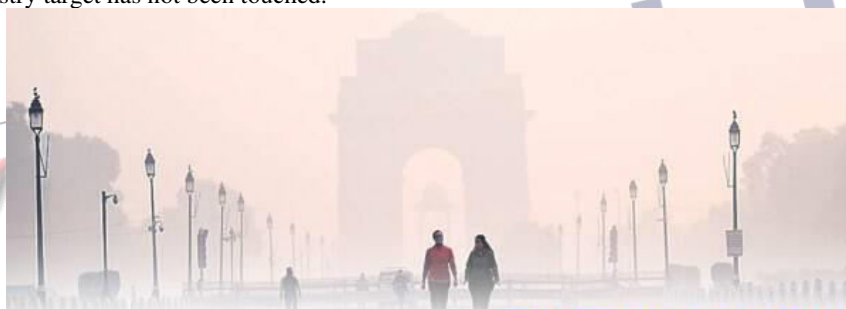


ENVIRONMENT

- ❖ **As India strengthens its climate targets, a look at the progress so far, what's new**
- ❖ **CONTEXT: Nine months after Prime Minister made a few headline-grabbing promises at the climate change conference in Glasgow2021, the government, converted two of those into official targets, which would now be part of India's international climate commitments for 2030.**
- India's NDC, or nationally determined commitments, have been updated with these two promises, both of which are enhancements of existing targets, and would be submitted to the UN climate body. The 2015 Paris Agreement requires every country to set self-determined climate targets which have to be progressively updated with more ambitious goals every few years. India's first NDC was submitted in 2015, just before the Paris Agreement was finalised.
- India's original NDC contained three main targets for 2030:
 - A 33 to 35 per cent reduction in emissions intensity (or emissions per unit of GDP) from 2005 levels
 - At least 40 per cent of total electricity generation to come from non-fossil renewable sources
 - An increase in forest cover to create an additional carbon sinks of 2.5 to 3 billion tonnes of carbon dioxide equivalent
- At the Glasgow meeting last year, Modi promised to strengthen India's climate commitments. He made five promises, and called it the 'Panchamrit', the nectar that Indians prepare using five ingredients. Two of these were upward revision of existing targets, the ones that have been made official and put in the updated NDC on 4th august 2022.
- Accordingly
 - India will now reduce its emission intensity by at least 45 per cent, instead of just 33 to 35 per cent, from 2005 levels by 2030.
 - Also, it would now ensure that at least 50 per cent of its total electricity generation, not just 40 per cent, would come from renewable sources by 2030.
 - The forestry target has not been touched.



INDIA'S CLIMATE TARGETS: EXISTING AND NEW

Target (for 2030)	Existing: First NDC (2015)	New: Updated NDC (2022)	Progress
Emission intensity reduction	33-35 per cent from 2005 levels	45 per cent from 2005 levels	24 per cent reduction achieved in 2016 itself. Estimated to have reached 30 per cent
Share of non-fossil fuels in installed electricity capacity	40 per cent	50 per cent	41.5 per cent achieved by the end of June this year
Carbon sink	Creation of 2.5 to 3 billion tonnes of additional sink through afforestation	Same as earlier	Not clear.

- Apart from these, at least 500 GW of India's installed electricity generation capacity in 2030 would be based on non-fossil fuel sources. Also, India promised that the country would ensure avoided emissions of at least one billion tonnes of carbon dioxide equivalent between now and 2030. These two promises have not been converted into official targets. But these are closely linked with others, and any progress on official targets would get reflected in these goals as well.
- Prime Minister had also announced a net zero target for India for the year 2070. Net zero is a situation in which a country's greenhouse gas emissions are offset entirely, either by absorption of carbon dioxide through natural processes like photosynthesis in plants, or through physical removal of greenhouse gases using futuristic technologies.
- But net zero is a long-term target and does not qualify to be included in the NDC which seeks five to 10 year climate targets from countries.

❖ **India's progress**

- The upward revision of the two climate targets — those relating to reductions in emissions intensity and proportion of non-fossil sources in electricity generation — do not come as a surprise. India is on way to achieve its existing targets well ahead of the 2030 timeline.
- India's emissions intensity was 24 per cent lower than the 2005 levels in the year 2016 itself, the last year for which official numbers are available. It is very likely that the 33 to 35 per cent reduction target has already been achieved, or is very close to being achieved. A further reduction of 10-12 per cent from here, to meet the new target, does not appear too challenging, even though these reductions get progressively tougher to achieve.
- The other target — having at least 40 per cent of electricity coming from non-fossil fuels — has officially been reached. According to the latest data from the power ministry, 41.5 per cent of India's current installed electricity capacity of 403 GW is now powered by non-fossil fuels. Renewable (wind, solar and others) alone account for more than 28 per cent of this capacity while hydropower contributes over 11 per cent.
- With most of the new capacity additions happening in the renewable energy sector, a 10 per cent rise in the share of non-fossil fuels in electricity generation is not an unrealistic target.



Promise	Whether included in new NDC
Non-fossil fuel electricity installed capacity to reach 500 GW	Not included
At least 50 per cent of total installed electricity generation capacity to come from non-fossil fuel sources	Included
Reduction of one billion tonnes of carbon dioxide equivalent from cumulative projected emissions between now and 2030	Not included
At least 45 per cent reduction in emission intensity of GDP by 2030	Included
Net zero status by 2030	Never intended to be part of NDC

❖ **Tricky Glasgow promises**

- Two promises that Prime Minister had made in Glasgow have not been converted into official targets. The Prime Minister had announced that India's non-fossil fuel electricity generation capacity would touch 500 GW in 2030 and India would cut at least one billion tonnes of carbon dioxide equivalent from its net projected emissions between now and 2030.
- Both these promises were tricky. The 500 GW non-fossil fuel electricity capacity target for 2030 is not easy. Of the current installed capacity of 403 GW, over 236 GW, or 58.5 per cent comes from fossil fuel sources, while non-fossil fuels, which include not just renewables like solar or wind but also hydropower, nuclear and others, make up only 167 GW. Capacity additions from non-fossil sources would have to triple in the next 10 years to reach the 500 GW target.
- The total installed electricity capacity has more than doubled in the last 10 years (from 199 GW in 2012 to 403 GW now), but it is not only because of non-fossil fuel sources.
- While renewables have seen an impressive increase, installed capacity from fossil fuels have also doubled during this period.
- The promise to reduce at least one billion tonnes of carbon dioxide equivalent from the cumulative projected emissions till 2030 was even more problematic.
- It was also the target with least clarity. It was the first time that India had enunciated any climate target in terms of absolute emission reductions. But it appears it was announced without much preparatory work.

- India does not have any official projection of its emissions in 2030. The emissions pathway from now to 2030 is also not clear. In the absence of a baseline, the target would have been meaningless.
- According to some estimates, India's annual projections are expected to rise from about 3.3 billion tonnes in 2018 to about 4 billion tonnes by 2030. Thus, India could be emitting anywhere between 35 to 40 billion tonnes of carbon dioxide equivalent in total by the year 2030.
- A reduction of one billion tonnes from this would represent 2.5 to 3 per cent. Some officials argue that if India achieves its official targets, the gains in terms of avoided emissions could be far in excess of one billion tonnes.
- The updated NDC also removes some of the confusion that had arisen due to a lack of clarity in the Prime Minister's speech in Glasgow.
- ❖ **Financial and technological support**
- In Glasgow in 2021 that India's enhanced climate commitments were likely to be contingent on the availability of international finance and technology from the developed countries. It would be difficult for India to achieve its higher targets in the absence of such international support.
- The updated NDC does talk about the need for low-cost international finance and transfer of technology, but does not make achievement of targets contingent on their availability. This was the case in the previous NDC as well.
- ❖ **How India plans to step up energy saving game**
- ❖ **CONTEXT: In order to facilitate the achievement of more ambitious climate change targets and ensure a faster transition to a low-carbon economy, the government is seeking to strengthen a 20-year law, called the Energy Conservation Act of 2001, which has powered the first phase of India's shift to a more energy-efficient future.**
- The Bill to amend the Energy Conservation Act, 2001, which was introduced in Parliament, has two main objectives.
 - First, it seeks to make it compulsory for a select group of industrial, commercial and even residential consumers to use green energy. A prescribed minimum proportion of the energy they use must come from renewable or non-fossil fuel sources.
 - Second, it seeks to establish a domestic carbon market and facilitate trade in carbon credits.
- Importantly, the amendment Bill seeks to widen the scope of energy conservation to include large residential buildings as well. Till now, the energy conservation rules applied mainly on industrial and commercial complexes.
- ❖ **Energy Conservation**
- The 2001 law defined standards for energy conservation and efficiency to be followed by a select group of industries and commercial complexes.
- Efficiency standards were also prescribed for equipment and appliances like air conditioners or refrigerators.
- This law set up the Bureau of Energy Efficiency (BEE) to promote the use of more efficient processes and equipment in order to save energy. The star ratings on various household appliances and the large-scale shift to LED bulbs were some of the successful initiatives of BEE that have resulted in massive energy savings over a period of time.
- The overall objective has been to improve energy efficiency across sectors, so that much more productivity can be obtained from the same amount of energy.
- Over the years, India's energy intensity, or the amount of energy consumption per unit of GDP, has declined significantly.
- ❖ **New provisions**
- The amendment Bill seeks to build upon the progress made so far.
- For example, just like the standards for appliances and equipment, energy consumption standards would be specified for motor vehicles, ships and other water vessels, industrial units, and buildings.
- In the case of vehicles and water vessels, fuel consumption norms would be defined. And just like it is for appliances and equipment, the new provisions would empower the government to prohibit the manufacture or import of any vehicles or water vessels if it does not conform to the prescribed energy standards.
- New sustainable building codes are to be defined which every building with a certain threshold of energy consumption, whether industrial, commercial or residential, would have to adhere to. Every such building would have to ensure that at least a part of its total energy consumption comes from renewable or non-fossil fuel sources. This would help in reducing the proportion of fossil-fuel based energy being used in the economy and push the demand for renewable or other non-fossil fuels.
- ❖ **What are carbon markets?**
- The creation of a domestic carbon market is one of the most significant provisions of the proposed amendment Bill. Carbon markets allow the trade of carbon credits with the overall objective of bringing down emissions.
- These markets create incentives to reduce emissions or improve energy efficiency. For example, an industrial unit which outperforms the emission standards stands to gain credits. Another unit which is struggling to attain the prescribed standards can buy these credits and show compliance to these standards. The unit that did better on the standards earns money by selling credits, while the buying unit is able to fulfill its operating obligations.

- Under the Kyoto Protocol, the predecessor to the Paris Agreement, carbon markets have worked at the international level as well. The Kyoto Protocol had prescribed emission reduction targets for a group of developed countries.
- Other countries did not have such targets, but if they did reduce their emissions, they could earn carbon credits. These carbon credits could then be sold off to those developed countries which had an obligation to reduce emissions but were unable to. This system functioned well for a few years. But the market collapsed because of the lack of demand for carbon credits. As the world negotiated a new climate treaty in place of the Kyoto Protocol, the developed countries no longer felt the need to adhere to their targets under the Kyoto Protocol.
- A similar carbon market is envisaged to work under the successor Paris Agreement, but its details are still being worked out.
- Domestic or regional carbon markets are already functioning in several places, most notably in Europe, where an emission trading scheme (ETS) works on similar principles. Industrial units in Europe have prescribed emission standards to adhere to, and they buy and sell credits based on their performance. China, too, has a domestic carbon market.
- A similar scheme for incentivising energy efficiency has been running in India for over a decade now. This BEE scheme, called PAT, (or perform, achieve and trade) allows units to earn efficiency certificates if they outperform the prescribed efficiency standards. The laggards can buy these certificates to continue operating.
- However, the new carbon market that is proposed to be created through this amendment to the Energy Conservation Act, would be much wider in scope.
- Although the details of this carbon market are not yet known, it is likely to be on the lines of the European ETS, facilitating the buying and selling of carbon credits.

PRELIMS

1. What are live-fire exercises, recently conducted by China?

❖ **CONTEXT:** In a massive show of strength, China began its live-fire exercise near Taiwan, launching at least 11 ballistic missiles into the country's coast, a day after US House speaker Nancy Pelosi visited Taiwan. Taiwan's defence ministry announced, that multiple Chinese ships and planes had once again crossed the median line of the Taiwan Strait, which separates the two countries. Calling the military exercises "highly provocative," the defence ministry states that it had dispatched aircraft and ships and deployed land based missile systems in response to the situation.

❖ What are live-fire exercises?

- They are exercises primarily used by military personnel, in which live ammunition is used to create training conditions that are as close to real combat scenarios as possible.
- Live-fire exercises are also used by law enforcement and fire fighters as a form of field training, to train them to act calmly in real-life emergency situations in the future.
- During live-fire training, soldiers are placed in simulated combat situations and are given the opportunity to use their weapons and equipment (like ships, aircraft, tanks and drones). Such exercises are invaluable in maintaining combat readiness of troops, the cohesiveness of units, and instilling confidence in their ability to use their weapons and equipment correctly.
- It also involves testing the effectiveness of vehicles, weapon platforms and weapons systems (such as intercontinental ballistic missiles, cruise missiles, anti-aircraft weapons), so that any design flaws can be resolved before the weapons are fully operational.

❖ Have they been done in the region before?

- China had previously undertaken a similar show of force during the Third Taiwan Strait Crisis in 1995-1996, when it fired missiles into the waters near Taiwan, after former President Lee Teng-hui visited the US, despite China's strong objections.
- Between July 25-29, the US army resumed its live-fire drills in South Korea after a hiatus of three years, in response to the series of weapons tests undertaken by North Korea this year. The deadly Apache helicopters stationed in South Korea were allowed to fire rockets and guns at the Rodriguez Live Fire Complex, south of the Demilitarised Zone (DMZ) that divides North and South Korea.
- The live-fire exercises had been previously cancelled in 2019 after residents living in the vicinity of the area had complained about noise and raised concerns about safety, as reported by Reuters.
- After North Korea launched 8 short-range ballistic missiles on June 5, the US and South Korea responded in a tit-for-tat fashion, by firing 8 of their own into the sea.

2. Khayyam Satellite

❖ **CONTEXT:** Russia will launch an Iranian remote sensing satellite 'Khayyam' into orbit by using its Soyuz 2.1B satellite carrier.

- The satellite is named after 11th-12th century Persian polymath Omar Khayyam.
- This satellite is a remote sensing satellite designed and manufactured at enterprises that are part of the Russian Space Corporation Roscosmos.
- The satellite has high imaging accuracy and is capable of filming the earth's surface in different image spectra. It aims to

1. Monitor the country's borders,
 2. Enhance agricultural productivity and
 3. Monitor water resources and natural disasters.
- Russia is putting the satellite into space but it will be guided and controlled from ground stations in Iran.
 - ❖ **Baumol's Cost Disease**
 - Economics theory states that wages rise when there's greater productivity.
 - However, Baumol's cost disease refers to the increase in the wages of certain labourers even though their productivity or skill level has not risen commensurately.
 - This happens because there is competition between various industries for the limited supply of labour.
 - So, even if the productivity of their employees has not risen significantly, employers in many cases have no choice but to pay higher wages in order to prevent the movement of labourers to other higher-paying industries.
 - It should be noted that labour is often a kind of non-specific resource that can be used across various industries
 - ❖ **World Dairy Summit 2022 to be held in India after 48 years**
 - ❖ **CONTEXT: India is hosting the World Dairy Summit 2022 in New Delhi. The last World Dairy Summit was organized in 1974 in New Delhi. After 48 years, India is organizing the summit again.**
 - It organized by International Dairy Federation (IDF) and will Hosted by India
 - It is aim to provide a forum for the industry experts to share knowledge and ideas on how the sector can contribute to nourishing the world with safe and sustainable dairying.
 - Theme of this summit is Livelihood and Nutrition
 - ❖ **Dairy Sector in India**
 - India is ranked 1st in milk production contributing 23% of global milk production.
 - Uttar Pradesh is the highest milk-producing state in India contributing around 18% to the total milk production followed by Rajasthan, Andhra Pradesh, Gujarat and Punjab.
 - Initiated in 1970, Operation Flood was arguably the most ambitious dairy development programme that transformed India into one of the largest milk producers.
 - However, India is yet to join the ranks of major milk exporting nations as much of what we produce is directed towards meeting domestic demands.
 - ❖ **Diary Sector Schemes**
 - **Dairy Processing and Infrastructure Development Fund** scheme aims to provide subsidized loans at 6.5% to capital-stressed milk cooperatives for primarily replacing their decades-old chilling and processing plants and addition of value-added product plants.

ANSWER WRITTING

Q. "The growth of cities as I.T hubs has opened up new avenues of employment, but has also created new problems." Substantiate this statement with examples.

IT sector has been one of the most important sectors to help India achieve good growth and provide avenue for employment of rapidly growing engineering graduates every year.

Advantages of this sector:

- The industry continues to be a net employment generator making it a dominant player in the global outsourcing sector. NASSCOM has confirmed that the industry continues to be a net hirer and reports that 2.5-3 million new jobs will be created by 2025.
- Probably no sector is untouched by information technology. As a result, the I.T industry employs professionals from all other fields which could also be non- technical in nature.
- The rapid development of technologies such as networking, multimedia and the Internet have created totally new job categories where none existed a few years ago.

Problems created by this sector are:

- **Urbanization issue:** – Due to concentration of IT companies only in few cities, urban population swelled leading to endless traffic jams, over-crowded public transport, etc. – The cities are booming with malls, shops and offices of multinational companies, but completely lacks the infrastructure to support this growth. – Led to the compact growth at central core areas of cities and sprawl at outskirts which are deprived of basic amenities. - Water crisis
- **Psychological issues:** – Extended work timings, competition and, most importantly, insecurity at work are contributing to an increase in people's stress levels. – People working as per client timing in foreign countries have disturbed life and sleeping patterns, and in many cases, have almost no family life.
- Neglect to all other traditional disciplines of education that stood as backbone of country's development.
- The applications of computers in many other fields like natural resource development, utilization of such resources for overall regional balanced growth, and many such developments never occurred in India because of excessive growth of IT.
- It is not able to create jobs proportionate to the graduating youth every year.
- **Migration:** – Similarly, this also leads to increase in migration with demand for domestic labour on rise. However, these problems have been faced not just by the IT sector, but by all the high growth sectors of late and they have occurred due to improper urban planning rather than the sector itself. There needs to a be transformation in urban governance by making India's municipal administrations politically strong also cities need to implement plans for

service delivery, including routine maintenance to prevent the gradual degradation of assets. Similarly, We need to create planned cities with proper infrastructure and promote the growth of such sectors there. For example, the recent development of GIFT city for financial sector in Gujarat is on correct lines. We need more such specialized cities.

MCQs

1. Consider the following statement with reference to World Dairy Summit 2022.
 1. It is first of its kind summit hosting by India for the first time
 2. It organized by International Dairy Federation (IDF)
 Choose the correct statement using the codes given below?
 - a) 1 only
 - b) 2 only**
 - c) Both 1 and 2
 - d) Neither 1 nor 2
2. Consider the following statements
 1. India is ranked 1st in milk production globally followed by china.
 2. In case of Export of milk china ranked first followed by USA
 Choose the correct statement using the codes given below
 - a) 1 only
 - b) 2 only
 - c) Both 1 and 2
 - d) Neither 1 nor 2**
3. Which of the following state is topped the rank of milk production?
 - a) Uttarpradesh**
 - b) Rajasthan
 - c) Gujarat
 - d) pinjab
4. Which of the following statement is correct regarding Operation flood?
 - a) It was initiated in second five year plan
 - b) Dairy development programme which lead to white revolution in India**
 - c) Its primary aim was to increase milk export
 - d) Both a and b
5. Which of the following statement is correct regarding Baumol's cost disease recently seen in news
 - a) A phenomenon where in a country witnesses uneven growth across sectors due to the discovery of natural resources, especially large oil reserves.
 - b) A situation where GDP growth potential is low with High unemployment rate
 - c) Increase in the wages of certain labourers even though their productivity or skill level has not risen commensurately**
 - d) Is a situation where Central bank lowering the interest rate but the commercial banks does not pass the benefit to borrowers
6. Consider the following statement with regards to International Dairy Federation (IDF)
 1. It is a specialized agency of UN
 2. Its headquarter situated is at Beijing ,china.
 Choose the correct statement using the codes given below

a) 1 only	b) 2 only	c) Both 1 and 2	d) Neither 1 nor 2
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7. A remote sensing satellite known as 'Khayyam' recently mentioned in news is belongs to which of the following country

a) UAE	b) Oman	c) Iran	d) Egypt
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8. Consider the following statement with reference to "Live fire exercise" recently conducted by china
 1. In this type of exercise live ammuniton is used to create training conditions that are as close to real combat scenarios.
 2. This is for the first time china conducted by china.
 Choose the correct statement using the codes

a) 1 only	b) 2 only	c) Both 1 and 2	d) Neither 1 nor 2
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9. Taiwan Strait is in news because of china – Taiwan tensions which of the following is connected by this strait
 - a) South china sea with North china sea
 - b) South china sea with East china sea**
 - c) Philipine sea with South china sea
 - d) Philipine sea with East china sea
10. Which of the following date is observed as Hiroshima Day?

a) 3 rd August	b) 11 th August	c) 6th August	d) 5 th August
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