India**. The initiative has four key response elements: (i) Political will to reduce malaria deaths (ii) Strategic information to drive impact (iii) Better guidance, policies, and strategies, and (iv) A coordinated national malaria response.

In India, the Implementation of the HBHI initiative started in four states West Bengal, Jharkhand, Chhattisgarh, and Madhya Pradesh in July 2019.

Asia Pacific Leaders Malaria Alliance (APLMA): It has set a target for malaria elimination in all countries of the Asia Pacific region by 2030 as per its Malaria Elimination Roadmap. India is also a member of APLMA.

National Initiatives

National Framework for Malaria Elimination in India (2016-2030): It aims to eliminate malaria nationally and contribute to improved health, quality of life and alleviation of poverty.

National Strategic Plan for malaria elimination (2017-2020): Under the plan, the country has been stratified into four categories based on the malaria burden – category 0 to category 3 and have different targets for each categories.

National Vector Borne Disease Control Programme (NVBDCP): It was launched in 2003-04 by merging the National anti-malaria control programme, National Filariasis Control Programme and Kala Azar Control programmes.

Malaria Elimination Research Alliance-India (MERA-India): It was launched by the **Indian Council of Medical Research (ICMR)**. It is a conglomeration of partners working on malaria control. The aim is to harness and reinforce research in a coordinated way in order to achieve a tangible impact on malaria elimination.

What are the challenges in eliminating Malaria from India?

Weak surveillance system: A key impediment to eliminating malaria is a weak surveillance system. India and Nigeria, two major contributors to the global burden of malaria, were able to detect only 8% and 16% of cases, respectively, via the system.

More Plasmodium vivax cases: Nearly half of plasmodium vivax cases were traced in India. This could at least be partially explained by resistance to chloroquine, the first-line treatment to p. vivax infections, that have been detected in pockets of the country earlier this decade.

Note: The Mosquirix offers no protection against P vivax malaria.

Porous borders and migrant movement: The North-eastern states share their border with neighbouring countries such as Myanmar and Bangladesh where malaria is still prevalent and there is a persistent threat of an influx of malaria cases from these countries.

Prevalence of Urban Malaria: Increased population pressure, insufficient capacity of the civic bodies to deal with water supply, and sewage and solid waste disposal have led to increased transmission of malaria in urban areas.

How India can reduce the Malaria burden?

It is important to **address human resource challenges** to effectively implement malaria control programs. Training programmes at the national and sub-national level for entomologists, epidemiologists and physicians should be provided.

A **cross-border malaria strategy** with the neighbouring countries is crucial to maintain and achieve the aims of malaria elimination.

It is important to **conduct systematic drug resistance studies** and monitoring. Antimalarial drug policies should also seek to address operational issues such as surveillance, diagnosis, compliance, health-seeking behaviour of the malaria-affected communities.

Though the Mosquirix does not offer protection to *Plasmodium vivax* cases, India can start vaccinating the citizens, especially in the HBHI regions of the country to reduce the *P. falciparum* type. This will significantly reduce India's disease burden.

India's informal economy: Challenges and solutions – Explained, pointwise**Introduction**

The majority of the urban population across the world makes its living from the informal economy. According to one report published by the ILO in 2018, more than 2 billion people – almost 61% of the world's employed population – were dependent on the informal economy. In some countries, this proportion is as high as 80% of working population.

Informality is found in both the traditional informal economy and – increasingly – through the growth of informality in the formal sector. Limited employment creation in the formal economy means that for many people the only alternative is to seek employment in the informal economy.

According to the PLFS 2017-18, there are **92.4% informal workers** (with no written contract, paid leave and other benefits) in the Indian economy.

Let's try and understand various issues associated with informal economy and the ways in which India can deal with them.

What is an informal economy?

Informal economy can be characterized as a range of economic units which are mainly owned and operated by individuals and employ one or more employees on a continuous basis. Informal sector includes farmers, agricultural labourers, owners of small enterprises and people working in those enterprises and also the self-employed who do not have any hired workers.

The informal economy is the unregistered economy, small firms that are below thresholds for regulation, with unregistered labourers who have no rights to work, at work or to social security.

India's informal economy is the biggest in the world, supporting possibly 400 million livelihoods, with no sector or region exempt. It is unorganized but not disorganized. It is not necessarily de-professionalised either, being regulated through local chambers of trade and commerce.

What is the range of jobs in the informal economy?

The informal economy has a huge spectrum of skills.

There are **low-skilled jobs** like porter work, basic construction or street vending which don't need a lot of training.

There are **intermediate-skilled jobs** like informal manufacturing, workshops doing welding, making furniture, etc. — these need workers to operate machines which requires months of training.

Then, there are **highly skilled jobs** like high-end weaving or delicate metal work which require years of training.

Informal economy scenario

Currently, more than half the developing world's jobs are thought to be informal.

In OECD countries, about 15% of GDP is generated by informal activity. In China, this is about a quarter and growing. In India, it is **about half of GDP**.

India:

- India tops the list with about **85% jobs being informal**.
- The informal economy in India also employs **94% of the country's female workforce**.

- Of the 384 million employed in the informal sector, half work in **agriculture**, living mostly in **rural India**, and the other half are in non-agricultural sectors. Of those, about half live in rural India and the remaining in urban areas.
- Within the informal economy, **women account for greater employment than men in India**. Women are considered mainly for domestic work and when it comes to construction and other related sectors, they usually work as support workers.

What are the challenges associated with informal economy in India?

- i). Labour in informal economy is generally low-paid or gains low returns.** Small firms making some money tend to use this to establish more small firms, rarely expanding to become a big firm. It is the lack of assets, capabilities, volatile earnings, poor access to social protection that make this sector vulnerable.
- ii). Poverty and Indebtedness:** Workers in the unorganized sector have a much higher incidence of poverty than their counterparts in the organized sector. The low levels of income and uncertain employment in the unorganized sector make the workers unable to meet their basic necessities and other social and other cultural responsibilities.
- iii). The prevalence of informal work is also associated with high inequality:** Workers with similar skills tend to earn less in the informal sector than their formal sector peers, and the wage gap between formal and informal workers is higher at lower skill levels.
- iv). Irregularities in Minimum Wages:** Most of the studies undertaken to analyse the conditions of employment in the unorganized sector have examined the wage levels and earnings of workers and have found that the daily wages in the informal sector are below the minimum rate of wages.
- v). Lack of social security:** There are many times when a worker cannot be economically active. It may be due to biological reasons such as sickness or old age, or on account of personal circumstances such as an accident. In the informal sector, there are no social security measures to provide risk coverage and ensure maintenance of basic living standards at times of such crises.
- vi). Informality also has a gender bias.** Women are somewhat more likely to be engaged in the informal economy but significantly more likely than men to be working as informal workers in the formal sector. They usually get the most hazardous and laborious tasks. There is gender discrimination with harder work, less work security and lower wages for women.

What steps have been taken by the government?

- i). Legal initiatives:** The legal initiatives like the Employees State Insurance Act (1948), the Minimum Wages Act (1948), the Coal Mines Provident Funds Act (1948), The Employees Provident Fund Act (1952), the Maternity Benefit Act (1961) and the Contract Labour Act (1970) etc. are important for welfare of informal economy labour market.
- ii). Poverty related development schemes:** Govt has initiated various poverty-related development schemes which indirectly benefited the urban informal sector since independence. Schemes like the Nehru Rozgar Yojana, MGNREGA and the Swarna Jayanti Shahri Rozgar Yojana were launched to provide support to the poor who constitute bulk of the informal sector.
- iii). Social security:** To provide social security benefits, the Parliament enacted the Unorganised Workers' Social Security Act, 2008. The government has also launched Atal

Pension Yojana, Pradhan Mantri Suraksha Bima Yojana, Pradhan Mantri Jeevan Jyoti Bima Yojana, Rashtriya Swasthya Bima Yojana etc.

iv). Skill development: To take care of the need for skills of workers in the informal economy, the government has started various programs such as the Skill India Mission, Pradhan Mantri Kaushal Vikas Yojana, Deen Dayal Upadhyay Grameen Kaushal Yojana, recognition of prior learning etc.

What is the way forward?

i). The informal economy workers shouldn't just be called 'informal', implying that they're not part of the economic mainstream. They should be called 'self-employed' instead. Indeed, they are also huge employment generators. For instance: Katherine Boo's work showcases the incredible mosaic of small enterprises located in Dharavi, Mumbai, employing thousands.

ii). Upskilling: If attention is paid to the infrastructure, modernisation and upskilling of informal economy workers, they can become very competitive globally. This includes Varanasi's weaving, Surat's textiles, Moradabad brassware, etc.

iii). Skill-mapping exercise: In India skills are often measured through formal educational qualifications and the skills of informal economy workers often aren't visible — they appear unskilled and unproductive. They don't get social respect despite being core members of a productive economy. There is a need for an intensive skill mapping exercise. India's huge spectrum of skills need to be examined and build on it to mainstream people, who may not have been formally trained, into the formal certification system.

The tremendous importance of the informal economy must be acknowledged in order to bring its people into the fore of policy and civic discussions. A good place to start is the classrooms where the young people should be taught about the the dignity and the contribution of such workers.

Privatisation of Air India – Explained, pointwise

Introduction

Government has approved Tata Group's Rs 18,000-crore bid for the state-owned carrier, Air India. The deal, which is expected to be completed by December-end, also includes sale of Air India Express and ground handling arm AISATS.

Air India had a total debt of ₹61,562 crore as on August 31. Of this, Tata Sons holding company Talace Pvt Ltd will take over ₹15,300 crore and the remaining ₹46,262 crore will be transferred to a special purpose vehicle, Air India Assets Holding Ltd (AIAHL).

This marks the first major outright privatisation of a public sector company in almost two decades.

Why government took the decision to privatise Air India?

Air India has been in loss since its merger with Indian Airlines in 2007. It has raked in a cumulative debt of around Rs 60,000 Crore till now. Excessive debt in the airline's balance sheet had also pushed equity value to **negative at (-) ₹32,000 crore. Moreover**, the government had been incurring **per day expenditure of ₹20 crore** to keep Air India afloat.

In a developing country like India, this arrangement was highly inefficient, given the other high priority demands on government resources.

In fact, the NITI Aayog, in its recommendations on strategic disinvestment of CPSEs in May 2017, while referring to the fragile finances of Air India, had stated that further financial support in a mature and competitive aviation market would not be the best use of **scarce financial resources of the government**.

Also, Air India's presence in the civil aviation sector had **severely distorted the market**, since government subsidies allowed it to run at a loss and undercut private sector airlines.

And lastly, the **pandemic's impact on public finances and the carrier's operations** especially given the devastating impact on air travel both domestic and international, also contributed to government's decision to privatise Air India.

What are the terms of the deal?

Tata's will have to retain over 13,500 employees of Air India and Air India Express for one year, post which VRS could be offered.

The terms of the deal allow Tata to **go ahead with merger** and also **sell up to 49%** stake after one year, but ensure business continuity for three years.

The Air India brand and eight logos too would be transferred to the Tatas but it will have a **5-year lock-in** and with the clause that they cannot sell them to a foreign entity.

The story of Air India's privatisation and what led to its collapse?

Jehangir Ratanji Dadabhoy (JRD) Tata founded the airline in 1932 and named it Tata Airlines. In 1946, the aviation division of Tata Sons was listed as Air India, and in 1948, the Air India International was launched with flights to Europe.

In 1953, Air India was nationalised and for the next over four decades it remained the prized possession for India controlling the majority of the domestic airspace.

With the opening up of the aviation sector to private players in 1994-95 and private entities offering cheaper tickets, **Air India gradually started losing market share**.

As part of its broader privatisation and disinvestment push, in 2000-01 the government tried to sell a minority stake or 40% stake in Air India. It was unsuccessful due to opposition from Trade unions.

Air India started suffering losses every year since its **merger with Indian Airlines in 2007-08**. In **June 2017**, the Cabinet Committee on Economic Affairs (CCEA) gave in-principle approval to the consideration for strategic disinvestment of Air India and its five subsidiaries.

In March 2018, the government invited expression of interest from investors wherein the buyer was required to take ₹33,392 crore or close to 70% of the carrier's debt on its books. **No bids were received.**

October 2020: Government now gave flexibility to investors to decide on the amount of Air India debt they wanted to absorb.

October 2021: Government announces Tata group makes winning bid of ₹18,000 crore for Air India.

Reasons for Air India's collapse:

- The main reason for Air India's collapse has been **mismanagement** over the decades by successive governments.
- Among other things, Air India has had a record of trading away valuable landing slots, **acquiring aircraft far in excess** of what is financially justifiable (thus saddling it with a mountain of debt), **fudging accounts** and going in for needless expenditure programmes.
- Absence of a strong independent regulator for civil aviation.

What is the global scenario?

The government's sale of its 100% stake will see Air India finally join a long list of airlines the world over that were once owned by national governments but have since been privatized.

- **Privatised:** Qantas, Air Canada, Lufthansa and British Airways
- **Still state-owned:** Singapore Airlines, Emirates and Etihad

What are some post-privatisation challenges?

Integrating the state-run carrier's sizeable workforce is going to be one among the many serious challenges, awaiting the Tatas.

To turn around Air India at a time of **soaring fuel costs and COVID-hit air travel**, will be another challenge.

With privatisation of Air India done, government may face **pressure for doing away with other loss-making PSUs** like BSNL.

What are the potential implications/impacts of the privatisation of Air India?

i). Privatisation of loss-making assets: That there was little opposition to the sale from employees of the beleaguered PSU or, for that matter, from political parties, suggests an acceptance of the fact that the government could no longer throw good money after bad. The government has also displayed flexibility and pragmatism in pushing the sale of Air India by retaining a part of its huge debt with itself, this time. Air India's privatisation is an excellent signal for the government's broader disinvestment programme.

ii). Freeing up of scarce resources: With the conclusion of this sale, the government will no longer need to constantly infuse cash in the loss-making enterprise. It has pumped in around Rs 1.1 lakh crore since 2009-10 to keep the airline up. In 2019-20 alone, the airline's operational losses were to the tune of Rs 8,743 crore. This now frees up scarce resources which are better spent on providing public services like health and education.

iii). Creation of a monopoly: A complete lack of state control might give rise to private monopolies. To prevent this some form of govt regulation still needs to be there.

iv). Rise in prices: Since, government will no longer be there to subsidise losses for Air India, it might lead to a rise in ticket prices.

v). No political influence: As the public sector industries are managed by the government, political interference is bound to take place. Similar was the case with Air India. Several decisions were made under political pressure without consideration of their impact on company as well as its employees. Privatisation will put a stop to this.

What is the way forward?

Strong regulator: With no state-run carrier left in a licensed market category, good regulation is even more important now. If the Centre wants the example of Air India's privatization to serve as a successful template, it should have an empowered regulator that can use an even hand, focus on consumer interests, and keep crony capitalism at bay.

Effective People Management: Work practices need to be reengineered to make employees more productive and efficient. At present most of the departments are overstaffed. There are also certain departments —Vigilance, Hindi implementation, Parliament Cell, etc. that will require shutting down as Air India transits from a govt to a private entity. Manpower rendered surplus will need to be redeployed more gainfully.

It is hoped that the next years will see more high-profile privatisations.

Drug usage and the NDPS Act – Explained, pointwise

Introduction

Recently, Bollywood actor Shah Rukh Khan's son Aryan Khan was arrested by the **Narcotics Control Bureau (NCB)** for the consumption, sale and possession of illegal drugs. The pandemic saw a rise in drug-related arrests and seizures. The Home Minister of **Karnataka** proclaimed that as of July 2021, **drug seizures** in the state were **higher than all seizures for the last five years** combined.

The local police seemed to have become more active in its pursuit, not only for dealers but also for users. But, the amended **Narcotic Drugs and Psychotropic Substances (NDPS) Act**, does not require drug users to be imprisoned. This raises questions over the implementation of the Act and the usage of drugs in India.

What is the impact of the pandemic on Drug usage?

According to **National Crime Records Bureau**, there was a **decrease of more than 27% in crimes related to personal consumption of drugs** from 2019 to 2020. Even crimes related to drug trafficking had seen a drop of 2% in the same period.

But the pandemic period saw a rise in drug-related issues and seizures. However, there is no empirical evidence to suggest that the number of drug users has increased in the last two years.

What is Narcotics and Psychotropic Substances (NDPS) Act?

Narcotics and Psychotropic Substances (NDPS) Act was passed in 1985 to tackle the problem of illegal drugs in India. The Act **establishes Narcotics Control Bureau** as the apex drug law enforcement agency and empowers it to oversee the implementation of the NDPS Act and also the other International conventions related to it.

It prohibits the **production, sale, purchase, transport and consumption** of narcotic drugs and psychotropic substances. The act extends to the whole of India and also in aircraft and ships that are registered in India.

The NDPS Act has been **amended thrice** – in 1988, 2001 and 2014.

The original Act provided no immunity to drug addicts, and there was no real difference in treatment of the user and the dealer.

The **Act was amended in 2001**. After the amendment, the act became **more tolerant and provided a distinction between a drug user and a drug dealer**. The amendment was undertaken to focus on bigger fish: Those who smuggled the drugs and facilitated its trade. The objective of the amendment was to stop thinking of and treating drug users as hardened criminals, which they rarely are.

Punishment and rehabilitation: The Act prescribes quantity-based punishment. The Act differentiates between **small and commercial quantities** of various drugs.

NDPS Act provides **harsh sentences** for those convicted of offences involves smuggling. It even provides for the **death penalty** in some cases where a person is a repeat offender.

But the same act also provides for **immunity from prosecution to those who are dependent on drugs** (through Section 64). It also provides the setting up of **treatment facilities for addicts** (through Section 71).

What are the other steps taken by the Indian government to control drugs?

Seizure Information Management System (SIMS): Narcotics Control Bureau has developed the SIMS platform. It contains a complete online database of drug offences and offenders.

Narco Coordination Centre (NCORD): The Ministry of Home Affairs has constituted the NCORD in 2016. It is a mechanism to conduct regular meetings with various Central and State Agencies and facilitate coordination between them. In 2019, the NCORD system has been restructured into 4 tiers up to the district level by MHA for better coordination and cooperation.

Joint Coordination Committee (JCC): To monitor the **investigation of large seizure cases**, a Joint Coordination Committee (JCC) with Director General, Narcotics Control Bureau (NCB) as its Chairman has been set up by the government in 2019.

India's International collaborations to control the drug usage

India is a signatory to the **UN Single Convention on Narcotics Drugs 1961**, the **Convention on Psychotropic Substances, 1971** and the **Convention on Illicit Traffic in Narcotic Drugs and Psychotropic Substances, 1988**.

As a part of International cooperation, India has signed **26 Bilateral Agreements** and 15 MoUs, and two agreements on security cooperation with different countries for combating illicit trafficking of NDPS and Chemical Precursors.

Read more: [India signed 26 pacts to fight drug menace](#)

Apart from that, the NCB also coordinates with various international organizations, such as SAARC Drug Offences Monitoring Desk (SDOMD), **United Nations Office on Drugs and Crime (UNODC)**, **International Narcotics Control Board (INCB)**, etc for sharing information and intelligence to combat transnational drug trafficking.

What are the challenges in curbing drug usage?

India's geographic location: A major factor making India vulnerable to drug trafficking and consequent drug usage is its geographical location. India lies in close proximity to the major opium-producing regions of South West and South East Asia, known as the '**Golden Crescent**' and the '**Golden Triangle**', respectively.



This makes India vulnerable to transit, trafficking and consumption of Opium derivatives in various forms along the known trafficking routes.

Legal availability of gateway drugs: Drugs such as tobacco, bhang are legally available in India. Tobacco is an experiment for many drug users at their initial stage or during childhood. Later they gradually progress to other drugs such as alcohol and then Heroin, Cocaine, Opium and other drugs.

High youth population: Currently, India has large young population with disposable income. With their willingness to take risks, the availability of drugs creates a drug addiction.

Misuse of the provisions of the NDPS Act: Instead of going behind drugs of commercial quantity, the officials focus more on small quantities. Even though the law provides safety to drug users, it now becomes routine to arrest those suspected of drug consumption. This creates three major issues.

- i) **Continuous prevalence of small quantity drugs** in society, thereby making occasional drug use a regular habit.
- ii) **Wastage of huge manpower and state exchequer** for investigating, interrogating, arresting and prosecuting the small amounts of drug usage.
- iii) Create **overcrowding in prisons**.

Apart from that, the government authorities also use the NDPS Act to snoop into people's phones and look at their messages. This is a breach of privacy.

What can be done to reduce drug usage?

India can consider legalising Marijuana: A WHO study concluded Marijuana is not as unhealthy compared to alcohol and tobacco products. The study also mentions that the harms associated with marijuana use were greatly overestimated and society should respond to its use through progressive public health policies rather than bans.

So, India can consider legalising Marijuana. This will **reduce the workload** and **free up precious police time** and go after the big drug mafias.

Read more: [Decriminalising Marijuana in India](#)

Preventing misuse of the NDPS Act with training and awareness programs: The government can conduct training and awareness programs for law enforcement agencies to focus on the commercial quantity of drugs. This can release many young people landed in overcrowded jails whose only crime was using drugs alone.

At present, the enforcement agencies first arrest the person and then investigate the case. The training has to remind law enforcement authorities that the ability to arrest does not mean that an arrest should always be made.

Learn from the best performers: India can consider experiences from European and Latin American countries. In Europe and Latin American countries, it was found that non-punitive measures improved the health and well-being of drug addicts. India should increase the number of counselling and rehabilitation centres. Further, these centres should be equipped with trained health workers to ensure sustained de-addiction of addicts.

Educate the youth: Education curriculum should include chapters on drug addiction, its impact and also on de-addiction. This will prevent children from experimenting with drugs.

In conclusion, to prevent drug usage India not only need strict legislation but also need a proper implementation along with the societal change to prevent it in future.

Terms to know:

- [Narcotics and Psychotropic Substances \(NDPS\) Act](#)

Indian Space Association (ISpA) – Explained, pointwise

Introduction

Indian Space Association was recently launched by the Prime Minister of India. The industry association will act as an independent and “single-window” agency for enabling the opening up of the space sector to start-ups and the private sector.

The tagline of the association is **“Bhumandal Se Brahmaand Tak”**, meaning from “Earth to the Universe”. The launch of ISpA follows the government’s move in 2020 to open up this sector to private enterprise.

With a new age space race underway between the US on the one hand side and China & Russia on the other, India has taken a step in the right direction to make the most of its potential and in keeping up with the competition.

What is ISpA?

ISpA is the premier industry association of space and satellite companies, which aspires to be the collective voice of the Indian Space industry. It will undertake policy advocacy and engage with all stakeholders in the Indian Space domain, including the Government and its agencies. Echoing with the vision of Atmanirbhar Bharat, ISpA will help in making India **self-reliant, technologically advanced** and a leading player in the space arena.

ISpA is represented by leading homegrown and global corporations with advanced capabilities in space and satellite technologies. Its founding members include Larson & Toubro, Nelco (Tata Group), OneWeb, Bharti Airtel, Mapmyindia, etc.

What is the aim of the ISpA?

One of the main goals of the organisation is to **supplement the government’s efforts** towards making India a global leader in commercial space-based missions. Of late, ISRO’s rockets have been carrying the payload and communication satellites of various countries; now, private players will also look to enter this space with the new organisation.

ISpA will also work towards **building global linkages** for the Indian space industry to bring in critical technology and investments into the country to create more high skill jobs.

ISpA will be focussed on **capacity building and creation of space hubs as well as incubators** in the country for private space start-ups. It will work in tandem with NewSpace India Limited (NSIL), a central public sector enterprise under the Department of Space (DOS), which functions as the commercial arm for ISRO and secures launch contracts from customer satellites.

The association will also work with **IN-SPACE**, which acts as a regulator facilitating the use of government facilities by private companies.

What is the rationale behind establishing ISpA?

Space exploration: Ever since the race to reach space and then land on the Moon began between the US and the erstwhile USSR, governments across the world have poured millions of dollars towards the exploration of the edges of space. With time, governments and government agencies collaborated to explore newer planets and galaxies in search of life forms that exist outside Earth.

In the recent past, private sector companies such as Elon Musk's SpaceX, Richard Branson's Virgin Galactic, and Jeff Bezos' Blue Origin have taken the lead in spaceflight, promising to start tourist flights to space.

Though India too has made significant strides in space exploration over time, state-run ISRO has been at the centre and front of this progress. Several private sector companies, however, have shown an interest in India's space domain, with space-based communication networks coming to the fore.

Innovation of new materials and technology: Space exploration and the demand it creates for tough, lightweight, heat-resistant, radiation-impervious materials have also led to the creation of many materials with unusual properties, such as teflon, nanotubes, dust-resistant paints, heat-resistant composites, etc. A domestic material sciences industry can thrive in such favorable conditions.

– The origins of **telemedicine** and **remote diagnosis** also lie in space research. This has led to the development of things like lightweight exercise equipment, and portable MRI scanners. Studying humans, plants and other organisms in variable gravity has given us many insights into bioscience.

– Also, there are the futuristic possibilities of **robotic mining on the moon and asteroids**, and the establishment of colonies or long-term habitats, on the moon, or Mars. These would require entirely new technologies and Indian start-ups may well contribute in these spheres as well.

– If ISRO and the other ISPA members decide to launch manned missions, or offer space tourism packages, they will have to develop **advanced technologies to ensure medical care**. Instead of importing such equipment, the domestic healthcare industry would then receive access to "Made in India" products.

– Space research has also led to **extremely good recycling systems**, which reprocess organic waste products (urine, faeces, carbon dioxide), and make them fit for re-consumption. Space research has also led to better designs for adult diapers, and more efficient toilets. Some of those water-recycling technologies have been scaled up for **urban wastewater treatment** at municipal level. Given India's endemic and growing water shortages, more efficient toilets and better wastewater management and recycling systems would be a very big deal.

Satellite internet: In India, the space-based communications network is being seen as the next frontier to provide high-speed and affordable Internet connectivity to inaccessible, hilly and remote areas. This includes SpaceX's StarLink, Sunil Bharti Mittal's OneWeb, Amazon's Project Kuiper, US satellite maker Hughes Communications, etc. Satellite internet is hugely important for the **"Digital India"** concept to work evenly across the nation.

The mapping of India and pinpointing of locations could be sharpened with the help of orbital devices designed for domestic purposes.

Weather-forecast apps rarely offer the hour-to-hour precision in India than they do in the West, and this is another gap waiting to be plugged.

And there's **space tourism** too, for which a market may emerge.

Note: The current size of the global space economy stands at about **\$360 billion**. However, India accounts for **only about 2%** of the space economy, with a potential to capture 9% of the global market share by 2030.

There are huge opportunities in space-related areas. A focus on exploiting these could lead to a **rapid build-up of capacities currently lacking in India's industrial base**. Global

communications, entertainment, weather prediction, and geo-locational systems are all dependent on satellites.

The **global satellite launch market** itself represents a big opportunity. ISpA could help develop the capacity to design, build and launch larger satellites for clients all around the world. This would happen more efficiently if there were multiple players competing and pitching in to research this.

Hence, ISpA can serve as a platform to bring public space agencies and private players together towards the development of India's space sector, policies on space communication, and promotion of startups and innovation in fields like remote sensing.

Why do we need ISpA when we already have ISRO?

At present, the ISRO undertakes two to three major satellite launches a year. The **Pillai committee** had recommended a greater role for private sector for using ISRO facilities for satellite launch taking the number of annual launch to 15.

Also, Public-private partnerships would accelerate the grasp of the necessary technical know-how for building and launching larger satellites commercially.

Moreover, no single agency, no matter how accomplished, can explore all possibilities. Encouraging the injection of private capital and entrepreneurship is a must. While ISRO has made contributions to geo-location, weather management and communications, private enterprise could surely do more.

For instance: The **NASA experience** indicates how a collaboration between public agencies and private enterprise can lead to many positive outcomes. The US space agency does engineering design, science experiments, and “blue-sky” research, while contracting out for equipment it uses. Moreover, it freely releases and licenses the arising patents. This has led to the development of a vast range of technologies, which have found other off-the-shelf uses, and enriched America's technical capacities in many ways. For eg: improvements in **propulsion systems** (with the private sector now building rockets), advances in **computing, innovative chip designs**, solar energy systems, **autonomous vehicles**, water management and waste-recycling systems, robotics, were all driven by space research before finding more everyday applications.

What are some pending issues/challenges/concerns?

Following are some challenges that ISpA will need to tackle,

i). Clarity on the role: Leading telcos have said that they had been asked to be core members, but they would prefer to be inducted as founding members. The telcos' apprehension is that while founding members have five votes, the core members have only three and this could lead to a “non-level playing field”, especially as they have varying views on many issues in the space sector.

ii). Lack of a robust Dispute Settlement Mechanism: This discourages private investment in the space sector. The void was seen in the cancelled Antrix – Devas satellite deal and the ensuing dispute between the two entities. The Government of India owes nearly \$1.2 billion to Devas Multimedia as per an order of a tribunal of the International Chamber of Commerce.

iii). Brain Drain: India produces the best brains in the world but is unable to retain them. People emigrate from the country for better opportunities and careers abroad which might hamper the development of the space sector.

iv). Managing big constellations of satellites: Although India has a good potential to launch satellites, managing a huge number of satellites in space could be a challenging task in the future. This should be done keeping in mind the **possibilities of a future space war**.

v). Lack of space legislation: The draft Space Activities bill was introduced way back in 2017 but hasn't been passed yet. India needs comprehensive space legislation enabling coherence across technical, legal, commercial, diplomatic and defence goals.

What is the way forward?

Capacity development of youth: Incubators need to be set up all around India for the capacity development of our youth. Further, India also needs space scientists who can innovate and complement the efforts of ISpA. This can fuel the next-generation disruption and help India reach the pinnacle of space innovation.

Creation of space parks: Space parks, like the one set up in **Kerala**, also need to come up in other parts of India to develop capacities for startups, foreign investments and leveraging industry-academia synergy.

Providing a stable policy and regulatory environment will be another major requirement, as ISpA can move forward only if the government has a decisive vision of the future for the space sector of India.

Brahmos model: The Pillai report suggested that the Brahmos model could also be followed in space ventures. In Brahmos, the DRDO which is department of the government is an investor in a private capacity. Similarly, the ISRO could invest in any major public-private space partnerships to further complement objectives of ISpA.

Terms to know:

- [Indian National Space Promotion and Authorization Center \(IN-SPACe\)](#)

Nobel Prizes 2021 – Explained, pointwise

Introduction

Recently, the Nobel Prize 2021 has been announced in various fields. This year's Nobel Prize highlighted a few significant developments and research around the globe. For instance, Research on wages and jobs, discoveries of human receptors for temperature and touch, etc. This article is a summary of this year's Nobel Prizes and their significance.

About the Nobel Prize

The first Nobel Prizes were awarded in Stockholm, Sweden in 1901 on the fifth anniversary of the death of Alfred Nobel. Swedish inventor Alfred Nobel invented dynamite and other high explosives.

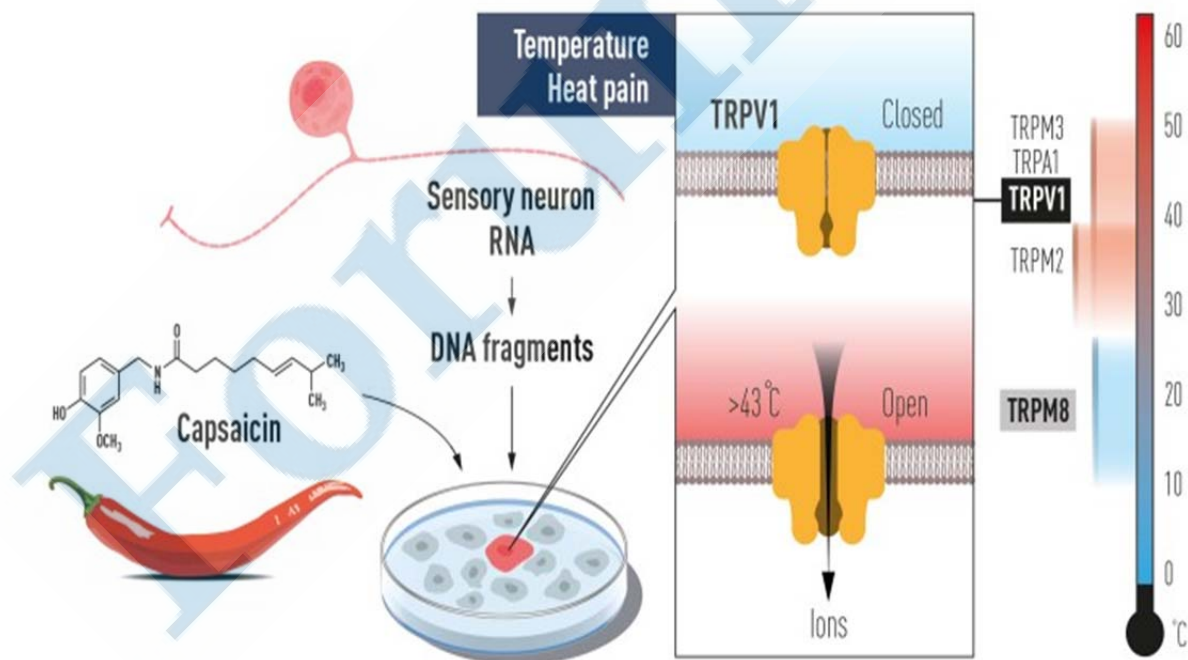
Originally, the prize was awarded in the fields of Physics, Chemistry, Physiology or Medicine, Literature, and Peace. Later in 1968, a sixth prize was added in the field of economic sciences, but it is not officially called Nobel Prize (Sveriges Riksbank Prize in Economic Sciences).

Prizes may be given only to individuals, except the Peace Prize, which may also be conferred upon an institution. However, 3 individuals at max, can share a prize.

[Click here to read more about other facts about Nobel Prize](#)

About Nobel Prizes 2021

Nobel Prize in Medicine or Physiology, 2021



The 2021 Nobel for Physiology (or Medicine) went to David Julius and Ardem Patapoutian for their “discoveries of receptors for temperature and touch”.

Artificial sensors like thermometers are very common temperature sensors that can perceive changes in temperature. Similarly, in the human body, there are sensors to sense. However, only very specific proteins molecules relay these signals to the nervous system.

David Julius and Ardem Patapoutian have discovered the molecular sensors in the human body that are sensitive to heat, and to mechanical pressure. They found those heat receptors open up a passage for specific chemicals, like calcium ions, through the membrane of nerve cells.

These findings opened up “an entire field of **pharmacology**”. The identification of these receptors opens up the **possibility of regulating their functioning**. Researchers are already working to develop drugs to **target the receptors** they identified.

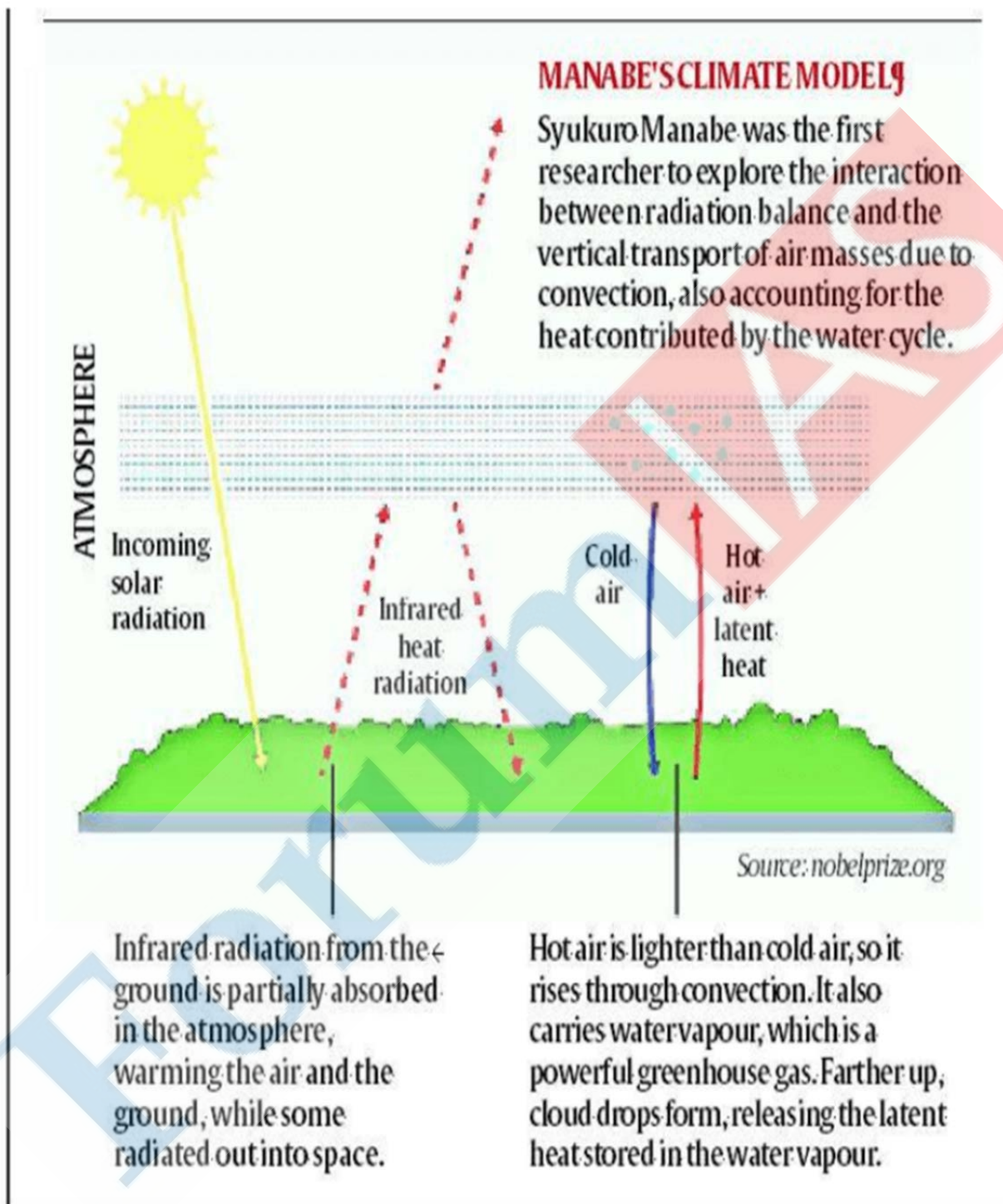
For example, there are receptors that make us feel pain, if these receptors can be suppressed or made less effective, the person would feel less pain.

Read more: [Explained: Nobel Prize in Medicine 2021](#)

Nobel Prize in Physics, 2021

The 2021 Nobel Prize in Physics went to a trio who created weather system models and found ways to spot patterns, and make predictions about weather and climate.

Syukuro Manabe and Klaus Hasselmann were awarded half the prize money “for the physical modelling of Earth’s climate, quantifying variability and reliably predicting global warming”.



Source: Indian Express

The other half went to Giorgio Parisi “for the discovery of the interplay of disorder and fluctuations in physical systems from atomic to planetary scales”.

Read more: [Nobel Prize for Physics Goes to 3 for Climate Discoveries](#)

Nobel Prize in Chemistry, 2021

The 2021 Chemistry Nobel went to Benjamin List and David MacMillan for their “development of a precise new tool for molecular construction: organocatalysis”.

Catalysts are substances that **control and accelerate chemical reactions**, without becoming part of the final product. **For example**, catalysts in cars transform toxic substances in exhaust fumes into harmless molecules.

In the past, it was believed that there are just two types of catalysts available: metals and enzymes. Now, there is a third type of catalyst i.e., **asymmetric organocatalysis**.

These new catalysts are thus **fundamental tools for chemists** for research. Further, these catalysts are **more friendly to the environment and cheaper to produce**.

Read more: [Nobel Prize in Chemistry 2021](#)

Nobel Prize in Literature, 2021

This year's Nobel Prize for Literature is awarded to “Abdulrazak Gurnah”. He became the fifth African writer to win the Nobel Prize for Literature.

He is the author of 10 novels and several short stories and essays. These include “**Desertion**” and “**Paradise**”(shortlisted for the Booker prize). The Theme of his works mostly dealt with ‘immigrant experience and how exile and loss, shape identities and cultures’.

Read more: [Explained: Importance of Nobel winner Abdulrazak Gurnah's writing in highlighting the refugee experience](#)

Nobel Peace Prize 2021

Maria Ressa of the Philippines and Dmitry Muratov of Russia received the Nobel Prize for Peace “for their courageous fight for freedom of expression”.

An investigative journalist, Ressa in 2012 co-founded **Rappler**, a digital media platform for investigative journalism, which she continues to head. Ressa and Rappler have documented how social media is being used to spread fake news, harass opponents, and manipulate public discourse.

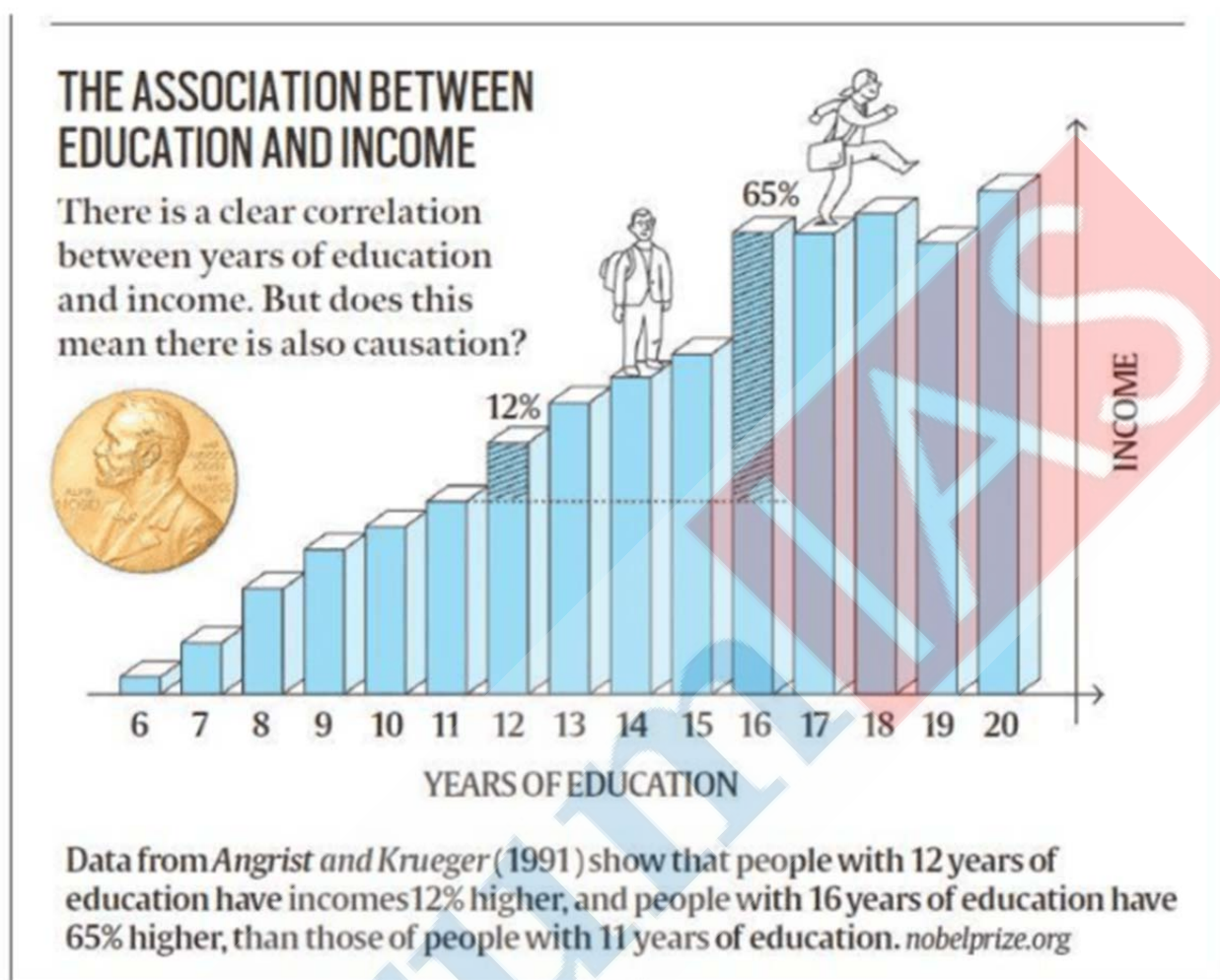
The Nobel Committee said Muratov has for decades defended freedom of speech in Russia under increasingly challenging conditions. Five years after Muratov left the popular daily Komsomolskaya Pravda, he along with around 50 colleagues started **Novaja Gazeta** in 1993, as one of its founders. He has served as the newspaper's editor-in-chief since 1995.

Read more: [2 journalists battling for freedom of expression awarded peace Nobel](#)

Sveriges Riksbank Prize in Economic Sciences, 2021

The Royal Swedish Academy of Sciences has awarded the Sveriges Riksbank Prize in Economics to three US-based economists: David Card, Joshua D. Angrist and Guido W. Imbens.

David Card studied the **relationship between the minimum wage and employment** in the early 1990s. His research showed that the **minimum wage increase had no downward effect** on the number of employees.



Source: Indian Express

Angrist and Imbens won the other half of the award for their work on education and pay. The duo solved a methodological problem and demonstrated how **precise conclusions about cause and effect** can be drawn from natural experiments.

Read more: [Explained: Top prize for labour economics](#)

Highlights of Nobel Prizes 2021

The physics and chemistry awards this year clearly highlighted environmental concerns. For instance, This is the **first time climate scientists** (Manabe and Hasselmann) have been **awarded the Physics Nobel**.

Note: The **Intergovernmental Panel on Climate Change (IPCC)** had won the Peace Nobel in 2007, an acknowledgement of its efforts in creating awareness for the fight against climate change.

In 1995, Paul Crutzen has won a Chemistry Nobel for his work on the ozone layer.

This would probably help in further mainstreaming climate science. Apart from that, it will also convince people and governments, that are not convinced of the reality of the interconnectedness of anthropogenic activities and climate change.

The **physiology award** was given to a very elegant work that opened up a new understanding of biological sensory apparatus and nervous systems.

The **Literature Nobel** came at a time when the **global refugee crisis** is exponentially on the rise, Gurnah's work draws attention to how racism and prejudice against targeted communities and religions perpetuate cultures of oppression.

The **Sveriges Riksbank Prize in Economic Sciences** has helped to formulate policies that are bottom-up (as opposed to top-down approaches). Further, they provide robust evidence that is less contestable.

This is the **first Nobel Peace Prize for journalists since the German Carl von Ossietzky** won it in 1935.