Mizoram, Chhattisgarh record over 70% polling

Mizoram registers 76% polling; Chhattisgarh brings in 71% in 20 seats; 3 security personnel injured in bomb blast and gun battle as all 12 Assembly seats in Maoist-affected Bastar votes in first phase

The Hindu Bureau
NEW DELHI

Kick-starting crucial State polls perceived to be semi-finals before the 2024 Lok Sabha election, voting took place in all 40 Assembly seats in Mizoram and in the first phase of polling in Chhattisgarh, which was marred by sporadic violence, on Tuesday. Chhattisgarh Chief Minister Bhupesh Baghel said that some Central Reserve Police Force (CRPF) personnel had threatened voters against exercising their franchise.

While Mizoram recorded more than 76% polling by 4 p.m., about 71% of voters had exercised their franchise by 5 p.m. in the 20 Assembly seats of Chhattisgarh which went to the polls in the first phase. "The voting percentage is likely to go upwards when reports from all polling stations, including interior and inaccessible polling stations, come in," the Election Commission said.

For all five States going to the polls this month – Mizoram, Chhattisgarh, Madhya Pradesh, Rajasthan, and Telangana – the counting of votes will be held on December 3.

At least three security personnel were injured in violence in the Maoist-affected Bastar region of Chhattisgarh, where all 12 Assembly seats voted in the first phase. An inspector from the elite CoBRA unit of the CRPF was injured in an IED blast triggered by Naxalites in Sukma district.

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Voter turnout

All 40 seats in Mizoram and 20 constituencies in Chhattisgarh went to polls on Tuesday

Exercising her right: A Mizo woman with her baby comes out from a polling booth in Aizawl. RITU RAJ KONWAR

- Mizoram recorded approximately 77% voter turnout by 4 p.m., while Chhattisgarh's turnout was nearly 71%
- The polling in Chhattisgarh was marred by sporadic violence, including an IED blast triggered by Naxalites in Sukma district, which injured a CRPF commando. Incidents of violence were also reported in other districts, and four other security personnel were injured
- Mizoram is expected to witness a three-way contest among the MNF, ZPM and the Congress. In contrast, the main contenders for power in Chhattisgarh are the ruling Congress and the Opposition BJP

Mizoram, Chhattisgarh record over 70% polling

Encounters were reported between the police and the Maoists in Sukma, Narayanpur and Kanker districts of the Bastar region. Two jawans sustained injuries in a gun battle in Sukma's Minpa area, where voting was held for the first time since the State was formed. In fact, polling stations were set up in 126 villages in seven districts affected by Left Wing Extremism for the first time since Independence, the EC said.

BJP vs Congress

At a rally in Surajpur district , Prime Minister Narendra Modi accused the State's Congress government of failing to contain Naxalism. Whenever the Congress comes to power at the Centre, Naxalites and terrorists get emboldened, the PM said. He also targeted the CM over the alleged Mahadev betting app scam and other accusations of corruption.

Mr. Baghel, on his part, said that the BJP had already accepted defeat as it was using agencies to target Opposition leaders. These Central agencies would take a short break and return to raid again before the 2024 Lok Sabha election, he said.

'CRPF threatened voters'

He alleged that CRPF personnel were threatening voters not to exercise their franchise. "This is the real character of the BJP government at the Centre. If they are not able to hold in front of Congress in the elections, then CRPF jawans have been put forward. This is not the only complaint of stopping voters. Such complaints have been received from many places in Bastar. ," he said on X.

EVM glitch

In Mizoram, Chief Minister Zoramthanga failed to exercise his franchise in the first attempt due to an EVM malfunction, but was finally able to vote in the Aizawl North-II Assembly constituency.

Zika virus cases: Centre asks States to intensify surveillance

Afshan Yasmeen
BENGALURU

Even as Karnataka is awaiting reports of the Chikkaballapur mosquito pool samples that were found to be positive for Zika virus, the Centre has written to all States, including Karnataka, asking them to strengthen entomological surveillance and intensify vector control activities.

The letter referred to the recent detection of Zika Virus Disease (ZVD) cases in Kerala and Maharashtra. "In addition, the virus has also been detected in mosquito pool samples from Chikkaballapur district of Karnataka. It is important to strengthen entomological surveillance and intensify vector control activities with a focus on areas with high vector density in order to prevent Zika virus transmission," the official said.

The *Aedes aegypti* mosquito that transmits the Zika, chikungunya, dengue. AFP

Last month, samples collected from a mosquito pool in Thalakayalbetta village in the jurisdiction of Dibburahalli Primary Health Centre (PHC) during routine surveillance were found to be carrying the Zika virus.

"I am sure that an action plan and requisite logistics for vector management focusing on dengue and chikungunya is in place with the States. The same needs to be implemented for Zika," the letter stated.

"Equally important is the need to avoid any kind of panic in the public by disseminating correct information. Like dengue and chikungunya, there is no specific drug or vaccine for ZVD," the letter stated.

Cease fire

From being a victim of terrorism, Israel has turned into a ruthless aggressor

Israel's bombing of Gaza is entering its second month, and the tiny Mediterranean strip of 2.3 million people has been turned into what the UN has called a "graveyard for thousands of children" and "a living hell for everyone else". According to the Gaza Health Ministry, at least 10,000 people, many of them women and children, have been killed in Israel's onslaught, which began after Hamas's October 7 cross-border raid, killing at least 1,400 Israelis. Israel's attack has also displaced some 1.5 million people. Israel ordered more than a million Gazans to move south and then continued to bomb the enclave. High-rises have been levelled and northern Gaza's neighbourhoods turned into rubble. Refugee camps, schools, hospitals and ambulances are not being spared, which led to frantic calls from the UN Secretary-General António Guterres for a ceasefire and respect for international humanitarian laws. According to the UN, 89 UN aid workers were among those killed in Gaza in four weeks, the highest "in any comparable period in the history of our organisation". The war has also triggered massive protests across the world, especially in the Arab street. But Israel's Prime Minister, Benjamin Netanyahu, has rejected calls for even a humanitarian pause, let alone a ceasefire.

Israeli troops have now encircled Gaza city, a densely populated Hamas stronghold, and are involved in street battles with militants. The objective appears to be to topple the Hamas government, kill its commanders, destroy its military infrastructure and rescue the hostages seized by Hamas on October 7. In the past, Israel had taken quick victories against conventional armies in the region, but its track record in asymmetric wars is mixed. It has lost at least 30 soldiers, and once the fighting enters Gaza city, it is expected to be bloodier. If Israel presses on, turning the rest of Gaza into an open prison on fire, it can have disastrous consequences for West Asia. Yemen's Houthis have already launched attacks against Israel. The Israeli-Lebanese border remains tense with Hezbollah saying all "options are open". The only country that can rein Israel in is its patron, the U.S. But unfortunately, the Biden administration, despite all its rhetoric about rights and a rules-based order, is yet to act. This is an opportunity for the U.S. to show the moral leadership which it always preaches about. It should tell Israel, and use pressure if needed, that it cannot continue to kill Palestinian civilians in the name of its right to defend itself. Israel must be made to cease fire immediately.

Closer together

India and Bhutan can change the development story of the region

The decision by India and Bhutan to focus on infrastructure and connectivity during talks between Prime Minister Narendra Modi and Bhutan's fifth King Jigme Khesar Namgyel Wangchuck is an important marker towards more bilaterally driven regional initiatives. A joint statement speaks of completing surveys for the Kokrajhar-Gelephu rail link that connects Bhutan to Assam, and beginning discussions on another Bhutan to West Bengal rail link, while also facilitating Bhutan-Bangladesh trade, with yet another rail link, and upgrading checkpoints along the India-Bhutan border. These plans foretell a future that could well change the development story of the region, including West Bengal and the northeast, Bhutan's south and east dzongkhags (districts), as well as Northern Bangladesh. Bhutan's economy has been dependent on hydropower and tourism revenues, and has been particularly hit by the COVID-19 pandemic as well as worries over global warming. A lack of opportunities has also led to emigration by educated youth and professionals. The new project proposed by the king, to build a Special Economic Zone at Bhutan's southern border with Assam, and an airport at Gelephu, are expected to drive growth and investment to the kingdom. In addition, Bangladesh's signing of a Preferential Trade Agreement with Bhutan in 2020 could increase Bhutanese export of local produce and build more markets for Indian and Bangladeshi producers in the sub-region. India's "energy exchange", which is bringing more Bhutanese and Nepali hydropower suppliers online, while planning to distribute energy to Bangladesh and Sri Lanka, will drive intra-regional growth and revenues. This would also power New Delhi's attempt at bridging the economic gap with the northeast, while drawing development partners like the World Bank and donor countries like Japan into the creation of a "sub-regional hub".

Efficient and time-bound execution is, therefore, key to such ambitious plans. Given India's problems with Pakistan and sanctions on Myanmar for the 2021 coup blocking the path for trade and land connectivity to the East, working with other countries on India's periphery to build connectivity, markets and energy links is the most sustainable way forward. In the longer term, geopolitical conflicts and anti-globalisation trends are forcing regional groupings to be more cohesive, something South Asia has not been able to achieve as yet. As India worries about China's push into South Asian trade, infrastructure projects and strategic ties, including concerns over a Bhutan-China boundary agreement's overhang over Doklam and India's "Chicken Neck" (Siliguri Corridor) route, these are ideas which will offer more security and prosperity for the countries involved, with particular benefits for Bhutan, India's traditionally trusted partner in the region.

How are the MiG-21 fighter jets being phased out?

By when will the Hindustan Aeronautics Limited supply the IAF with the 83 Light Combat Aircraft?

Dinakar Peri

The story so far:

On October 31, 2023 MiG-21 fighter jets of the No. 4 squadron 'OORIALS' of the Indian Air Force (IAF) flew one last time over Uttarlai in Rajasthan. The squadron has been operating the MiG-21 since 1966 and is now being re-equipped with the Sukhoi-30 MKI aircraft, said Colonel Amitabh Sharma, PRO Defence Rajasthan in a statement. The IAF is now at 31 fighter squadrons as against the sanctioned strength of 42 squadrons.

What role did the MiG-21 jets play?

The MiG-21 was the first supersonic fighter in service of the IAF and was inducted in 1963 and has participated in all major conflicts since. More than 800 variants of the supersonic fighter have been inducted into service, and it remained the frontline fighter jet of the IAF for a long time. For instance, the No.4 squadron has served the country for approximately six decades and has significantly contributed to the war effort during Indo-Pak conflicts, Col. Sharma noted.

Last year, the No. 51 squadron 'swordarms' based in Srinagar was phased out. It was the same squadron of which Gp Capt (then Wg Cdr) Abhinandan Varthaman was part of and saw action in February 2019, a day after the Balakot air strike. The squadron was raised at Chandigarh on February 1, 1985 under the command of Wg Cdr V. K. Chawla and moved to Srinagar on May 1, 1986. It was initially equipped with MiG-21 Type 75 aircraft and later converted to the upgraded MiG-21 Bison in January 2004.

The IAF now has two MiG-21 squadrons in service comprising the upgraded Bison variants, the No. 3 squadron 'Cobras' at Bikaner and No. 23 squadron 'Panthers' at Suratgarh, which will be phased out by 2025, as stated by Air Chief Marshal (ACM) Vivek Ram Chaudhari. "We will stop flying the MiG-21 fighter aircraft by 2025 and we will replace the MiG-21 squadron with the indigenous Light Combat Aircraft (LCA)-MkIA... The induction of the LCA Mark-IA will fill the gap of these MiG-21s," he had said. "The IAF operated 24 fighter squadrons and four training units equipped with the MiG-21. Throughout service in these 28 establishments, the average tenure of the MiG-21 aircraft was 33 years. The transition to the MiG-21 began with the No. 28 squadron in 1963, and the No. 20 squadron was the last (albeit briefly) in the late 1990s," writes Anchit Gupta, an aviation historian on his blog iafhistory.in. "No. 4 squadron holds the distinction of serving the longest with the MiG-21 for nearly 58 years. If No. 3 squadron continues its service until 2025, it will be the second-longest-serving unit at 53 years."

According to the IAF website, during the 1971 War of Bangladesh, the MiG-21s showed its true grit. Although Pakistan had initiated the war with pre-emptive air strikes against major forward air bases, the IAF "rapidly gained the initiative and had thereafter dominated the skies over both fronts.....Six squadrons of MiG-21FLs were part of the IAF's order-of battle, participating in operations both in the Eastern and Western Sectors," it says. On the 1999 Kargil conflict, the IAF says that night operations were carried out using ingenuity and imagination; at times, excellent results were achieved by the aircraft using little else but a stop watch and a GPS receiver. "These operations had a significant effect on the enemy's resilience, stamina and very will to fight."

In the course of six decades, the MiG-21 fleet saw over 400 accidents claiming the lives of around 200 pilots. The IAF was to phase out the MiG-21s much earlier but it was extended as newer inductions especially the LCA Tejas were delayed.

What about the MiG replacement?

In the last few years, the IAF has inducted two squadrons of the LCA Tejas and two squadrons of Rafale fighter jets procured from France which pushed the squadron strength to over 30. In January 2021, the IAF signed a contract with Hindustan Aeronautics Limited (HAL) for 83 LCA MkIA which it will start receiving from early 2024 onwards. A larger LCA-Mk2 as well as the fifth generation Advanced Medium Combat Aircraft (AMCA) are under development. As they take time to be available in large numbers, it is the LCA-MkIA which will form the bulk of the force. Last month, ACM Chaudhari had said that they are looking to procure an additional 97 LCA-MkIA at an estimated cost of ₹67,000 lakh crore, making a total of 180 MkIA variants.

Understanding the fundamentals of how electricity is transmitted

Since energy exists in many forms, like light, sound and heat, power and power transmission also exist in many forms. However, electric power transmission is more complicated because of the multiple phases of electric current, and factors like voltage, impedance, frequency etc

Vasudevan Mukunth

When India's first Prime Minister Jawaharlal Nehru visited the planned site of the Bhakra Nangal Dam in Bilaspur in 1954, he called dams "the temples of modern India". Contained in his turn of phrase were many indications about the way India was to develop in the coming decades, but it also spoke to the centrality of electricity in the modern nation and the foundations that power transmission laid for development.

Since energy exists in many forms, like light, sound, heat, etc., power and power transmission also exist in many forms. For example, mechanical power in a car is transmitted using gears. However, electric power transmission is more complicated because of the multiple phases of electric current, and factors like voltage, impedance, frequency, etc.

Any power supply system has three broad components: generation, transmission, and distribution. Electricity is generated at power plants as well as at smaller renewable-energy installations. Then it is transmitted using a distributed network of stations, substations, switches, overhead and underground cables, and transformers, among other elements. Finally, it is distributed to consumers in a standardised way, befitting the needs of various machines and applications.

What are the basics of transmitting electricity?

First, in any conductor that transports electric current, the transmission efficiency is higher at lower current and higher voltage. This is because the energy loss during transmission increases as the square of the current, whereas the amount of voltage increase corresponds on a 1:1 basis with the amount of current decreased. That is, if voltage is increased by five units, the amount of current will drop by five units, but the amount of energy lost will be reduced by 25 units.

This is the purpose of transformers: they increase the voltage and reduce the current before feeding into transmission lines, and the reverse when receiving current to be supplied to consumers. Transmission cables can be seen transporting current at 115 kV, 230 kV, etc. for this reason. However, more than 2,000 kV or so is infeasible because then air itself becomes conducting, causing the cable to 'leak' current.

Second, the cables that move the current still have some resistance, which results in some energy loss. The amount of loss can be controlled by adjusting the cable's thickness: the thicker it is, the less energy is lost, but the cost increases. So when the cost of the cable's material is high, the cables are thinner. Third, the longer the distance of transmission, the lower the transmission cost.

All these factors are further complicated by the use of alternating current (AC). AC can be modified more easily in transformers than direct currents (DC) and also has higher transmission efficiency. But when the AC frequency is higher, the amount of resistance the current encounters in the material increases. Engineers model all these factors for a given network to understand how much electrical energy will be lost between generation and consumption.

What is AC power?

The most common way to transfer electric power is in the form of three-phase AC. In AC, the voltage flips polarity. If one polarity urges the current to flow in one direction, the opposite polarity urges the current to flow the other way. The AC frequency is equal to the voltage flipping frequency.

Imagine this voltage change to be mapped to a circle: it completes one semi-circle (180°), from top to bottom, as it flips one way; when it flips the other way, it completes the other semi-circle (180°) and is back to its starting point.

In a three-phase AC circuit, there are (at least) three wires. When current starts to follow in Wire A, the voltage is at 120°; in Wire B, it is 240°; and in Wire C, it is 360°. These are the three phases.

All three wires transport AC power. Consumers, for example households, receive three such wires from where they can draw power for various appliances. These appliances are also designed to use AC because it is easier to control than DC.

How is power transmitted?

In a three-phase AC circuit, each wire transmits an AC current in a different phase. From a power station, the wires are routed to transformers that step-up their voltage. Then, they are suspended from transmission towers, which must be stable and properly wired, as they travel long distances.

Insulators in contact with the wires draw away some current if there is a surge in the line; circuit-breakers 'break' the circuit if there is too much. The towers are also grounded and equipped with arresters that prevent sudden increases in voltage – such as due to a lightning strike – from affecting the wires. Similarly, dampers prevent vibrations in the wires from affecting the towers' stability. Switches are used to control the availability of current and to move currents between different lines.

These wires eventually lead to and exit from different kinds of substations. For example, collectors collect power incoming from different sources and relay them to transmission substations. Converters modify the AC frequency. Distribution substations step-down the voltage in power lines and prepare them for consumption. Transmission substations merge or fork different lines and diagnose problems in different lines.

All these centres require their own support and safety infrastructure, from electrical engineers to fire protection, from connections to computerised operations to facilities for staff. There are also many other elements and setups to perform various other functions, in keeping with the sophisticated needs of entire economic regions.

How do grids operate?

As mentioned earlier, transmission is situated between production and distribution. A national grid includes all three components, and as a result transmission also has to account for the particulars of power production at different types of sources, at various locations, and how and where that power is consumed.

For example, some sources – like coal-fired or nuclear reactors – can produce energy continuously, whereas renewable energy sources are intermittent. So grids also have storage facilities that store electrical energy when there's a surplus supply and release it in times of deficit. They are also connected to sources like gas turbines that can provide power on short notice, such as during emergencies, as well as automated systems that 'tell' sources to increase or decrease their output in response to fluctuating consumer demand.

Grids also need to respond to failure in different parts of the network and prevent them from carrying over to other parts, adjust voltages in response to demand (as well as manage demand), control the AC frequency, improve the power factor (the power drawn by a load versus the power available in a circuit), etc.

A grid becomes a wide-area synchronous grid if all the generators connected to it are producing an AC current at the same frequency. The world's largest such grid covers Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Mongolia, and Russia; the world's most powerful is the North Chinese State Grid, with a connected capacity of 1,700 GW. India's national grid is also a wide-area synchronous grid.

Such grids result in lower power cost but also require measures to prevent cascading power-supply failures.