

## 2024\_10\_06 DAILY CURRENT AFFAIRS

### TOPICS COVERED

1. 'Shompen of Nicobar prize their freedom above all' (GS Paper-I: Society (Tribes), Environment)
2. Anti-cancer drugs to sport QR codes to check fakes
3. No bar on fathering a child after death, rules Delhi HC
4. Brains and brawn (GS Paper-III: Environment)
5. How are tanks armouring Ladakh sector? (GS Paper-III: Internal Security)
6. Why is salt pan land being used for homes? (GS Paper-III: Environment)
7. What's behind Israel's ban on the UN chief? (GS Paper-II: UN and UNSG)
8. Iran's forward defence network (GS Paper-II: Militant Groups in West Asia)
9. Researchers find mechanisms behind plant response to warming
10. Two months on, Meghalaya polio case shrouded in secrecy
11. Hidden pandemic of AMR poses challenge
12. India's energy demand to triple by 2050: Wood Mackenzie's Whitworth
13. Sri Lanka approves controversial foreign debt deal sought by IMF

# 'Shompen of Nicobar prize their freedom above all'

GS Paper I: Society (Tribes), Environment

**Jacob Koshy**  
NEW DELHI

Triloknath Pandit, a former Director of the Anthropological Survey of India (AnSI) who was posted to the Andaman islands for nearly two decades, chuckles at a memory involving Fakhruddin Ali Ahmed, the fifth President of India.

On a visit to the islands, the head of state and his wife were slated to meet with tribal residents.

"As the resident anthropologist, I was summoned and gave a talk at the government guest house. As part of the function, they had some [people] from the Shompen tribe in attendance," says Mr. Pandit, 89, in an interview at his home in Delhi.

"There was the President and there were a couple of well-built Shompen men. They came with their hunting spears and were naked. There was also me and some other officials. Everybody in the room was silent and staring at each other because there

was no comprehensible language in which to communicate. Suddenly some of the Shompen visitors started weeping and were in visible distress. They had been out fishing and were suddenly caught and herded into a guest house. All in all, it was an extremely awkward situation," he recalls.

## Forest home at risk

According to the 2011 Census, there are only around 229 members of the Shompen tribe, which makes its home on the Nicobar islands along with the much more numerous Nicobarese tribe. The Shompen, a semi-nomadic forest-dwelling tribe believed to have been resident on the Great Nicobar island for at least 60,000 years, have historically preferred limited contact outside their groups.

In May 2024, seven of them voted in the general election, amid a contentious plan to develop a transshipment container terminal, port, and solar power plant on the Great



Triloknath Pandit, former AnSI Director. JACOB KOSHY

Nicobar island. This will involve razing nearly a million trees in about 130 square km of rainforest, which are the primary source of sustenance to the forest-dwelling Shompen.

While environmental clearances have been accorded to the project, the Congress, environmental groups and collectives of anthropologists have publicly voiced concern over the environmental consequences of the project.

Mr. Pandit warns that such projects could have disastrous consequences

for the Shompen. "My observation is that living in the forest, in the way they want to, is their supreme concern. In my opinion, such major infrastructure projects aren't correct [on the Great Nicobar island]. They are virgin forests and part of it has already been destroyed," he says.

In his years as an anthropologist with the AnSI, Mr. Pandit interacted with all of the existing tribes on the Andaman and Nicobar islands. He was the first researcher to make contact with the particularly reclusive

Sentinelese, who live on the Sentinel islands. The latter sparked an international controversy in 2018, when American missionary John Chau, who illegally visited the island, was lynched by the islanders.

"The Shompen in my experience generally keep their distance. A few centuries ago, the Shompen came into contact with French missionaries, who ended up being assassinated. Unlike the Nicobarese who live along the coastal stretches of the island, the Shompen live in the interiors, they hunt and fish in the rivers. They are concerned that their girls and women will be kidnapped and there have been instances of one group of Shompen raiding another group, or clan, for their women. However they as a people greatly prize their freedom and do not like confinement," Mr. Pandit says.

There are camps on the island where rations such as rice and provisions are

often made available and the Shompen partake of them when they need to.

"Their basic approach is however to be unconstrained. They will either chase and hunt a pig, spear a fish, capture a girl [from another group of Shompen]. But the primary impulse is freedom," Mr. Pandit says, emphasising that the Shompen and Nicobarese have lived in peace with each other though they maintain separate habitats.

The tribes that have lived on the Nicobar islands for millennia are links to humanity's early history.

"The Shompen may be few in number but their knowledge of the forests in their islands is supreme. They are happy, joyous. They have their own understanding of the universe. Let them remain the way they are. If we enter into their abode, their end will be much faster, such as from disease. If they need us, they will reach out," he adds.

## 'Shompen of Nicobar prize their freedom above all' (6 October)

- Triloknath Pandit, former Director of the Anthropological Survey of India (AnSI), spent nearly two decades in the Andaman islands.
- He recalls an awkward encounter involving Fakhruddin Ali Ahmed, the fifth President of India, who visited the islands.
- During the visit, the President and his wife were scheduled to meet tribal residents.
- Pandit, as the resident anthropologist, gave a talk at a government guest house with Shompen tribe members in attendance.
- The room was silent, with no common language for communication.
- Some Shompen men, who were naked and carrying hunting spears, began to weep in distress after being herded into the guest house following a fishing trip.
- The Shompen tribe consists of around 229 members as per the 2011 Census and resides on the Nicobar islands alongside the Nicobarese tribe.
- The Shompen are semi-nomadic forest dwellers believed to have lived on Great Nicobar island for at least 60,000 years, preferring limited contact with outsiders.

- In May 2024, seven Shompen voted in a contentious general election regarding the development of a transshipment terminal, port, and solar power plant on Great Nicobar island.
- This development plan involves clearing nearly a million trees over 130 square km of rainforest, vital for the Shompen's sustenance.
- Environmental clearances have been granted, but there is significant opposition from the Congress, environmental groups, and anthropologists.
- Pandit warns that such projects could be disastrous for the Shompen, emphasizing their concern for living freely in the forest.
- He notes that major infrastructure projects in virgin forests are inappropriate and detrimental.
- Throughout his career, Pandit interacted with various tribes in the Andaman and Nicobar islands, including the reclusive Sentinelese.
- The Sentinelese gained international attention in 2018 after an American missionary was killed during an illegal visit.
- The Shompen typically maintain their distance from outsiders and have a history of violent encounters with foreign missionaries.
- Unlike the Nicobarese, who live along the coast, the Shompen inhabit the interiors and rely on hunting and fishing.
- They are wary of potential kidnappings of women and have a history of clan raids.
- The Shompen prioritize their freedom and prefer not to be confined, often choosing to hunt and gather on their own terms.
- Camps on the island provide rations, which the Shompen access as needed, but they primarily value their independence.
- The Shompen and Nicobarese have coexisted peacefully while maintaining separate habitats.
- The tribes of the Nicobar islands are seen as links to humanity's early history.
- Despite their small numbers, the Shompen possess extensive knowledge of their forests and lead happy, fulfilled lives.
- Pandit advocates for allowing the Shompen to remain as they are, warning that outside interference could lead to their rapid decline and exposure to diseases.

# Anti-cancer drugs to sport QR codes to check fakes

**Bindu Shajan Perappadan**  
NEW DELHI

With reports of anti-cancer drugs being replaced by counterfeit products, the government may soon make it mandatory to attach quick response (QR) codes to every vial and strip of medication marketed in India. This is to ensure a rigorous track-and-trace mechanism.

This was proposed at a recent meeting of the Drugs Technical Advisory Board (DTAB) meeting, show its minutes. The Board was apprised that unscrupulous criminals, in collusion with hospital pharmacies, were found refilling empty vials of expensive anti-cancer medicines with counterfeit drugs.

The DTAB is a committee that advises the Indian government on technical matters related to the



The government may soon make it mandatory to attach QR codes to every vial and strip of medication. FILE PHOTO

Drugs and Cosmetics Act. The Board is part of the Central Drugs Standard Control Organisation (CDSCO) in the Health Ministry.

“These fake drugs were then mixed with genuine stocks and sold to unsuspecting cancer patients, putting their life at risk,” the Board meeting’s minutes noted.

A course of chemothera-

py in India typically costs between ₹1 lakh and ₹4 lakh, depending on the drugs used. Radiation therapy can cost around ₹1 lakh to ₹3 lakh. A combination of cancer treatments is sometimes required to obtain better results.

**Preventing counterfeits**  
Based on this input, the Union government is now working to bring in a mandatory quick response and rigorous track and trace mechanism to prevent counterfeits and validate the authenticity of anti-cancer medicines.

At the DTAB meeting, it was proposed that Schedule H2 of the Drugs Rules, 1945 be amended to include all anti-cancer medicines.

This would make it mandatory to print or affix bar codes or quick response codes in the labels of these medicines.

## Anti-cancer drugs to sport QR codes to check fakes (6 October)

- Reports indicate that anti-cancer drugs are being replaced by counterfeit products in India.
- The government may soon mandate attaching quick response (QR) codes to every vial and strip of medication.
- This measure aims to establish a rigorous track-and-trace mechanism for medications.
- The proposal was discussed at a recent meeting of the Drugs Technical Advisory Board (DTAB).
- The Board was informed about criminals colluding with hospital pharmacies to refill empty

vials of expensive anti-cancer medicines with counterfeit drugs.

- DTAB advises the Indian government on technical matters related to the Drugs and Cosmetics Act.
- It operates under the Central Drugs Standard Control Organisation (CDSCO) within the Health Ministry.
- Minutes from the meeting noted that fake drugs were mixed with genuine stocks and sold to unsuspecting cancer patients, risking their lives.
- The cost of a chemotherapy course in India typically ranges from ₹1 lakh to ₹4 lakh, depending on the drugs used.
- Radiation therapy costs around ₹1 lakh to ₹3 lakh, and a combination of treatments is often necessary for better results.
- The Union government is working on implementing a mandatory quick response and rigorous track-and-trace mechanism to combat counterfeits.
- At the DTAB meeting, it was proposed to amend Schedule H2 of the Drugs Rules, 1945, to include all anti-cancer medicines.

- This amendment would require printing or affixing bar codes or QR codes on the labels of these medicines.

## No bar on fathering a child after death, rules Delhi HC

**Ishita Mishra**  
NEW DELHI

The Delhi High Court on Friday ordered a city-based hospital to release the frozen sperm of an unmarried deceased man to his parents, to enable him to father a child posthumously. The court said **Indian law did not prohibit posthumous reproduction, if the consent of a sperm or egg owner was proven.**

Justice Prathiba M. Singh noted that the petitioners' son, who died of cancer after giving consent for preservation of his semen sample, had clearly stated that he was doing it to preserve fertility. She said the **parents being the heirs of the deceased, and semen samples being genetic material and constituting property, they were entitled to have access to the sample.**

The court also noted

### **Court allows parents of dead man to receive his semen sample to enable him to father a child**

that with modern science enabling infertile couples to have children, the hope of parents to continue the legacy of their young deceased son, who got his semen sample preserved, cannot be defeated.

The court also noted that the grandparents are equally capable of bringing up their grandchildren in a manner so as to integrate them into society. "Is there any prohibition on posthumous reproduction under the existing law? The answer is clearly in the negative," the court noted.

It further added that in the absence of any such prohibition, this court is unable to read a restriction

where none exists.

The court stressed that since it was to decide in respect of access to the sperm sample of a deceased person, enormous caution needs to be exercised.

It also relied upon similar situations in other countries, including the case of a 19-year-old soldier from Israel who was killed in 2002 in Gaza, in which his parents received legal permission to access their son's sperm sample posthumously. The mother of the deceased soldier also got permission to choose the future single mother and a daughter was born. The court also noted a case from Germany that "adopts a rather conservative approach", where the case of the "Erlanger baby" was hotly debated after a brain-dead pregnant mother was kept alive to save her pregnancy.

constituting property, entitling them access.

- The court emphasized that modern science allows infertile couples to have children, and parents should be able to continue their deceased son's legacy.
- It acknowledged that grandparents are capable of raising grandchildren and integrating them into society.
- The court confirmed there is no legal prohibition on posthumous reproduction under existing law.
- The court stressed the need for caution when deciding on access to the sperm sample of a deceased person.
- It referenced international cases, including a 19-year-old Israeli soldier killed in 2002, whose parents received legal permission to access his sperm sample.

## No bar on fathering a child after death, rules Delhi HC (6 October)

- The Delhi High Court ordered a city-based hospital to release the frozen sperm of an unmarried deceased man to his parents for posthumous reproduction.
- The court stated that Indian law does not prohibit posthumous reproduction if consent from the sperm owner is proven.
- Justice Prathiba M. Singh noted that the deceased man had consented to the preservation of his semen sample to preserve fertility.
- The court recognized the parents as heirs of the deceased and stated that semen samples are genetic material

- The mother of the Israeli soldier was also allowed to choose a future single mother, resulting in the birth of a daughter.
- The court mentioned a German case involving a brain-dead pregnant mother that sparked debate, indicating a more conservative approach to similar issues.



**Nomadic life:** A Halari donkey herder with his livestock at the Bhanvad grasslands in Gujarat.



**Social animals:** A drove of Halari donkeys form a line to cross a waterbody in the grasslands.



**Pets and pats:** A herder feeds roti made of pearl millets to his drove of Halari donkeys.

# Brains and brawn

GS Paper III:  
Environment

The endangered Halari donkeys, native to the Halar region of Gujarat, are considered to be intelligent animals which work closely with human beings



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**D**onkeys are intelligent animals which work closely with human beings. They are social animals and form close bonds with people, supporting them for transport needs.

One of the most beautiful breed of donkeys is found in the Halar region of Gujarat. Considered endangered, the surviving population of the Halari donkey numbers fewer than 500. The average Halari donkey is white in colour, and is larger and more resilient than other donkey breeds. It is an important domestic animal in the semi-arid landscape of Jamnagar and Dwarka districts in Gujarat's Saurashtra region.

Hamirbhai Bhundiya, a herder, sends out a unique call, upon hearing which his drove of Halari donkeys rush to him like they are his pets. He feeds them *bajra rotla* (roti made of pearl millets).

The close bond he shares with his donkey drove is to be seen to be believed. Three of his donkeys died in the recent floods, a loss which has left him deeply troubled.

Local people narrate stories about these animals being used for the building of dams, forts, hilltop temples, rest houses, and dharamshalas. The donkeys, they say, have impressive ability to

carry loads of stone and sand.

Today, one will have to shell out over ₹1 lakh to buy a Halari donkey. There is also demand from other parts of the country to set up Halari donkey dairies.

Halari donkey milk is known for its sweetness. Milk powder made from it can fetch upwards of ₹7,000 a kg in the international market, and is used for cosmetic purposes.

The Sahjeevan Trust has worked to conserve this breed in collaboration with the Animal Husbandry Department of the Gujarat government. They work along with the National Bureau of Animal Genetic Resources for the conservation of this endangered animal.

Under this project, they have identified pure-bred Halari male and female donkeys for breeding and conservation. Their efforts resulted in an increase in the number of Halari donkeys, says Ramesh Bhatti, programme director, of the Sahjeevan Trust.

But experts say that these efforts are not sufficient to really make a difference, and that it would need the depth of the resources of the State government. They call for establishing breeding farms for the Halari donkeys in their native tract of the Halar region.



**Rich produce:** A herder sells Halari donkey milk which is known for its sweetness.

## Brains and brawn(6 October)

**The endangered Halari donkeys, native to the Halar region of Gujarat, are considered to be intelligent animals which work closely with human beings**

- Donkeys are intelligent, social animals that work closely with humans for transport needs.
- The Halari donkey breed, found in the Halar region of Gujarat, is considered endangered with fewer than 500 individuals remaining.
- Average Halari donkeys are white, larger, and more resilient than other breeds.
- They play an important role in the semi-arid landscapes of Jamnagar and Dwarka districts in Gujarat's Saurashtra region.
- Hamirbhai Bhundiya, a herder, has a unique call that attracts his Halari donkeys, which respond like pets.
- He feeds his donkeys bajra rotla (roti made of pearl millet).
- Bhundiya is deeply troubled by the loss of three donkeys during recent floods.
- Locals recount stories of donkeys being used for building dams, forts, hilltop temples, rest houses, and dharamshalas.
- Halari donkeys are known for their impressive ability to carry heavy loads of stone and sand.
- The price for a Halari donkey exceeds ₹1 lakh, and there is demand for Halari donkey dairies in other parts of the country.
- Halari donkey milk is known for its sweetness and can fetch upwards of ₹7,000 per kg in the international market, often used for cosmetic purposes.
- The Sahjeevan Trust collaborates with the Gujarat government's Animal Husbandry Department and the National Bureau of Animal Genetic Resources to conserve the Halari breed.
- They have identified pure-bred Halari male and female donkeys for breeding and conservation, resulting in an increase in their population.
- Ramesh Bhatti, programme director of the Sahjeevan Trust, reports positive outcomes from these efforts.
- Experts argue that more extensive resources from the State government are needed for significant impact.
- They advocate for establishing breeding farms for Halari donkeys in their native Halar region.

# How are tanks armoured Ladakh sector?

GS Paper III: Internal Security

Why is the modern battlefield seeing a revival of tanks? What has India deployed on the Line of Actual Control? What are the difficulties due to terrain and altitude? What is the threat from China? What are the Indian Army's future plans to fortify the border areas?

Dinakar Peri

## The story so far:

The Ukraine war front has showcased the adaptability of battle tanks, proving that armour is even more essential in the new-age battlefield in addition to long-range firepower. In another arena, after the May 2020 stand-off in the Eastern Ladakh sector between India and China, armies and tanks of both have been deployed at altitudes of 13,000-15,000 feet, in some cases barrels facing each other 100 metres apart.

## What is the current situation?

In September 2024, the Army demonstrated the capabilities of its armour deployed close to the Line of Actual Control (LAC) in Eastern Ladakh. T-90 tanks and BMP-2 armoured carriers demonstrated their capabilities including crossing the Indus river at Nyoma located at an altitude of 13,700 feet and around a 30 km straight line from the LAC. Army personnel explained the challenges in maintaining the machines and keeping them optimally functional in extreme weather conditions to a group of visiting journalists. "We are fully prepared to destroy our enemy at this altitude. It (T-90) can be deployed anywhere and remove obstacles to cross the area. It is capable of deep-fording (the technique used to cross water bodies)," said tradesman Manoj Kumar. He termed the T-90, manufactured in India as the Bishma, as one of the best tanks in the world.

## What happens when the temperature dips?

The performance of tanks can be affected due to the rarefied air (with low oxygen level). "When the temperature dips at night, we have to start the engine two-three times so that it can remain functional," Mr. Kumar explained. The T-90, manned by a three-member crew and powered by a 1,000-hp engine, has a 125-mm main gun, a 7.62-mm machine gun and a 12.7-mm gun for aerial targets. It can also fire an Anti-Tank Guided Missile (ATGM). The Army is also planning to upgrade the T-72s with a 1,000-hp engine. The BMPs can go under water and even float and are much faster than tanks, one officer observed as several T-90s and BMPs raced across the uneven terrain raising waves of dust all around, the ground vibrating as they passed.

Since 2012, India has been significantly augmenting its infrastructure and deployments in Ladakh. For instance, the Army began

Tanks and armoured platforms are adapting to the changing nature of warfare

deploying troops on longer tenures along the LAC instead of loop battalions on six-month tenures. This has meant availability of more acclimatised troops and increased patrols in the claim areas. Beginning 2014, India started deploying tank regiments consisting of T-72s in Eastern Ladakh. One tank regiment each was deployed in 2014, 2016 and 2018 completing the full brigade. More tanks, BMPs as well as artillery guns were pushed in since the stand-off. Eastern Ladakh has several plains in between the mountain ranges and the terrain permits use of tanks and mechanised elements. India has deployed tanks in Sikkim since long.

## What happened after 2020 Galwan clash?

After May 2020, there was a major force accretion as well as reorientation of troops from the western to the northern borders. As the stand-off unfolded, the Indian military went all-out in mobilisation to counter Chinese build-up as well as its ingress into Indian-held territory. The Indian Air Force (IAF) pressed its entire transport fleet, airlifting over 68,000 troops, 330 infantry vehicles and over 90 tanks in addition to artillery guns in the initial phase, according to defence sources. In all, over 9,000 tonnes were airlifted including radars and surface-to-air guided weapon systems.

At the height of the tensions in Eastern Ladakh, the Army deployed one regiment of K9 Vajra tracked self-propelled Howitzers to augment its long-range fire power to counter a massive Chinese build-up. The K9 Vajra is a 155-mm, 52 calibre tracked self-propelled Howitzer built by Larsen & Toubro (L&T) with technology transfer from South Korean defence major Hanwha Defence. Impressed with their performance, the Army is now in the process of procuring another 100 of these guns. "Acceptance of Necessity (AON) for repeat order of 100 Guns was granted. Further process is on," said Lt Gen Adosh Kumar, Director General of the Regiment of Artillery.

At the end of August in 2020, as tensions flared up once again on the north and south banks of Pangong Tso, tanks of both sides came dangerously close, about 100 metres apart, on the Kailash ranges. They were subsequently pulled back some distance from the friction points as part of the disengagement reached between the two countries.

## What are the challenges due to high altitude?

Dialling back to the 1962 war, the Indian Army had attempted using tanks at these heights as six AMX-13 tanks were airlifted to Ladakh in AN-12 transport aircraft. However, their trust was blunted as both the men and the machines were not prepared for the high altitude. Oxygen levels go down at high altitudes while temperatures dip to minus 40 degrees. Most military hardware, especially built by other countries, is not designed to operate in those conditions.

There is also high wear and tear and degradation, requiring quicker turnaround of spares and systems. This time too, transporting the tanks to these locations and then ensuring they are fully operational was a Herculean task. The tanks which have been transported remain there as troops and units rotate. The Army has created maintenance facilities for the tanks and armoured vehicles at Nyoma and also on the

axis to Daulat Beg Oldi. Special lubricants and fuel are used to keep the tanks running, and engines are revved-up to keep the systems in order. For the K9s too, to ensure their optimal performance, the Army has procured winterisation kits to protect batteries, oils and lubricants and such. There are nine items, which don't freeze at -20 degrees, as reported by *The Hindu* earlier.

## What is India up against?

The Chinese People's Liberation Army (PLA) has rapidly upgraded its troop strength and fire power along the LAC. It has deployed the ZTQ 15 (Type 15) 3rd generation modern light tank, in addition to the Type 96A 2nd generation tanks. Chinese mechanised brigades opposite Eastern Ladakh have inducted new wheeled APCs as also the CSK series of assault vehicles.

Not just India and China, several European countries have outlined major tank acquisition plans, while major tank producers, like the U.S., the U.K., Germany among others, are adding new protective systems to existing tanks. France and Germany recently announced plans for the joint development of a new tank.

## What lies ahead?

From lessons drawn from Ukraine, the Armenia-Azerbaijan war and the Israeli offensive in Gaza and Lebanon, among the top threats are long-range projectiles, drones of various kinds and loitering munitions. Measures are already being implemented to counter them and protect armoured columns and other assets. The Army is looking for air burst ammunition to be fired from 30mm cannons on the BMP-2s to shoot down drones as well as more potent ammunition for the tanks. This is in addition to planned upgrades for the armoured carriers, which includes a 3rd gen ATGM replacing the existing 2nd gen Konkurs wire guided ATGM. Procurement of other variants of the BMP are in the pipeline while a range of specialised vehicles have been inducted since the stand-off. The U.S. Stryker infantry combat vehicle is also under evaluation and a few hundred vehicles could possibly be procured. Aside from the upgrades, the hunt is on for new Future Ready Combat Vehicles (FRCV) and Future Infantry Combat Vehicles (FICV) to replace the existing tanks and BMPs in service. These are long-term projects, which have failed to take off in the past, but are now expected to see faster progress given the relative development of the domestic industry in the last few years. With the main battle tank proving to be pivotal in modern day battlefields, the Indian Army is looking to procure a new generation 'Future Tank' under the FRCV project in a phased manner, with expected induction by 2030, according to official sources.

In the immediate term, the most pressing project is the light tank weighing 25 tonnes, the need for which was felt by the Army during the stand-off, as China deployed its own light tanks along the LAC which are agile and more manoeuvrable. The indigenous light tank 'Zorawar' being developed by the Defence Research and Development Organisation (DRDO) along with L&T has just successfully completed preliminary automotive as well as firing trials. After a series of trials, the light tank is planned to be handed over to the Army for user trials by August 2025, officials said.

Given the hectic pace of developments, tanks and armoured platforms are adapting to the changing nature of warfare, and are going to remain a potent force for both offensive and defensive purposes.



Armed and ready: A BMP-2 armoured personnel carrier in Eastern Ladakh.

# How are tanks armouring Ladakh sector? (6 October)

**Why is the modern battlefield seeing a revival of tanks? What has India deployed on the Line of Actual Control? What are the difficulties due to terrain and altitude? What is the threat from China? What are the Indian Army's future plans to fortify the border areas?**

- The Ukraine war has shown the importance of battle tanks in modern warfare, alongside long-range firepower.
- After the May 2020 standoff between India and China in Eastern Ladakh, both countries deployed armies and tanks at high altitudes (13,000-15,000 feet), sometimes facing each other at just 100 meters apart.
- In September 2024, the Indian Army showcased its armored capabilities near the Line of Actual Control (LAC) in Eastern Ladakh.
- T-90 tanks and BMP-2 armored carriers crossed the Indus River at Nyoma, which is at an altitude of 13,700 feet and about 30 km from the LAC.
- Army personnel discussed the challenges of maintaining tanks in extreme weather.
- Tradesman Manoj Kumar emphasized the T-90, also called Bhishma, as a top tank, capable of overcoming obstacles and deep fording.
- Cold temperatures can affect tank performance, requiring the engine to be started multiple times at night.
- The T-90 has a 1,000-hp engine, a 125-mm main gun, and can fire Anti-Tank Guided Missiles (ATGMs).
- Plans are underway to upgrade T-72 tanks with a 1,000-hp engine.
- BMPs can float and are faster than tanks.
- Since 2012, India has been improving its infrastructure and military presence in Ladakh, deploying troops for longer periods.
- The Army began using tank regiments in Eastern Ladakh starting in 2014, with deployments in 2014, 2016, and 2018.
- Increased numbers of tanks, BMPs, and artillery have been sent to the region since the standoff.
- The terrain in Eastern Ladakh, with plains between mountains, is suitable for tank operations.
- India has had tank deployments in Sikkim for a long time.

**What happened after 2020 Galwan clash?**

- After May 2020, India increased troop presence and reoriented forces from the western to northern borders in response to Chinese buildup.
- The Indian military mobilized extensively to counter Chinese incursions into Indian-held territory.
- The Indian Air Force airlifted over 68,000 troops, 330 infantry vehicles, and over 90 tanks, along with artillery guns, transporting more than 9,000 tonnes of equipment, including radars and surface-to-air systems.
- To enhance long-range firepower, one regiment of K9 Vajra tracked self-propelled Howitzers was deployed during heightened tensions.
- The K9 Vajra is a 155-mm, 52-caliber Howitzer developed by Larsen & Toubro with technology from Hanwha Defence of South Korea.
- The Army is in the process of procuring another 100 K9 guns, with the Acceptance of Necessity (AON) already granted.
- In August 2020, tensions rose near Pangong Tso, with tanks from both sides coming within 100 meters of each other before being pulled back as part of a disengagement agreement.
- The 1962 war highlighted challenges of using tanks at high altitudes, as six AMX-13 tanks airlifted to Ladakh were not effective due to low oxygen and extreme cold.
- Most foreign military equipment is not designed for high-altitude operations, leading to wear and tear and requiring quick maintenance.
- Transporting tanks to high-altitude locations and keeping them operational is a significant challenge.
- The Army has established maintenance facilities for tanks at Nyoma and along the route to Daulat Beg Oldi.
- Special lubricants and fuel are used to keep tanks running in extreme conditions, and engines are revved to maintain systems.
- For the K9 Howitzers, winterization kits have been procured to protect batteries, oils, and lubricants, including nine items that do not freeze at -20 degrees.

### **What is India up against?**

- The Chinese People's Liberation Army (PLA) has rapidly increased troop strength and firepower along the LAC.
- The PLA has deployed the ZTQ 15 (Type 15) 3rd generation modern light tank and the Type 96A 2nd generation tank.
- Chinese mechanized brigades opposite Eastern Ladakh have also introduced new wheeled armored personnel carriers (APCs) and the CSK series of assault vehicles.
- Several European countries are planning major tank acquisitions, while major producers like the U.S., U.K., and Germany are enhancing existing tanks with new protective systems.
- France and Germany have announced plans for joint development of a new tank.

- Lessons from conflicts in Ukraine, Armenia-Azerbaijan, and Israel highlight threats from long-range projectiles, drones, and loitering munitions.
- The Army is implementing measures to counter these threats and protect armored columns.
- The Army seeks air burst ammunition for BMP-2s to target drones, as well as more effective ammunition for tanks.
- Planned upgrades for armored carriers include replacing the existing 2nd generation Konkurs anti-tank guided missile (ATGM) with a 3rd generation variant.
- Procurement of additional BMP variants is in progress, and the U.S. Stryker infantry combat vehicle is being evaluated for possible purchase.
- New Future Ready Combat Vehicles (FRCV) and Future Infantry Combat Vehicles (FICV) are being developed to replace current tanks and BMPs.
- The Indian Army aims to procure a new generation 'Future Tank' under the FRCV project by 2030.
- The immediate priority is a light tank weighing 25 tonnes, identified as necessary during the standoff with China.
- The indigenous light tank 'Zorawar,' developed by DRDO and L&T, has successfully completed preliminary trials.
- The light tank is expected to be handed over for user trials by August 2025.
- Tanks and armored platforms are adapting to modern warfare and will remain important for both offensive and defensive operations.

# Why is salt pan land being used for homes?

What is the Maharashtra government doing to relocate people via the Dharavi Redevelopment Project? Why is the move controversial? What are urban planners and environmentalists saying? Are salt pan lands ecologically important?

## GS Paper III: Environment

Vinaya Deshpande Pandit

### The story so far:

The Maharashtra government has issued a GR (Government Resolution) allocating 255.9 acres of salt pan land, distributed over three land parcels in Mumbai's eastern suburbs, for the construction of rental houses in the Dharavi Redevelopment Project through a lease agreement.

### What are salt pans?

Salt pan lands are ecologically important salt marshlands. They are low-lying areas around the shore that are used for salt cultivation. They act as holding ponds and work as a sponge for the absorption of rain. They are a coastal area's

Salt pan lands are a coastal area's natural defence against flooding, say environmentalists

natural defence against flooding. They help intertidal activity, and are home to diverse flora and fauna.

### What does the decision entail?

The government has allocated 255.9 acres of salt pan land distributed over three land parcels – 120.5 acres of Arthur Salt Works land at Kanjur, 76.9 acres of Jenkins Salt Works land at Kanjur and Bhandup, and 58.5 acres of Jamasp Salt Works land at Mulund – to Dharavi residents. Maharashtra has almost 13,000 acres of salt pan land, of which over 5,000 acres are in Mumbai. The DCPR-2034 (Development Control and Promotion Regulations) document says 1,781 acres of that land can be developed. The land parcels allocated for rental housing for the Dharavi project are under the ownership of the Central government. After the Maharashtra government sought these parcels from the Centre, the Union Cabinet approved the proposal in September 2024.

### What are the terms for allocation of land?

Four conditions have been put forth for the allocation of the land which will be given at a concessional rate of 25% of the prevailing rate. The State government will collect the land revenue from the Dharavi Redevelopment Project Private Limited (DRPPL), the special purpose vehicle (SPV), and pay it to the Central government. The DRPPL will bear the cost of resettlement of the labourers working on the land, and other incidental costs for the acquisition of the land. But the court cases and

other legal matters will be handled through the Dharavi Redevelopment Project (DRP), a government body. The land will be used for rental housing, slum rehabilitation, and affordable housing for economically weaker sections. The DRPPL is an SPV in which an Adani Group entity holds 80% stake and the State government has a 20% stake. The land will be leased to the Maharashtra government for a period of 99 years, and it cannot be used for commercial activities.

### What are the concerns?

Urban planners and environmentalists say that an impact assessment study needs to be done before opening up large packs of land for intensive activities like housing. They also say that the salt pan lands on the Eastern Express Highway have played an important role in keeping the eastern suburbs free from flooding. The most important demand with respect to the Dharavi project has been for in-situ rehabilitation. Urban planners point out that handing over land parcels in different parts of the city for a developer will lead to formation of ghettos. They also say that the impact of hyperactivity on ecologically sensitive areas needs to be studied.

### What lies ahead?

The Centre will hand over the land to the State government, which will give permission to DRPPL to go ahead with the construction after their plans are approved. For that, the DRPPL will have to seek an approval from the Ministry of Environment, Forest and Climate Change. Environmentalists claim that the entire process from here on can be challenged in the court of law. As per the GR issued by the government of Maharashtra, the litigation will be taken care of by DRP, the government body.



On relocating: Salt pan workers in Mumbai in 2019. PRASHANT NAKWE

## Why is salt pan land being used for homes? (6 October)

What is the Maharashtra government doing to relocate people via the Dharavi Redevelopment Project? Why is the move controversial? What are urban planners and environmentalists saying? Are salt pan lands ecologically important?

- The Maharashtra government has issued a Government Resolution (GR) allocating 255.9 acres of salt pan land for rental houses in the Dharavi Redevelopment Project.
- The land is divided into three parcels located in Mumbai's eastern suburbs.
- Salt pan lands are ecologically important marshlands used for salt cultivation and serve as natural flood defenses.
- They absorb rainwater and support diverse flora and fauna in coastal areas.
- **The allocated land includes:**
  - 120.5 acres of Arthur Salt Works land at Kanjur

- 76.9 acres of Jenkins Salt Works land at Kanjur and Bhandup
- 58.5 acres of Jamasp Salt Works land at Mulund
- Maharashtra has nearly 13,000 acres of salt pan land, with over 5,000 acres in Mumbai.
- According to the Development Control and Promotion Regulations (DCPR-2034), 1,781 acres of salt pan land can be developed.
- The land parcels for the Dharavi project are owned by the Central government.
- The Maharashtra government requested these parcels from the Centre, and the Union Cabinet approved the proposal in September 2024.

### **What are the terms for allocation of land?**

- Four conditions are set for the allocation of the land, which will be leased at 25% of the current market rate.
- The Maharashtra government will collect land revenue from the Dharavi Redevelopment Project Private Limited (DRPPL) and pay it to the Central government.
- DRPPL will cover the costs of resettling laborers and other incidental costs for land acquisition.
- Legal matters, including court cases, will be managed by the Dharavi Redevelopment Project (DRP) government body.
- The land will be used for rental housing, slum rehabilitation, and affordable housing for economically weaker sections.
- DRPPL is a special purpose vehicle (SPV) with an 80% stake held by an Adani Group entity and a 20% stake by the State government.
- The land will be leased for 99 years and cannot be used for commercial activities.
- **Concerns include:**
  - Urban planners and environmentalists call for an impact assessment study before developing large land areas for housing.
  - Salt pan lands on the Eastern Express Highway help prevent flooding in the eastern suburbs.
  - There is a strong demand for in-situ rehabilitation rather than handing over land in different parts of the city, which could lead to ghettos.
  - The ecological impact of increased activities in sensitive areas needs to be evaluated.
- **Next steps:**
  - The Centre will transfer the land to the State government, which will permit DRPPL to begin construction once plans are approved.
  - DRPPL must seek approval from the Ministry of Environment, Forest and Climate Change.
  - Environmentalists suggest that the process could be legally challenged in court.
  - The GR states that litigation will be handled by the government body, DRP.

# What's behind Israel's ban on the UN chief?

Has a UN chief ever been banned by a member state? What has been the response to the move?

GS Paper II: UN and UNSG

The story so far:

**I**n October 2, Israeli Foreign Minister Israel Katz announced that Israel had banned United Nations Secretary-General (UNSG) António Guterres from entering the country, accusing him of "backing" Hamas, Hezbollah, the Houthis, and Iran.

**Why did Israel ban the UN chief?**

According to Mr. Katz, the decision to declare Mr. Guterres "PNG" (*persona non grata*) was taken because he hadn't "unequivocally condemned" Iran's missile strikes on Israel earlier in the week, and thus the UNSG does not "deserve to set foot on Israeli soil". Mr. Katz also claimed that the UNSG had not denounced the terror attack by Hamas on October 7 last year, which left about 1,200 Israelis dead, and 250 taken hostage. The UNSG and UN bodies have, in fact, condemned the attack a number of times. In a statement in April, Mr. Guterres had condemned the use of "sexual violence, torture and kidnapping of civilians", calling the "horror unleashed by Hamas" unjustifiable. In the context of the latest escalation, which included Israel's strikes on Lebanon that killed hundreds and took out the top leadership of Hezbollah, as well as Iran's launch of 200 missiles targeting Israeli bases, Mr. Guterres named neither country, saying in a statement that he

The UN Security Council has said that 'any decision not to engage with U.N. Secretary-General António Guterres or the United Nations is counterproductive'

"condemned" the broadening of the West Asia conflict, calling for a ceasefire. A day after the Israeli ban was announced, the UNSG issued a clarification, saying that he

"strongly condemned" the "massive missile attack by Iran on Israel." However, Israel has not withdrawn the ban.

**Is there a history to Israel-UN tensions?**

The ban on Mr. Guterres is part of a larger Israeli argument against the UN, which it claims is run by the "anti-Israel" bloc of Arab and Islamic countries and affiliated organisations like UNRWA that it alleges are involved with Hamas. At the UN General Assembly last week, angry at a number of UN resolutions backed by a big majority of countries that called for a ceasefire and criticised Israel, Israeli Prime Minister Benjamin Netanyahu called the UN an "anti-Semitic swamp". Israel has in the past banned UN Special Rapporteurs and other senior officials accusing them of "bias" against Israel and in favour of the Palestinian side. Last year, outraged at Mr. Guterres' remarks to the UNSC that the October 7 attacks had not occurred "in a vacuum" and that they followed "56 years of suffocating occupation" of Palestinian areas, Israel banned then-UN Under-Secretary General Martin Griffiths. Alongside his comments on Hamas, Mr. Guterres has also been consistently critical of Israeli bombardment of Gaza. More than 40,000 Palestinians have been killed thus far, including 15,000 minors, and a record number of 135 UN personnel working with Palestinian refugees, which the UNSG called a "moral stain", referring to Gaza as a "graveyard for children."

**Has such a ban happened before?**

According to former Indian Permanent Representative to the UN, Asoke Mukerji, the ban on the UNSG is "unprecedented", recalling that the closest a country came to such an action was in 1950, when the then-USSR accused UNSG Trygve Lie of bias on the Korean crisis and threatened to veto his re-election. Citing the UN charter (Article 100, para 2), which says "each Member of the United Nations undertakes to respect the exclusively international character of the responsibilities of the Secretary-General and the staff and not to seek to influence them in the discharge of their responsibilities." Mr. Mukerji told *The Hindu*, "we all need the Secretary-General for substantive and logistical reasons." In 1987, the U.S. had banned Kurt Waldheim who had earlier been UNSG (1972-1981) and Austrian President (1986-1992), when it emerged that he had been complicit in Nazi war crimes during his time in the Austrian Army in the Second World War.

**How has the world reacted to Israel's ban?**

A day after the ban was announced, the UN Security Council issued a statement, which is only possible with the concurrence of all P-5 members, that said "any decision not to engage with the UN Secretary-General or the United Nations is counterproductive, especially in the context of escalating tensions in the Middle East." The U.S. State Department called it "not productive to improving [Israel's] standing in the world." Even the Ministry of External Affairs, that has taken care not to be over-critical of Israel, was dismissive. "Mr. Guterres is the UNSG for us. What somebody else says about it, what third person says is not our area of outlook or a matter to comment on," said spokesperson Randhir Jaiswal on Friday.

# What's behind Israel's ban on the UN chief?(6 October)

Has a UN chief ever been banned by a member state? What has been the response to the move?

- On October 2, Israeli Foreign Minister Israel Katz announced that Israel has banned UN Secretary-General António Guterres from entering the country, accusing him of supporting Hamas, Hezbollah, the Houthis, and Iran.
- The ban was declared because Mr. Guterres did not "unequivocally condemn" Iran's missile strikes on Israel and had not denounced the Hamas attack on October 7, 2022, which resulted in around 1,200 Israeli deaths and 250 hostages.
- Mr. Guterres and UN bodies have condemned the Hamas attack multiple times, including a statement in April denouncing violence and kidnappings by Hamas.
- Following the Israeli ban, Mr. Guterres clarified that he "strongly condemned" the missile attacks by Iran on Israel, but Israel has not lifted the ban.
- The ban reflects broader Israeli tensions with the UN, which Israel claims is influenced by an "anti-Israel" bloc of Arab and Islamic countries.
- Israeli Prime Minister Benjamin Netanyahu has criticized the UN as an "anti-Semitic swamp" during a recent General Assembly session.
- Israel has previously banned UN officials accused of bias against it, including a ban on UN Under-Secretary General Martin Griffiths in response to comments about the October 7 attacks.
- The current ban on Mr. Guterres is considered "unprecedented" according to former Indian Permanent Representative to the UN, Asoke Mukerji.
- In 1950, the USSR threatened to veto the re-election of UNSG Trygve Lie, but no country has banned a sitting UNSG before.
- The UN Security Council reacted to the ban, stating that disengagement with the UNSG is counterproductive amid escalating tensions in the Middle East.

- The U.S. State Department also described the ban as unproductive for Israel's global standing.
- The Indian Ministry of External Affairs was dismissive of the ban, affirming its support for Mr. Guterres as the UNSG.

**Trygve Halvdan Lie** (1896–1968) was a Norwegian politician and diplomat best known as the **first Secretary-General of the United Nations** (UN). His term lasted from **February 1946 to November 1952**, during a period of profound global reconstruction following World War II. Lie played a critical role in establishing the UN as a viable international body and navigated a series of early Cold War tensions.

### Early Life and Political Career

- **Born: July 16, 1896, in Oslo, Norway**, Trygve Lie was raised in a politically active family. He became involved with the **Norwegian Labour Party** early in his career.
- **Political Involvement:** By the 1920s, Lie had already established himself as a prominent figure in the Labour Party, focusing on trade union activities and domestic policies. He served as **Minister of Justice** and **Minister of Trade** in Norway before World War II.
- **Foreign Minister during WWII:** During the Nazi occupation of Norway, Lie was appointed **Foreign Minister** in the Norwegian government-in-exile in London. He played an instrumental role in Norway's diplomatic relations during the war and post-war recovery.

### Secretary-General of the United Nations (1946-1952)

1. **Appointment and Challenges:** Trygve Lie was appointed as the **first Secretary-General of the UN** on **February 1, 1946**, a pivotal time for the establishment of the UN. His election was seen as a compromise between the major powers at the time, including the United States and the Soviet Union.
2. **Key Contributions:**
  - **Formation of UN agencies:** Lie's tenure saw the creation of many key agencies within the UN system, including **UNESCO (United Nations Educational, Scientific and Cultural Organization)** and the **WHO (World Health Organization)**.
  - **Handling the Cold War:** He was deeply involved in navigating early Cold War tensions between the **United States** and the **Soviet Union**. While he sought neutrality, his stance often placed him in difficult positions, especially with Joseph Stalin's USSR.
  - **Palestine and Korea:** Lie advocated for the **partition of Palestine** and supported the creation of **Israel** in 1948. He also played a crucial role in coordinating the UN's military and diplomatic efforts during the **Korean War** (1950-1953), though his firm anti-Soviet stance during this period angered the USSR.
3. **Resignation:** In **1950**, Lie's relationship with both the Western and Soviet blocs became increasingly strained. The Soviet Union boycotted him for his role in the

Korean War, leading him to resign in **1952**, under immense pressure from both sides.

### **Achievements and Legacy**

- **Institution Building:** Lie laid the foundation for the development of several key international institutions under the UN. His commitment to human rights and peace was evident in his advocacy for the **Universal Declaration of Human Rights**.
- **Post-UN Career:** After leaving the UN, Trygve Lie returned to Norway and served as **Governor of Oslo** and later **Minister of Industry**. Despite his controversial tenure, he is remembered as a steadfast advocate of peace and international cooperation.

# Iran's forward defence network (6 October)

From Hamas to Hezbollah and Houthis to Hashad, the Islamic Republic has built strong links with a wide network of non-state militias in West Asia, which are now at the centre of the unfolding regional conflict with Israel

## Iran's forward defence network

### The 'Axis of Resistance'

From Hamas to Hezbollah and Houthis to Hashad, the Islamic Republic has built strong links with a wide network of non-state militias in West Asia, which are now at the centre of the unfolding regional conflict with Israel

#### GS Paper II: Militant Groups in West Asia

Stanly Johny

The 1979 Iranian revolution, which saw the fall of a thousands-of-years-old monarchy and spanned the birth of a theocratic republic, was one of the most consequential events of post-World War West Asia. Shah Mohammed Reza Pahlavi, the last king of Iran, was a close ally of the U.S. and Israel. In 1953, the U.S. helped orchestrate a violent coup in Iran against Mohammad Mosaddegh, an elected Prime Minister, and reinstated the authority of the Shah. The monarch was seen as a pawn of the U.S. by the revolutionaries.

Anti-imperialism was one of the ideological forces behind the revolution. The theocratic regime, established by Ayatollah Khomeini, broke with the U.S., "the great Satan", and the existing order of the day in West Asia.

Then the Islamic Republic was instantly seen as an enemy by Sunni Arab states and the U.S. Within a year, when the Ayatollah was still consolidating his authority in Iran, neighbouring Iraq, backed by Sunni Arab monarchies and the U.S., attacked Iran. Isolated, attacked and lacking conventional capabilities to face the growing geopolitical challenges around it, Iran turned to a new model of deterrence – forward defence or the formation of a network of militias across the region through which it can project its influence. This is how the so-called Axis of Resistance was born.

#### Hezbollah

Among the groups that are part of the Axis, there are organisations that Iran helped create and groups that it co-opted into its orbit. Hezbollah is part of the former. In 1982, after the Israeli invasion of Lebanon, the Islamic Revolutionary Guard Corps (IRGC) helped form a loose network of Shia militias called the 'Islamic Resistance', whose initial target was the Multi-National Force (MNF) deployed in Lebanon. After the 1983 U.S. embassy and military barracks bombing orchestrated by the new militia group, the MNF announced its

withdrawal from Lebanon. But Israeli troops continued its occupation of a sliver of territory in southern Lebanon. In 1985, the network announced itself as Hezbollah (Party of God), whose primary objective was to fight the occupying Israeli troops.

In 2000, when Israel announced its withdrawal from Lebanon, Hezbollah claimed 'the first Arab victory against the Zionist entity'. From the 1990s, Hezbollah, under the leadership of Hassan Nasrallah, who was killed on September 27 by an Israeli strike on Beirut, transformed itself into a state within the state of Lebanon. According to the Office of the U.S. Director of National Intelligence, Hezbollah has over 40,000 well-trained fighters and many more reservists. The group has been the crown jewel of the Axis of Resistance – Iran's arm on Israel's borders.

#### Hamas and Islamic Jihad

If the Shah's Iran was a close ally of Israel, the Islamic Republic, driven by anti-imperialism, turned against Israel (the 'little Satan'). Ayatollah Khomeini said support for Palestine was a duty of the Islamic Republic. Two years after the revolution, the Islamic Jihad was formed in the Palestinian territories. A Sunni Islamist outfit, it was inspired by the clerical rule established by Khomeini in Iran.

In Gaza, there was another Islamist organisation, the Islamic Centre, which was established by Sheikh Ahmed Yassin as a branch of the Muslim Brotherhood in the 1970s. In late 1987, after the first intifada broke out in Palestinian territories, the Islamic Centre reinvented itself as Hamas (Harakat al-Muqawamah al-Islamiyyah, or the Islamic Resistance Movement).

Theocratic Iran saw allies in these Islamist groups rather than the secular Palestinian Liberation Organisation, which was backed by Arab countries and was ready to engage with the Israelis. Unlike Hezbollah, which gets direct Iranian support through Syria, Hamas and the Islamic Jihad get limited material support from Tehran. But they are the Palestinian wings of the Axis and enjoy unlimited political support from Tehran. When Hamas



ILLUSTRATION: R. RAJESH

carried out the October 7, 2023 attack in Israel, Iran instantly supported the group.

#### Ansar Allah (Houthis)

Unlike Hezbollah, Hamas and the Islamic Jihad, the Houthis of Yemen came into the picture much later. The roots of the Houthi movement can be traced to 'Believing Youth', a Zaydi revivalist group founded by Hussein al-Houthi and his father, Badr al-Din al-Houthi, two Zaydi clerics, in the early 1990s.

They called themselves Ansar Allah (Partisans of God), mobilised tribesmen in the north against the government of Ali Abdullah Saleh and chanted "Death to America". In 2004,

Saleh's government issued an arrest warrant against Hussein al-Houthi. He resisted the arrest, starting an insurgency. In September, government troops attacked the rebels and killed Hussein. The government's high-handedness only strengthened the Houthis, who are named after their slain leader. When Yemen fell into chaos after the Arab Spring-inspired protests in 2011, the Houthis marched towards Sana'a and by January 2015, they captured the capital and much of northern Yemen. They still control those parts, despite a large-scale bombing campaign launched by a Saudi alliance. When Israel launched its retaliatory war on Gaza after the October 7 attack, the Houthis declared

war against Israel. Ever since, they have targeted hundreds of commercial vessels in the Red Sea and launched direct missile attacks on Israel.

#### Hashad al-Shabi

When the U.S. invaded Iraq and brought down the Saddam Hussein regime in 2003, the country fell into chaos and spiralling violence. Subsequently, a new Shia political class emerged in Iraq. Iran, which had historically built close ties with Shia groups in Iraq, found the fall of Saddam an opportunity to expand its influence in the neighbouring country.

When Syria fell into a civil war following the 2011 protests, which also saw the rise of the Islamic State in Syria and Iraq, Iran offered direct support for Shia militias that fought in Iraq and Syria against the IS. These groups came to be called the Shia Popular Mobilisation Forces or Hashad al-Shabi. This includes Kata'ib Hizballah, Asa'ib Ahl al-Haq, Harakat al-Nujaba, Kata'ib Sayyid al-Shuhada, and the Badr Organisation.

Gen. Qassem Soleimani, the commander of Iran's Quds Force, was the main architect of the Hashad and the key strategist of the Axis. Gen. Soleimani was killed in an American airstrike on Baghdad in January 2020, along with Abu Mahdi al-Muhandis, the leader of Kata'ib Hizballah. The killings were a setback for the network, but the militias remain powerful across Iraq and Syria.

All these groups have been part of the unfolding conflict in West Asia. Hamas attacked Israel on October 7. When Israel retaliated, Hezbollah and Houthis started attacking Israel. Hashad targeted U.S. bases in Iraq, Syria and Jordan. In response, the U.S. and allies have carried out air strikes against Hashad and Houthis. Israel has taken the war straight to Hezbollah, killing Nasrallah and launching an invasion of Lebanon. In retaliation, Iran launched its second direct missile attack on Israel and the latter has vowed to hit Iran back. When viewed collectively, these actions constitute a regional conflict, with Iran and the Axis on the one side and Israel and its allies on the other, both willing to climb up the escalation ladder.

#### THE GIST

Iran's Revolutionary Guard helped create Hezbollah in the early 1980 in the aftermath of Israel's invasion of Lebanon. Hezbollah, a Shia militia, played a crucial role in forcing Israel to withdraw from Lebanon in 2000

Hamas, a branch of the Muslim Brotherhood, announced its existence in 1987, during the first intifada; it grew closer to Iran when the PLO, backed by Arab countries, recognised Israel and signed the Oslo agreements

Ansar Allah (Houthis), which was formed in Yemen by Badr al-Din al-Houthi taking inspiration from the Iranian revolution and Hezbollah emerged as a prominent actor after they captured Sana'a in 2015

which are now at the centre of the unfolding regional conflict with Israel

- The 1979 Iranian revolution led to the fall of a monarchy and the establishment of a theocratic republic, significantly impacting post-World War West Asia.
- Shah Mohammed Reza Pahlavi, the last king of Iran, was a close ally of the U.S. and Israel.

- In 1953, the U.S. orchestrated a coup to reinstate the Shah after ousting elected Prime Minister Mohammad Mosaddegh.
- The revolutionaries viewed the Shah as a pawn of the U.S.
- Anti-imperialism was a key ideological force behind the revolution, leading to a break with the U.S., referred to as “the great Satan.”
- The Islamic Republic was quickly seen as an enemy by Sunni Arab states and the U.S.
- Within a year of the revolution, Iraq, backed by Sunni Arab monarchies and the U.S., attacked Iran.
- Isolated and lacking conventional military capabilities, Iran adopted a new deterrence model focused on forming a network of militias across the region, known as the Axis of Resistance.
- Hezbollah is a key group within the Axis of Resistance, formed with Iran's assistance after the Israeli invasion of Lebanon in 1982.
- The Islamic Revolutionary Guard Corps (IRGC) helped establish a network of Shia militias, initially targeting the Multi-National Force (MNF) in Lebanon.
- Following the 1983 U.S. embassy and military barracks bombings by the militia, the MNF withdrew from Lebanon, while Israel continued its occupation of southern territory.
- In 1985, the network was named Hezbollah (Party of God), focusing on fighting Israeli forces.
- In 2000, Hezbollah claimed its actions resulted in the "first Arab victory against the Zionist entity" after Israel withdrew from Lebanon.
- Under Hassan Nasrallah’s leadership, Hezbollah evolved into a powerful state within Lebanon, with over 40,000 well-trained fighters according to U.S. intelligence estimates.
- Hezbollah serves as Iran’s key arm on Israel’s borders within the Axis of Resistance.

## **Hamas and Islamic Jihad**

- The Shah’s Iran was a close ally of Israel, while the Islamic Republic, driven by anti-imperialism, turned against Israel, referring to it as the “little Satan.”
- Ayatollah Khomeini emphasized that supporting Palestine was a duty of the Islamic Republic.
- Two years after the revolution, the Islamic Jihad was formed in the Palestinian territories, inspired by Khomeini’s clerical rule.
- In Gaza, Sheikh Ahmed Yassin established the Islamic Centre in the 1970s as a branch of the Muslim Brotherhood.
- The Islamic Centre reinvented itself as Hamas (Harakat al-Muqawamah al-Islamiyyah, or the Islamic Resistance Movement) after the first intifada in late 1987.
- Theocratic Iran viewed Islamist groups as allies rather than the secular Palestinian Liberation Organisation, which was backed by Arab countries and open to engaging with Israelis.

- Unlike Hezbollah, which receives direct Iranian support via Syria, Hamas and the Islamic Jihad get limited material support from Tehran but enjoy substantial political backing.
- Iran supported Hamas following its attack on Israel on October 7, 2023.
- The Houthis in Yemen emerged later than Hezbollah, Hamas, and the Islamic Jihad, with roots tracing back to the “Believing Youth,” a Zaydi revivalist group founded in the early 1990s.
- The Houthis, known as Ansar Allah (Partisans of God), mobilized tribesmen against the government of Ali Abdullah Saleh, chanting “Death to America.”
- In 2004, the Yemeni government issued an arrest warrant for Hussein al-Houthi, leading to his insurgency after he resisted arrest.
- Hussein al-Houthi was killed during a government attack, which strengthened the movement named after him.
- The Houthis gained control of much of northern Yemen after the chaos following the Arab Spring protests in 2011 and captured the capital, Sanaa, by January 2015.
- They continue to control those areas despite a large-scale bombing campaign by a Saudi alliance.
- After Israel’s retaliatory war on Gaza following the October 7 attack, the Houthis declared war against Israel.
- Since then, they have targeted hundreds of commercial vessels in the Red Sea and launched missile attacks on Israel.

## **Hashad al-Shabi**

- The U.S. invasion of Iraq in 2003 led to chaos and violence, resulting in the emergence of a new Shia political class.
- Iran seized the opportunity to expand its influence in Iraq following the fall of Saddam Hussein.
- During the Syrian civil war, which began in 2011 and coincided with the rise of the Islamic State, Iran provided direct support to Shia militias fighting against IS in Iraq and Syria.
- These militias became known as the Shia Popular Mobilisation Forces (Hashad al-Shabi), including groups like Kata’ib Hizballah, Asa’ib Ahl al-Haq, Harakat al-Nujaba, Kata’ib Sayyid al-Shuhada, and the Badr Organisation.
- Gen. Qassem Soleimani, commander of Iran’s Quds Force, was a key architect of the Hashad and the Axis of Resistance.
- Soleimani and Abu Mahdi al-Muhandis, leader of Kata’ib Hizballah, were killed in a U.S. airstrike in Baghdad in January 2020.
- Despite these setbacks, the militias remain powerful in Iraq and Syria.
- Following Hamas's attack on Israel on October 7, Hezbollah and the Houthis also began attacking Israel.

- Hashad targeted U.S. bases in Iraq, Syria, and Jordan, prompting airstrikes by the U.S. and its allies against Hashad and the Houthis.
- Israel retaliated by launching attacks on Hezbollah, killing Nasrallah, and invading Lebanon.
- In response, Iran executed its second direct missile attack on Israel, which vowed to retaliate.
- Collectively, these events signify a regional conflict, with Iran and the Axis on one side and Israel and its allies on the other, both escalating tensions.

## Researchers find mechanisms behind plant response to warming

### The Hindu Bureau

Microscopic pores on the surface of leaves called stomata help plants 'breathe' by controlling how much water they lose to evaporation. These stomatal pores also enable and control carbon dioxide intake for photosynthesis and growth.

### **Key mechanism**

With global temperatures, widening stomatal pores

are considered a key mechanism that can minimize heat damage to plants. University of California San Diego researchers have constructed a detailed picture of increased stomatal 'breathing' and transpiration processes in response to elevated temperatures. Their findings (*New Phytologist*) identify two paths that plants use to handle rising temperatures.

For decades, scientists struggled to find a clear

method to decipher the mechanisms underlying rising temperature-mediated stomatal openings due to the intricate measurement processes required.

The difficulty is rooted in the complex mechanics involved in setting air humidity (also known as the vapor pressure difference, or VPD) to constant values while the temperature increases, and the trickiness of picking apart temperature and humidity

responses.

The researchers developed a novel approach for clamping the VPD of leaves to fixed values under increasing temperatures. They then teased out the genetic mechanisms of a range of stomatal temperature responses, including factors such as drought hormones, carbon dioxide sensors, and temperature-sensitive proteins.

The researchers found that carbon dioxide sen-

sors are a central player in the stomatal warming-cooling responses, and can detect when leaves undergo rapid warming.

This starts an increase in photosynthesis in the warming leaves, which results in a reduction in carbon dioxide. This then initiates the stomatal pores to open, allowing plants to benefit from the increase in carbon dioxide intake.

Interestingly, the study also found a second heat

response pathway.

Under extreme heat, photosynthesis in plants is stressed and declines, and the stomatal heat response was found to bypass the normal photosynthesis-driven responses. Instead, the stomata employ a second heat response pathway, not unlike gaining entry through a backdoor to a house, to 'sweat' as a cooling mechanism.

## Researchers find mechanisms behind plant response to warming (6 October)

- Microscopic pores on leaves, called stomata, help plants control water loss and intake carbon dioxide for photosynthesis and growth.
- Widening stomatal pores are considered a key mechanism to minimize heat damage to plants as global temperatures rise.
- Researchers at the University of California San Diego studied increased stomatal 'breathing' and transpiration in response to elevated temperatures.
- Their findings, published in *New Phytologist*, identify two paths that plants use to manage rising temperatures.
- For decades, scientists struggled to understand the mechanisms behind temperature-mediated stomatal openings due to complex measurement processes.
- The difficulty arose from the need to maintain constant air humidity (vapor pressure difference, or VPD) while temperature increased.

- Researchers developed a novel approach to clamp the VPD of leaves to fixed values under rising temperatures.
- They identified genetic mechanisms involved in stomatal temperature responses, including drought hormones, carbon dioxide sensors, and temperature-sensitive proteins.
- Carbon dioxide sensors play a crucial role in stomatal warming-cooling responses, detecting rapid warming in leaves.
- Increased photosynthesis in warming leaves leads to reduced carbon dioxide, prompting stomatal pores to open for greater carbon dioxide intake.
- The study discovered a second heat response pathway that operates under extreme heat conditions.
- Under stress, photosynthesis declines, and stomatal heat responses bypass the carbon dioxide sensor system.
- This second pathway allows stomata to act as a cooling mechanism, akin to gaining entry through a backdoor.

# Two months on, Meghalaya polio case shrouded in secrecy

On August 12, the ICMR-NIV Mumbai unit reported that the polio case detected in Meghalaya was a type 1 vaccine-derived poliovirus. CDC Atlanta has also confirmed that it is not an imported strain of type-2 VDPV or wild poliovirus type-1

R. Prasad

In 2017, the Health Ministry and the Gujarat government covered up three Zika virus cases detected between November 2016 and February 2017. India informed the WHO about the outbreak in Gujarat only in May 2017, six months after the first case was detected. The news of the outbreak became known only when the WHO posted the information on its website. Eight years later, India has been found shying away from divulging all the details of a polio case detected in Meghalaya's West Garo Hills district in early August this year.

On August 12, the ICMR-NIV Mumbai Unit, which is a WHO-accredited polio laboratory, confirmed that the polio case detected in Meghalaya was a type-1 vaccine-derived poliovirus (VDPV), and reported the results to the Union Health Ministry, the Meghalaya State government and the WHO, Dr. Roderico H. Ofryn, WHO Representative to India, told *The Hindu* in an email.

Yet, the first report of the polio case published by PTI two days later on August 14 called it a "suspected" case of polio. Based on unnamed officials, the PTI report from Shillong said: "A two-year-old boy in a remote village in Meghalaya's West Garo Hills district has been found with symptoms of poliomyelitis or polio, prompting health authorities to start an investiga-



**Unwillingness to be fully transparent**

By not sharing all the details on time, the Health Ministry is setting a bad example

**Vaccine-derived poliovirus cases emerge when children are not fully immunised**

- On August 12, the ICMR-NIV Mumbai unit confirmed and reported the Meghalaya polio case as a type-1 vaccine-derived poliovirus (VDPV) case
- The first report of the polio case published by PTI on August 14, two days after the results were shared with the Health Ministry, called it a "suspected" case of polio
- A Directorate of Health Services official told PTI that a boy with symptoms of polio was detected on August 13
- As per an August 15 report, a Health Ministry official said that the polio case

was vaccine-derived and that the child was "immunocompromised"

- According to a WHO official, it takes three-four weeks to assess and get the results of the immunological profile of the child and to know if the virus is in circulation
- Follow-up tests conducted by the ICMR-NIV Mumbai unit have confirmed that the child is not immunocompromised and there is no evidence that the virus is circulating in the community
- The Health Ministry has not shared the complete details of the polio case till date

tion." The report, which quoted a senior doctor at the Directorate of Health Services, further added that "a boy with symptoms of poliomyelitis was detected yesterday [August 13] during routine surveillance" even when the results were available on August 12.

## Immune-deficient

According to an August 15 report in *The Hindustan Times*, a Union Health Ministry official said that the polio case was vaccine-derived and the child was "immunocompromised". Vaccine-derived polio can be of two types – circulating vaccine-derived polio (cVDPV) or immunodeficiency-related vaccine-derived poliovirus (iVDPV). In the case of iVDPV, polio is caused in an immune-deficient individual. By saying that the child is "immunocompromised", the official was suggesting that it

was a case of iVDPV. In reality, on August 15, it was not known whether the child was immunocompromised. It finally turned out that the child was not immunocompromised, and therefore was not a case of iVDPV.

On August 20, a senior official from the Union Health Ministry told *The Hindu* that the Meghalaya case had been confirmed as being vaccine-derived polio, and ruled out wild-type virus causing polio in the little child. However, on the same day, health officials in Meghalaya were ambiguous on whether it was vaccine-derived or caused by wild poliovirus. The State health officials said samples collected from the child were sent to ICMR-NIV's Mumbai unit for testing, and the government was "awaiting the test results to ascertain if it is a case of wild poliovirus or a circulating vaccine-de-

derived poliovirus".

While the Union Health Ministry officials told *The Hindu* that the polio case was vaccine-derived, details about whether the virus belonged to type-1, type-2, or type-3 have not been revealed to date.

## 'Incorrect statements'

Dr. Ofryn's email makes it clear that the Union Ministry officials and Meghalaya health officials were making conflicting and incorrect statements – whether the polio was vaccine-derived or caused by wild poliovirus, the date when the case was detected, insinuation by the State government officials that it might be a case of iVDPV, and refusal to divulge the details about poliovirus typing (type-1, type-2 or type-3) – despite being aware of the results, which were shared by the ICMR-NIV Mumbai Unit on August 12.

"The type 1 VDPV was

confirmed and reported by ICMR-NIV Mumbai on August 12, 2024. It has been determined... that the polio case is not caused by the wild poliovirus type 1," Dr. Ofryn told *The Hindu* by email on September 16. "The virus has been confirmed as type 1 VDPV by ICMR-NIV Mumbai as well as by CDC Atlanta. Both labs have confirmed that this is not an imported strain of type-2 VDPV or wild poliovirus type-1."

## No evidence

Explaining the delay in confirming whether the vaccine-derived polio is due to a circulating virus or due to immunodeficiency in the child, Dr. Ofryn said: "As per standard protocols laid down for responding to such isolations, immediate actions were initiated by the programme to assess the immunological profile of the child from whom the virus had been isolated and to also assess if there is any evidence of the circulation of the virus in the community. It generally takes three-four weeks to complete the process and receive the results."

According to Dr. Ofryn, the follow-up tests conducted by ICMR-NIV Mumbai have confirmed that the immunological profile of the child was normal and there was no evidence that the virus was circulating in the community. "The Ministry of Health and Family Welfare, the State government of Meghalaya, and WHO are fully aware of the details of the results," he said.

## Two months on, Meghalaya polio case shrouded

## **in secrecy (6 October)**

**On August 12, the ICMR-NIV Mumbai unit reported that the polio case detected in Meghalaya was a type 1 vaccine-derived poliovirus. CDC Atlanta has also confirmed that it is not an imported strain of type-2 VDPV or wild poliovirus type-1**

- In 2017, the Health Ministry and Gujarat government covered up three Zika virus cases detected between November 2016 and February 2017.
- India informed the WHO about the Gujarat outbreak only in May 2017, six months after the first case was detected.
- The outbreak became public knowledge when the WHO posted the information on its website.
- In August 2023, India hesitated to disclose details of a polio case detected in Meghalaya's West Garo Hills district.
- On August 12, ICMR-NIV Mumbai confirmed a type-1 vaccine-derived poliovirus (VDPV) case and reported it to the Union Health Ministry, the Meghalaya State government, and the WHO.
- The first media report on August 14 referred to the case as "suspected" based on unnamed officials.
- The report claimed a two-year-old boy exhibited symptoms of poliomyelitis, despite confirmation of the polio type on August 12.
- An official from the Union Health Ministry stated on August 15 that the child was "immunocompromised," suggesting an iVDPV case.
- Later, it was confirmed that the child was not immunocompromised, ruling out iVDPV.
- On August 20, Union Health Ministry officials confirmed the case was vaccine-derived but conflicted with Meghalaya health officials on the cause.
- State officials stated they were awaiting further test results to determine if it was a wild or circulating vaccine-derived poliovirus.
- Details about whether the virus was type-1, type-2, or type-3 have not been revealed.
- Dr. Roderico H. Ofrin from the WHO noted conflicting statements from Union and Meghalaya health officials regarding the nature of the polio case.
- He confirmed that the type 1 VDPV was reported by ICMR-NIV Mumbai on August 12, 2024, and it was not caused by wild poliovirus type 1.
- Delays in confirming the cause of the vaccine-derived polio were due to standard protocols requiring assessment of the child's immunological profile and community virus circulation.
- Follow-up tests confirmed the child's immunological profile was normal and there was no evidence of circulating virus in the community.

- The Ministry of Health, Meghalaya government, and WHO were informed of the test results.

## Hidden pandemic of AMR poses challenge

### Maitri Porecha

A simmering silent pandemic of superbugs that is going on for decades, is causing more havoc than most people realise. “While this is a global story, India is at its epicentre,” Anirban Mahapatra, Scientist, Editorial Director at American Society of Microbiology, whose book “When the drugs don’t work – The hidden pandemic that could end modern medicine” was released earlier this year told *The Hindu*. “Quarter of antibiotics consumed in the world are in India, and there are annually 300,000 direct deaths attributable to AMR, and superbugs are a factor in 10 lakh additional deaths each year.”

Mr. Mahapatra says that even a single scar can get dangerous as it can develop into a deadly wound if the body does not respond to antibiotics. “We haven’t had any innovative anti-

biotics developed since the last few decades and we are finding more and more patients with seemingly minor infections going for complicated treatments and surgery; even newborn babies are facing infections at a very high rate for which there is no cure,” he says.

So how did we reach this situation? A lot of early antibiotics were easier to isolate from soil and they have already been found. Also largely, populations have become resistant to these antibiotics. Also, pharmaceutical companies are now investing more in research and development related to anti-cancer medication as compared to antibiotics.

“There are only 27 drug candidates in clinical development for priority bacteria across the world meant for tackling AMR. Most of these will fail along the way and not get approved in comparison to 1,600 in cancer treatment. Also



There is more focus on R&D for cancer drugs compared to antibiotics. GETTY IMAGES

there are only 3,000 active researchers who focus on AMR resistance worldwide while there are 46,000 dedicated to cancer research,” Mr. Mahapatra explains.

There is a complete market distortion with how antibiotics are developed and how we value

them. “That’s why the pipeline is dry. The government can do more to provide incentives as there is going to be a public benefit to have more of these drugs,” he suggests.

### Less value as drugs

There is more focus on R&D for cancer drugs com-

pared to antibiotics because as a society we put less value on antibiotics as drugs, even if they are expensive and save your life compared to cancer which might just likely extend your life by a few months.

This is because he explains if a pharma company invests a lot of money in

antibiotics – say, it takes 10 years to develop that antibiotic – they normally have a set amount of time before it falls off the patent cliff. Then generics are available as an alternative so they have to recoup R&D expenses within a decade.

“So, the problem is that you have to price it very high and it is available for limited people, and the economics of it does not make sense at all,” Mr. Mahapatra adds.

### Need to restrict

Even when people suffer from a small sniffle, they prescribe antibiotics themselves or have a neighbourhood doctor write a prescription and there should be more stringent enforcement by the government to restrict this. During COVID, for instance, seven out of 10 people were given Azithromycin without basis even when they did not have a bacterial co-infection, he says.

## Hidden pandemic of AMR poses challenge (6 October)

- A silent pandemic of superbugs has been ongoing for decades, causing significant harm, especially in India.
- Anirban Mahapatra, Scientist and Editorial Director at the American Society of Microbiology, highlights that a quarter of the world's antibiotics are consumed in India.
- Annually, there are 300,000 direct deaths attributed to antimicrobial resistance (AMR), with superbugs contributing to an additional 1 million deaths.
- Minor infections can escalate into severe wounds if the body does not respond to antibiotics, affecting even newborns.
- The lack of innovative antibiotics developed in recent decades has led to increased complications in treating infections.
- Early antibiotics were easier to isolate from soil, but populations have largely become resistant to them.

- Pharmaceutical companies prioritize research and development for anticancer drugs over antibiotics.
- There are only 27 drug candidates in clinical development for priority bacteria to tackle AMR, compared to 1,600 for cancer treatment.

## India's energy demand to triple by 2050: Wood Mackenzie's Whitworth

**The Hindu Bureau**  
MUMBAI

With a Gross Domestic Product (GDP) growth of 7% and power demand rising over 8% this year, India is now the third-largest power market globally, and its energy demand is set to triple by 2050, said Alex Whitworth, vice president and head of Asia Pacific Power & Renewables Research, Wood Mackenzie.

Speaking at the Renewable Energy India (REI) Expo organised by Informa Markets, he said these numbers make it a critical investment destination.

"India's role in the global energy transition is becoming increasingly prominent as its economy has overtaken the U.K., surpassed France, and is on track to overtake major markets like Germany and Japan within the next five to ten years, he added.

Stating that renewables are expanding rapidly, with over 200 GW of solar and wind capacity expected by 2030, he said India's emergence as the second-largest solar module manufacturer, exporting to key global markets, highlights its potential.

"However, 70% of India's power still comes from coal, with 50 GW of coal and 10 GW of nuclear expected by 2030. In net-zero scenario, electrification would need to exceed 50%, a crucial focus for India as it balances development of fossil fuel and electric economies in parallel to meet its growing energy demands."

He said the country must address challenges in energy storage, grid infras-



**Clean power:** By 2030, India will have more solar, wind projects than coal plants, as per Bloomberg India estimates. THE HINDU

structure, and renewable deployment, while leveraging its domestic market and global partnerships to drive a low-carbon future.

Speaking on the occasion, Shantanu Jaiswal, head of India research, Bloomberg New Energy Finance (NEF), said the year 2023 marked an unprecedented climate milestone, for the first time, global surface temperatures exceeded 2°C above pre-industrial levels for several days.

### Greenhouse emissions

"What's more concerning is greenhouse gas emissions have not yet peaked, indicating that global temperatures will continue to rise for decades. In response to these challenges, there is a growing global focus on energy transition. India is at the forefront of this transition, with estimates from Bloomberg India suggesting that by 2030, the country will have more solar and wind projects than coal power plants," he said.

Emphasising that intermittency of renewable energy presents a significant challenge, making battery energy storage systems (BESS) essential for

ensuring grid stability and enhancing renewable integration, he said global energy demand is projected to triple, rising from 1.8 terawatt hours to over 5 terawatt hours by 2050, primarily on advancements in storage technology.

"Batteries play a crucial role not only in the power sector but also in transportation. India's electric mobility sector is growing rapidly, with major automakers establishing battery assembly plants and leveraging the Production Linked Incentive (PLI) scheme to create 50 gigawatt hours of battery manufacturing capacity," he said in a statement.

"Demand for lithium-ion batteries is anticipated to rise from 10 gigawatt hours today to 200 gigawatt hours by 2035, fueled by the electric vehicle market and grid-scale storage needs," he added.

Yogesh Mudras, managing director of Informa Markets in India, said India's strides in domestic lithium-ion battery output were particularly noteworthy, with production capacity expected to reach 150 gigawatt hours by 2030, covering 13% of total cell demand.

- Only 3,000 researchers focus on AMR resistance worldwide, while 46,000 are dedicated to cancer research.
- A market distortion exists in how antibiotics are valued and developed, leading to a dry pipeline for new antibiotics.
- The government could provide incentives to promote the development of more antibiotics for public benefit.
- Society places less value on antibiotics compared to cancer drugs, despite antibiotics being lifesaving.
- Antibiotic development can take a decade, after which generics become available, complicating the economic viability for pharmaceutical companies.
- Many individuals self-prescribe antibiotics for minor ailments, necessitating stricter government enforcement to restrict this practice.
- During COVID-19, 70% of people were prescribed Azithromycin without a bacterial co-infection, demonstrating the misuse of antibiotics.

**India's energy demand to triple by 2050: Wood Mackenzie's Whitworth (6 October)**

- India has a GDP growth of 7% and a power demand increase of over 8% this year, making it the third-largest power market globally.
- Energy demand in India is projected to triple by 2050, highlighting its importance as an investment destination.
- India's economy has surpassed the U.K. and France and is on track to overtake Germany and Japan within the next five to ten years.
- Over 200 GW of solar and wind capacity is expected by 2030, establishing India as the second-largest solar module manufacturer, exporting to key global markets.
- Currently, 70% of India's power comes from coal, with expectations of 50 GW of coal and 10 GW of nuclear capacity by 2030.
- In a net-zero scenario, electrification must exceed 50%, balancing the development of fossil fuel and electric economies to meet energy demands.
- India must address challenges in energy storage, grid infrastructure, and renewable deployment while leveraging domestic markets and global partnerships for a low-carbon future.
- 2023 marked a climate milestone, with global surface temperatures exceeding 2°C above pre-industrial levels for several days.
- Greenhouse gas emissions have not peaked, indicating a continued rise in global temperatures for decades.
- India is expected to have more solar and wind projects than coal power plants by 2030, leading the energy transition.
- The intermittency of renewable energy necessitates battery energy storage systems (BESS) for grid stability and renewable integration.
- Global energy demand is projected to triple from 1.8 terawatt hours to over 5 terawatt hours by 2050, driven by advancements in storage technology.
- Batteries are crucial for both the power sector and transportation, with India's electric mobility sector rapidly growing.
- Major automakers are establishing battery assembly plants, aiming for 50 gigawatt hours of battery manufacturing capacity under the Production Linked Incentive (PLI) scheme.
- Demand for lithium-ion batteries is expected to rise from 10 gigawatt hours today to 200 gigawatt hours by 2035 due to the electric vehicle market and grid-scale storage needs.
- India's lithium-ion battery production capacity is projected to reach 150 gigawatt hours by 2030, covering 13% of total cell demand.

## **Sri Lanka approves controversial foreign debt deal sought by IMF (6 October)**

- Sri Lanka's new government is led by Anura Kumara Disanayake.

## Sri Lanka approves controversial foreign debt deal sought by IMF



AFP

Sri Lanka's new government led by Anura Kumara Dissanayake has approved a controversial restructure of \$14.7 billion in foreign commercial credit tentatively agreed by the predecessor. The debt restructuring is a key IMF demand to rebuild the island's economy, which suffered its worst crisis in 2022 when it shrank by 7.8%. AFP

- The government has approved a controversial restructure of \$14.7 billion in foreign commercial credit.
- This restructuring was tentatively agreed upon by the previous government.
- Debt restructuring is a key demand from the IMF to rebuild Sri Lanka's economy.
- The island's economy experienced its worst crisis in 2022, shrinking by 7.8%.