

EPFO set to hike interest on PF deposits to 8.25%

The Hindu Bureau
NEW DELHI

The Central Board of Trustees (CBT) of the Employees' Provident Fund Organisation (EPFO) has recommended an interest rate of 8.25% on provident fund (PF) deposits for 2023-24. The current interest rate is 8.15%.

"The move is a step towards fulfilling PM Modi's guarantee of strengthening social security for India's workforce," said Union Labour Minister Bhupender Yadav after a meeting of the CBT here on Saturday.

Waiting for approval

The CBT has recommended to the Union Finance Ministry that the new interest of 8.25% could be applied to the accumulations in subscribers' accounts for 2023-24.



The current rate is 8.15%.

Once the Finance Ministry accepts the approval, the new rate will be officially notified in the government gazette.

"Subsequently, the EPFO will credit the approved rate of interest to its subscribers' accounts," the Union Labour Ministry said in a press release.

"The CBT has recommended a distribution of historic income amount of

₹1,07,000 crore to EPF members' accounts on a total principal amount of about ₹13 lakh crore, which were ₹91,151.66 crore and ₹11.02 lakh crore respectively in 2022-23. The total income recommended for distribution is the highest on record," the Centre said, adding that the income had grown by more than 17.39% and principal amount had increased by 17.97%, which is a healthy financial performance.

The issue of non-inclusion of representatives of the INTUC and the AITUC in the CBT were also taken up during the meeting.

Meanwhile, a meeting of the Employees' State Insurance Corporation (ESIC) held on Saturday decided to extend its medical benefits to superannuated insured persons with relaxed norms.

'Heritage spaces in Lucknow not being maintained properly'

Heritage enthusiasts in Uttar Pradesh lament condition of monuments in State capital even as the High Court directs the administration to remove encroachments from protected sites; officials say legal action is being taken to clear encroachers

Mayank Kumar
LUCKNOW

Syed Mohammad Halder Rizvi, 50, believes heritage sites are a collective legacy.

A lawyer and heritage enthusiast, Mr. Rizvi was jubilant when the Lucknow Bench of the Allahabad High Court on February 7 once again directed authorities to convene a meeting of the committee constituted in 2013 by the High Court, to identify and take action against encroachments in monuments in Lucknow.

"The court had asked the authorities to remove encroachments from Centrally protected heritage sites, but the administration did little," said Mr. Rizvi. The committee has met only 13 times over the past decade.

60 monuments

Up to 60 protected monuments in Lucknow have been declared to be of national importance under the Ancient Monuments and Archaeological Sites and Remains Act, 1958, by the Archaeological Survey of India (ASI). Mr. Rizvi said that most of these structures, built during the Nawab era (17th to 19th



Need for attention: Heritage lovers say authorities in both the Centre and U.P. have failed to take concrete steps to remove encroachments. A view of Rumi Darwaza in Lucknow. SANDEEP SAKENA

centuries), have been encroached upon in the last few decades.

Authorities, both Central and State, had failed to take any concrete step to remove intrusions, he alleged. "Despite numerous petitions and public interest litigation pleas, encroachment still exists at Chhattar Manzil, the Kazmain buildings, Rumi Darwaza, Bada Imambara, Chota Imambara, among others heritage sites," said Mr. Rizvi.

However, ASI's Superintending Archaeologist in Lucknow, Aftab Hussain, said: "We issue notice to

encroachers and approach the local administration for taking legal action wherever information of encroachment is found correct. We have issued notices to more than 1,100 people in Lucknow alone, and many encroachments have been removed."

The ground reality is different. Lucknow's iconic Bada Imambara, constructed in the late 18th century, has people living within the complex. Declared a protected monument by the ASI in 1920, it also houses a large Asfi mosque and a *bhul-bhulaiya* (labyrinth). It was built

during a devastating famine, by Awadh Nawab Asaf-ud-Daula, who aimed at providing employment to people reeling under poverty and hunger at the time.

The Union Ministry of Culture did a recent assessment of the Kazmain buildings, built mirroring a similar structure in Iraq, considered sacred to Shia Muslims. "The monument shows signs of rising dampness in the external façade on all sides along the plinth level," reads the report published in October 2023. It goes on to note "structural cracks at

the lintel level", "water seepage...at the ceiling which further led to deterioration of wooden roof structural members", and "missing copper panels [from the dome]".

The *kothi* (large house) at Bibyapur on the banks of the Gomti river, now in disarray, was built by Asaf-ud-Daula, the Nawab of Awadh, in the late 18th century.

Designed in the neo-classical style by Antoine Polier, who was intermittently a part of the British and Nawab's army, the residence was used as a country retreat for the Nawab.

So far, U.P.'s heritage zones are governed by rules monitored by the local development authorities. "In Lucknow, three heritage zones have been defined by the Lucknow Development Authority: Husainabad Zone, Kaisarbagh Zone, and Lamartiniere Zone," said Indu Prakash, a trained archaeologist who worked with the ASI for more than 35 years.

Mr. Rizvi and other heritage enthusiasts feel rules are not enough. "Heritage by-laws are needed. These will act as a catalyst in preserving these monuments," he said.

CSIR NAL flies test-drone that can double up as 'pseudo satellite'

Jacob Koshy
NEW DELHI

Scientists at the CSIR-National Aerospace Laboratories (NAL) successfully tested an unmanned aerial vehicle, called High Altitude Pseudo Satellite (HAPS), at Challakere, Karnataka earlier this month.

HAPS are like drones, except that they are expected to be in the stratosphere – well above where commercial planes fly – and can be powered enough by solar cells and a battery-system to be able to hover for days on end.

Variety of applications

A fully working HAPS can be used for a variety of applications, from surveillance to beaming 5G waves.

They can double up as “towers in the sky” and have more flexibility than satellites, in being able to map a piece of land from above.

The NAL system is currently far from these goals.



The unmanned aerial vehicle developed by NAL.
SPECIAL ARRANGEMENT

The HAPS that was flown this month is a scaled-down HAPS. The 5-metre-long system, with a wingspan of 11 metres and weighing 23 kg, rose to about 3 km and stayed put for about eight hours. This prototype, scientists associated with the project told *The Hindu*, “met or exceeded all the performance metrics set out for it”.

However, a series of tests have been planned and they are expected to culminate in a full-bodied craft – with a wingspan of 30 m (nearly as much as a Boeing 737) – by 2027.

It will be able to rise to

23 km and stay airborne for at least 90 days. “There are very few proven systems anywhere in the world that can do this and given the variety of potential applications, India ought to be able to have such capabilities of its own,” said Abhay Pashilkar, Director, CSIR-NAL.

‘Engineering prowess’

While HAPS may look elementary, it requires a fair bit of engineering prowess.

They are unmanned and must fly days and nights on end, meaning they need solar-powered batteries – and not jet fuel – capable of lifting the airframe up to the stratosphere (which extends from 20-50 km above the earth’s surface). This ascent into the sky is challenging, given the air turbulence in the atmosphere, and the fact that these are relatively light planes.

“The weight of the airframe is only 8 kg but the entire system’s weight is nearly 23 kg. Most of the

weight is of the batteries,” said Dr. Pashilkar.

Unlike the familiar solar panels on rooftops, those used to power the plane are extremely thin solar films.

“There are only one or two companies in the world capable of making solar-cell films that thin,” said L. Venkatakrishnan, Chief Scientist and Head, NAL, and in-charge of the HAPS programme.

“It’s like the Hero Honda of the skies. Our test this month gave us the information required to design a bigger system, particularly on how can we ensure that the drone remains balanced given the forces it will be subject to,” he told *The Hindu*.

CSIR-NAL aims to design and build the HAPS’ propellers, battery management system, carbon-composite airframe, flight-control system, and the high-powered electric motors that can withstand extreme temperature ranges.

What are the changes in the new Water Act?

Will the amendments weaken the laws that protect rivers and water bodies from industrial pollution?

Jacob Koshy

The story so far:

The Lok Sabha this week passed the Water (Prevention and Control of Pollution) Amendment Act, 2024. The legislation, which was introduced and passed in the Rajya Sabha on February 5, makes important changes to the Water (Prevention and Control of Pollution) Act, 1974.

What is the Water (Prevention and Control of Pollution) Act, 1974?

This Act was the first piece of legislation in independent India that identified the need to have an institutional structure to address contamination of water bodies. This led to the creation, in September 1974, of the Central Pollution Control Boards (CPCB) and State Pollution Control Boards (SPCB) that were charged with monitoring and preventing public water resources from getting contaminated by sewage and industrial effluents. This Act made it mandatory for industrial units to get permission from their respective State boards before setting up factories and submitting themselves to checks on whether their manufacturing and other processes were complying with prescribed norms.

"The Parliament of India in its wisdom enacted the Water (Prevention and Control of Pollution) Act in 1974 with a view to maintaining and restoring wholesomeness of our water bodies. One of the mandates of the Central Pollution Control Board (CPCB) is to collect, collate and disseminate technical and statistical data relating to water pollution," the website of the CPCB notes. While the CPCB is empowered to conduct checks and provide guidance on technical standards to be adhered to, the SPCB files cases and is expected to enforce compliance. Violating the provisions of the Water Act can mean industries being shut down; monetary fines as well as imprisonment of up to six years. That said, there have been no instances of companies or people in India having been imprisoned due to environmental violations.

What are the amendments?

Water is a State subject, and the Centre cannot directly pass legislative laws influencing water management. However, the Centre can create legislation, if two or more States demand it, and this can be made applicable by States over their territories if they adopt the legislation in their Assemblies. The amended version of the Act, passed by both Houses of Parliament, will currently apply to Himachal Pradesh and Rajasthan and the Union territories. The original Act, passed in 1974, is applicable in 25 States. The most important change is that it removes the provisions of imprisonment for several violations, deemed "minor", and replaces them with fines, to the tune of ₹10,000 extending up to ₹15 lakh.

As per the original Act, the SPCB's permission is needed for establishing any industry or treatment plant, which could discharge sewage into a water body, sewer, or land. In the amendment, the Bill specifies that the Centre, "... in consultation with the CPCB, may exempt certain categories of industrial plants from obtaining such consent...."

However, operating or establishing an industrial unit without SPCB consent can still land you in jail for six years along with a fine.

The Bill also adds that the Centre may issue guidelines for the grant, refusal, or cancellation of consent granted by the SPCB. It also penalises tampering with monitoring devices used in determining whether any industry or treatment plant can be set up. The penalty will be between ₹10,000 and ₹15 lakh. The amended Act also empowers the Centre to frame rules to select the chairpersons of SPCBs and frame guidelines that States can follow on matters for establishing industries and new operating processes.

What has been the response?

Explaining the rationale behind the amendments, Environment Minister, Bhupendra Yadav, who steered the Bill, said outdated rules and regulations caused a "trust deficit." The imprisonment provisions for minor violations, which are simple infringements and did not lead to any injury to humans or damage to the environment, often caused "harassment" to businesses and citizens and was not in consonance with the spirit of "ease of living and ease of doing business," he added. In discussions on the Act in the Lok Sabha, Members of Opposition parties raised concerns that the amendments weakened the laws that protected rivers and water bodies from industrial pollution. They argued that the fear of imprisonment acted as an effective deterrent to industrial units that were lax with complying with strict regulations.

How can child safety be ensured online?

What are the dangers and risks for children in the virtual space? What is the responsibility of tech companies? Should public pressure be stepped up to incorporate more safety aspects, especially for use by children? How can governments step in with regulatory frameworks?

Ramya Kannan

The story so far:

In early February, Meta CEO Mark Zuckerberg provided a public apology to parents whose children were victims of online predators during a Congressional hearing, that could be described as hostile to not just Meta, but other tech majors including X, TikTok, Snapchat, and Discord. The Big Tech and the Online Child Sexual Exploitation Crisis hearing was reportedly called "to examine and investigate the plague of online child sexual exploitation" and all their executives were pinned on their abdication of responsibility to protect children on social media platforms.

What are the issues with children's safety online?

Tech majors are increasingly finding themselves in the midst of a maelstrom of protests across the world, not just over privacy concerns, but also with the security of users online. Across the world, parents and activists are aggressively advancing the agenda of having the tech companies take responsibility, or provide platforms that are 'safe by design' for children and young users.

A UNICEF report of last year, 'The Metaverse, Extended Reality and Children', attempted an analysis of how virtual environments may evolve

'All the rules that exist in the real world to protect children should also prevail online'

and how they are likely to influence children and young adults. These technologies do offer many potential benefits for children, such as in the areas of education and health.

Are the risks significant?

The potential risks to children are significant, the report points out. "These include safety concerns such as exposure to graphic sexual content, bullying, sexual harassment and abuse, which in immersive virtual environments can feel more 'real' than on current platforms." Further, vast amounts of data, including about non-verbal behaviour are collected, potentially allowing a handful of large tech companies to facilitate hyper-personalised profiling, advertising and increased surveillance, impacting children's privacy, security, other rights and freedom.

While the complete immersion in an alternate reality which Metaverse promises is still not here, there are multiple virtual environments and games that are not fully immersive, and yet indicative of dangers in coping with that world. For instance, explains Sannuthi Suresh, programme co-ordinator, Tulir – Centre for the Prevention and Healing of Child Sexual Abuse, "in the hugely popular Grand Theft Auto, which does have adult and child versions, there is an instruction in the adult version to 'approach a prostitute and spank her many times'. Now, adolescents are likely to pick the adult version. What messages are we sending to children?" More recently, she adds, there were reports in the media about how children were using Artificial Intelligence to generate indecent child abuse images.

Then there is the mental health aspect, with children facing the prospect of trauma, soliciting and abuse online, which can leave deep psychological scars that impact lives in the real world too. Innocuous and innocent sharing of images online can also be twisted by depraved predators. End-to-end encryption is essential to protect the information that children share online, points out Ms. Suresh.

What about the reach of generative AI?

The Davos World Economic Forum in a paper

last year explained that generative AI brings potential opportunities, such as homework assistance, easy-to-understand explanations of difficult concepts, and personalised learning experiences that can adapt to a child's learning style and speed. "Children can use AI to create art, compose music and write stories and software (with no or low coding skills), fostering creativity," it says. For children with disabilities, a world opens up as they can interface and co-create with digital systems in new ways through text, speech or images.

"But generative AI could also be used by bad actors or inadvertently cause harm or society-wide disruptions at the cost of children's prospects and well-being," the report records. Generative AI has been shown to instantly create text-based disinformation indistinguishable from, and more persuasive than, human-generated content. AI-generated images are sometimes indistinguishable from reality. Children are vulnerable to the risks of mis/disinformation as their cognitive capacities are still developing. There is also a debate about how interacting with chatbots that have a human-like tone will impact young minds.

What can be done to keep children safe online?

The primary responsibility is that of the tech companies who will have to incorporate 'safety by design', explains Ms. Suresh. The proceedings of the Congressional hearings have made it obvious that these companies are fully cognisant of the extent to which their apps and systems impact children negatively.

Drawing on the Convention on the Rights of the Child, UNICEF offers guidance that lists nine requirements for child-centred AI, including support for children's development and well-being, and protecting children's data and privacy. UNICEF recommends that tech companies apply the highest existing data protection standards to children's data in the metaverse and virtual environments.

In addition, governments have the burden of assessing and adjusting regulatory frameworks periodically to ensure that such technologies do not violate children's rights, and use their might to address harmful content and behaviour inimical to children online.

Ultimately, as Ms. Suresh points out, everyone must start from the assumption that all the rules that exist in the real world to protect children, should also prevail online.



Online shield: Innocuous and innocent sharing of images online can also be twisted by depraved predators. GETTY IMAGES

EVAST

The moment of rhythm

Shakti

The 50-year-old music band has won the Best Global Music Album award at the 66th Grammy for their pandemic creation *This Moment*

Gowri S.

A few weeks ahead of their 50th anniversary tour's U.S. leg in 2023, transcontinental Indo-jazz band Shakti made a pit stop at NPR for their popular 'tiny desk concert'.

What followed was simply a lesson on ingenious spontaneity that can only be cultivated through years and layers of interaction. British jazz guitarist John McLaughlin's effortless strums were in conversation with the impeccable rhythm of tabla exponent Zakir Hussain, as vocalist Shankar Mahadevan seamlessly joined, while violinist Ganesh Rajagopalan and kanjira artiste V. Selvaganesh caught up with vigour.

Today, snippets from this infectious musical dialogue flood social media, as the country revels in the 50-year-old ensemble's win for the Best Global Music Album at the 66th Grammy Awards for their pandemic creation, *This Moment*.

The now-quintet took shape in 1973 as a two-person aspiration towards melding the musical sensibilities of the East and the West. Zakir Hussain, who was then already touring with his father and tabla maestro Ustad Alla Rakha, roped in the British guitarist with a penchant for Indian music and spirituality, John McLaughlin, to actualise this shared dream. They were introduced to



each other by a music shop owner in Greenwich Village, New York. The latter's fusion group Mahavishnu Orchestra – a jazz band with an Indian name – had already disbanded by then. Violinist L. Shankar and ghatam exponent 'Vikku' Vinayakram joined in 1974 to make Shakti a quartet with a unique sound.

Hussain's incomparable command over rhythm met McLaughlin's curiosity to learn the alleyways of Indian classical music despite his well-known prowess over jazz. Vikku's ghatam and Shankar's violin added an unexpected but fitting Carnatic flavour.

They found common ground in the concept of improvisation, and the quest for a global sound, right in the heels of Pandit Ravi Shankar and The Beatles, whose experiments had already put Indian music on the global map by then.

In an interview with *The Hindu* in 2023, Vikku Vinayakram fondly recalled, "Rhythm has been our only mode of communication since we first met." A widely shared video from last

year shows the 80-year-old conversing with his former bandmates Hussain and McLaughlin through a delightful 'konnakol' (a rhythmic rendition of Carnatic percussion syllables). While the 'East meets West' conversation was very much at the core of Shakti's sound, the band also celebrated the differences and similarities of classical music from the north and south of India.

A fresh sound

Five years and three albums later, in 1978, Shakti splintered as the musicians left to pursue personal projects, before regrouping in the late 1990s, with new members and a fresh sound.

This time, McLaughlin and Hussain were joined by U. Shrinivas on mandolin and legendary flautist Pandit Hariprasad Chaurasia on a reunion tour titled 'Remember Shakti'. On the vocals was Shankar as Selvaganesh took over the reins from his father Vikku Vinayakram to wield the ghatam and kanjira.

Following the sudden and tragic loss of Srinivas

in 2014, Shakti once again went silent until early 2020 when two sold-out concerts in India and Singapore led to the ensemble's resurrection on stage. This time around, on the violin was Ganesh Rajagopalan.

After the Grammy win, an ecstatic and emotional Ganesh said, "We want to thank John ji and Zakir bhai for the 50 years of hard work. We are just piggybacking." Selvaganesh added, "Without them, we are not here."

Hussain won two more Grammys, sharpening India's presence at this year's event further: one for best global music performance for *Pushto* and the other for best contemporary instrumental album for *As We Speak*, alongside American banjo player Bela Fleck and American bassist Edgar Meyer, featuring Indian flute player Rakesh Chaurasia, nephew of flautist Hariprasad Chaurasia.

This Moment is the band's new studio album in more than 45 years. An inherent sense of playfulness characterises the album. It is nothing but a reflection of their love for varied worlds that make space for each musician's sensibilities and knowledge. Their sound goes beyond what we traditionally refer to as 'fusion' – it is rather, a long-drawn experiment that continues to spring surprises.

So naturally, 50 years on, Shakti's sound still ticks on a global stage. The Grammy stands witness.

Transitioning to hyperlocal extreme weather forecasting

The Department of Agriculture & Farmers Welfare and the Ministry of Agriculture & Farmers Welfare have initiated the weather information network and data system (WINDS) to generate long-term, hyperlocal weather data

Ashish Agarwal

Weather forecasting plays a pivotal role in the country's functioning. Accurately predicting rain, cyclones, heatwaves and drought are critical to inform decision making on disaster management. In India the Indian Meteorology Department (IMD) is the principal government agency in all matters relating to meteorology and it specialises in the incredibly complex science of predicting weather patterns by observing, modelling and interpreting a multitude of variables.

However, in tropical countries like India, weather variability is inherently higher. IMD's forecasts have improved vastly in the last few years as it has upgraded to technologies similar to the ones used by the U.S., the U.K. and Japan, which are known to produce accurate forecasts. Yet, there are still many days and geographies for which Indian forecasts go wrong, especially during winter and summer monsoon.

One of the major hurdles is the lack of weather monitoring ground stations. Currently, IMD operates around 800 automatic weather stations (AWS), 1,500 automatic rain gauges (ARG) and 37 doppler weather radars (DWR). This is against the total requirements of more than 3,00,000 ground stations (AWS/ARG) and around 70 DWRs. It's interesting to note that several In-



dian State governments and private companies operate a significant network of ground stations (more than 20,000), many of which are not currently used by IMD. The factors range from the inaccessibility of the data to their reliability.

Not modern

Currently, most of the prediction software used in forecasting are based on the global forecasting system and weather research and forecasting models, both of which are not the most modern. In contrast, with the government's focus on Make in India, its support to start-ups and the huge public and private investments in the sectors of agriculture and climate, many new age companies are switching to artificial intelligence/machine (AI/ML) learning for more

predictions. At the same time though, these technologies are only as good and verifiable as the data they can access. Thus there is an urgent need for an integrated system to fill these data gaps.

A promising step forward was that recently, the Department of Agriculture & Farmers Welfare and the Ministry of Agriculture & Farmers Welfare have initiated the weather information network and data system (WINDS) to generate long-term, hyper-local weather data. The system will also promote the data for wider applications in agriculture and other sectors, it will help in creating a national-level data base, and it will assist in establishing the protocols required to access the country-wide data by the various public and private concerns. Under this pro-

gramme, more than 200,000 ground stations (AWS and ARG) will be installed, which can help in enhancing weather data utilisation and thus in improving weather predictions and decision making.

In the last month large dense fog blanketed the NCR region, leading to near-zero visibility. This happens mainly because of the high particulate matter and smog in the atmosphere.

Fog can trap the pollutants close to the ground, leading to an increase in respiratory and other health-related issues. Another cause for worry is that in foggy conditions, some pollutants like nitrogen oxides can react with other compounds to form secondary pollutants, thus posing severe health risks, particularly to children and the elderly.

Air quality monitoring systems are currently very expensive and tend to be imported. Thanks to the Make in India initiatives, however, many Indian companies have started to manufacture low-cost and highly reliable sensor-based air quality monitoring systems. These are also easy to install and have low maintenance costs. Thus, it is now possible to install a large number of such instruments quickly, especially in urban areas. The IITs are helping as well as they have started centres of excellence in this domain, with a mission to establish a nation-wide network of affordable air quality sensors. An integrated AI/ML-based model with data from the new air quality and weather sensors will be a major step forward to accurately predict fog as it will help in timely decision making around transportation and the health-related impacts of air pollution.

With the recent advances India is therefore poised towards establishing a world class, robust air quality and weather information network.

Once seamless data sharing and systems integration is achieved, India will have access to a new information gateway and one that is critical to addressing our climate and environmental challenges.

(Sachida Nand Tripathi is Professor, Department of Civil Engineering, IIT Kanpur, and Ashish Agarwal is Founder & Chief Technology Officer, Ingen Technologies)

Serum's HPV vaccine non-inferior to Gardasil: study

R. Prasad

A phase-2/3 trial of Serum Institute of India's human papillomavirus (HPV) vaccine Cervavac conducted at 12 tertiary care hospitals across India in girls and boys aged 9-14 years has found the vaccine to be safe and non-inferior to a comparator vaccine Gardasil manufactured by Merck. The Cervavac vaccine is a quadrivalent vaccine that targets four HPV subtypes - 6, 11, 16, and 18, and was compared with Gardasil vaccine which contains the same four HPV subtypes. The trial was carried out between September 2018 and February 2021. The results were published recently in the journal *The Lancet*.

The trial found that in adolescent girls and boys, two doses of the Serum's Cervavac vaccine generated nearly double the antibody response against HPV subtypes 16 and 18 com-

pared with the response generated with Merck's Gardasil vaccine in young adult women; non-inferiority against HPV types 6 and 11 was also shown in the trial.

While Serum's Cervavac vaccine was administered to boys and girls aged 9-14 years in the intervention arm, the control arm had men and women aged 15-26 years who received the comparator vaccine Gardasil. The intervention arm had 738 girls and 369 boys and received two doses of the Cervavac vaccine, while the control arm had 819 women and 381 men and received three doses of the Gardasil vaccine. The geometric mean titre (GMT) of antibodies against HPV subtypes 6, 11, 16, and 18 generated by the Serum's Cervavac vaccine in girls and boys aged 9-14 years was compared with the geometric mean titre of antibodies generated by Gardasil vaccine in women



Safety slides: Cervavac HPV vaccine was found to be safe and non-inferior to Merck's Gardasil vaccine.

aged 15-26 years.

The effectiveness of the HPV vaccine is generally higher when given to boys and girls at a younger age. A study that compared the effectiveness of HPV vaccine in different age groups found that 17 studies showed the highest vaccine effectiveness in the youngest age group. It found that vaccine effectiveness estimates for younger adolescents aged 9-14 years ranged from 74-93% whereas in adolescents aged 15-18 years, the effectiveness ranged from

12-90%.

"We used immunobridging approach for licensure of Serum's vaccine. This is based on WHO's recommendations for the evaluation of HPV vaccines. Immune responses observed with the new vaccine are compared with those obtained in an efficacy proven population. For Gardasil, efficacy is proven in women aged 15-26 years. Therefore, we compared the immune response of our vaccine to the efficacy proven population - women of age 15-26

years. With this approach, efficacy of the licensed vaccine is bridged to the comparator vaccine," Dr Umesh Shaligram, Executive Director - R&D, Serum Institute and a co-author of the paper says in an email to *The Hindu*.

On why the Serum's Cervavac vaccine administered to boys and girls aged 9-14 is compared with Gardasil given to women aged 15-26 years, Dr. Shaligram says: "For [recipients] aged 9-14 years, one has to immunobridge with the efficacy proven population. Therefore, immune responses in 9-14 girls and boys were compared with women aged 15-26 years receiving Gardasil as a primary endpoint, and this bridges efficacy to these age groups also. This is again in accordance with the WHO guidance. We have also compared [the antibody titres] in girls and boys aged 9-14 years who received Cervavac versus

girls aged 9-14 years who were administered Gardasil, as a secondary endpoint."

Explaining further the reason why the immune responses in boys and girls in the 9-14 years age group (intervention arm) are compared with the immune responses in women aged 15-26 years, Dr. Shaligram says: "For HPV vaccines, the principal target group is young adolescents who have not yet become sexually active. Regulatory authorities agreed that it was not feasible to conduct efficacy trials in this young population due to constraints surrounding evaluation of genital sampling and requirement of a very long duration of follow-up." He further adds: "For the Gardasil vaccine too, for 9-14 years, efficacy was extrapolated based on immunobridging to 15-26 years age group. We have followed the same design as per the WHO guidance."

'India, Maldives will sort issues bilaterally'

President Wickremesinghe says he discussed India-Sri Lanka economic and connectivity initiatives with External Affairs Minister S. Jaishankar at the Indian Ocean Conference, New Delhi and Canberra raise concerns about the presence of foreign research vessels in the Indian Ocean Region

Suhasini Haidar
PERTH

India and the Maldives would resolve the issues between them "bilaterally", Sri Lankan President Ranil Wickremesinghe said, emphasising that while Maldives has allowed a Chinese 'research' ship into the Male harbour, no Chinese troops had been allowed in.

Speaking to *The Hindu* on the sidelines of the Indian Ocean Conference, Mr. Wickremesinghe also confirmed Sri Lanka's decision to join the 15-nation ASEAN-led Regional Comprehensive Economic Cooperation (RCEP) agreement that includes China in the free trade zone, a grouping India walked out of in 2019.

The Sri Lankan Presi-



Team work: S. Jaishankar, Ranil Wickremesinghe, Penny Wong and Vivian Balakrishnan at the 7th IOC in Perth on Friday.

dent said he had discussed India-Sri Lanka economic and connectivity initiatives with External Affairs Minister S. Jaishankar, who called on him on Friday evening here, and both sides completed a review of pending programmes as well as Sri Lanka's economic recovery process. Explaining his decision to

apply for RCEP membership, Mr. Wickremesinghe said that Sri Lanka needed to access as many markets as possible.

"India has a vast internal market, but if Sri Lanka has to grow, it has to reach as many external markets as possible. We already have our relationship with India that helps us eco-

nomically as well as the 1998 free trade agreement," Mr. Wickremesinghe said, describing the RCEP as an opportunity to have the "best of two worlds". Asked whether the economic recovery would enable elections in the country, Mr. Wickremesinghe confirmed that Sri Lankan Presidential elections would be held in 2024 itself, while parliamentary elections would be held soon after them.

No mediation

He said neither Delhi nor Male had approached Sri Lanka to mediate between them, as tensions have grown over the return of Indian troops, entry of Chinese vessels, and critical comments made by Maldivian Ministers. Sri Lanka hopes the issues would subside "soon" in the inter-

est of the Indian Ocean Region.

"As a friend and a neighbour, we would like to see them [India and Maldives] sort out their issues soon. I would say, Maldives itself has an [internal] process and the two sides are talking. There is a new government there and I think everyone must give these issues time to be sorted out," Mr. Wickremesinghe said.

The presence of foreign research vessels in the Indian Ocean Region has been a prominent concern at the conference, where Dr. Jaishankar referred to "growing anxieties" over "dual purpose agendas" and Australian Foreign Minister Penny Wong spoke about China's "rapid military build-up" in the Indo-Pacific.

Mr. Wickremesinghe did

not respond to a question about whether pressure from India had led to Sri Lanka's one year moratorium on foreign research ships docking in Sri Lankan ports. However, he clarified that regular port calls for fuel and food replenishment as well as naval exercises would continue as normal, including from China. This month, the Lankan Navy accorded India's *INS Karanj* a ceremonial welcome at the Colombo port as a part of such exchanges.

The Sri Lankan President's words came even as the Maldives indicated that it has reached an agreement with India on the issue of the Indian troops stationed on southern atolls.

(*The Hindu* correspondent was an invitee to the Indian Ocean Conference)