

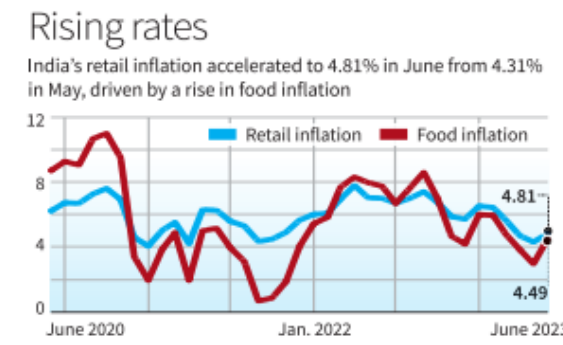
June inflation quickens to 4.8% as food prices climb

Food price inflation quickens to 4.5% from less than 3% in the previous month due to rising costs of items such as cereals, pulses and tomatoes; Retail inflation below RBI's upper threshold limit

Vikas Dhoot
NEW DELHI

Retail inflation hardened in June to a three-month high of 4.81%, from May's 4.31%, driven by a spike in food price gains due to the rising costs of items like cereals, pulses, milk and tomatoes. Food price inflation quickened to 4.5%, from less than 3% in the previous month.

While June's pace of consumer price gains snapped a four-month streak of moderation from the 6.5% uptick logged in January, urban consumers faced almost 5% inflation last month with food price inflation almost doubling in pace from May's 2.4% to 4.3%.



June was the fourth month in a row that retail inflation stayed below the Reserve Bank of India's (RBI's) upper tolerance threshold of 6%, but economists opine that the ongoing upturn in vegetable prices and the "flooding plus uneven monsoon" situation could exacerbate

food price pressures on headline inflation.

While the RBI is unlikely to release its 'pause' on interest rates at next month's monetary policy review, the inflation trend may further push back the prospect of rate cuts.

"The spike in vegetable prices is set to push retail

Industrial output expands by 5.2%

Industrial output expanded at the fastest pace in three months in May buoyed by infrastructure to grow by 5.2%, compared with April's 4.46%. Power generation snapped a two-month contraction to rise 0.9%. Manufacturing and mining also grew. » PAGE 14

inflation to an uncomfortable 5.3-5.5% in July," said Aditi Nayar, chief economist at ICRA, who sees the vegetable price shock likely causing average Q2 inflation to overshoot the RBI's 5.2% projection.

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Inflation touches 4.8% as food prices climb

Vegetables, in fact, remained in disinflation territory in June but only just, with prices just 0.1% lower than a year earlier, compared with May's disinflation of 8%.

The "tomato shock" would mean vegetable price inflation would resurge sharply this month, while cereals and pulses would also remain under pressure as the area under irrigation was lower so far this year, cautioned Bank of Baroda chief economist Madan Sabnavis.

June's Consumer Price Index surge comes on top of the 7% inflation recorded in the same month last year, when the Consumer Food Price Index had climbed 7.75%.

Despite the high base, cereals recorded an inflation of 12.7% this June, breaking a three-month streak of moderating prices. Spices recorded a sharp 19.2% inflation, while pulses prices rose 10.5%, milk by 8.6% and eggs by 7%.

Edible oil prices, which had shot up after the Russia-Ukraine conflict broke out last year, helped contain the overall food inflation print, recording an 18.1% drop in prices from June 2022 levels.

Among the 22 major States, 13 recorded an inflation rate below the national average of 4.8% in June, but four States recorded 6%-plus inflation, led by Tamil Nadu (6.41%), followed by Uttarakhand (6.32%), Bihar (6.16%) and Haryana (6.1%).

"The path ahead looks grim given the progress of monsoon and the spread across key areas in the Deccan Plateau region," Mr. Sabnavis noted. Crisil chief economist Dharmakirti Joshi underlined that July and August are critical months for agriculture. "We will wait to watch how rains pan out," he concluded.

Chief Minister Stalin inaugurates 3,010 TNUHDB housing tenements across T.N.

These tenements have been constructed in Chengalpattu, Chennai, Dharmapuri, Kanniyakumari, Vellore and Theni districts. The Chief Minister also handed over financial assistance to students living in TNUHDB tenements from the CSR funds of DBS Bank

The Hindu Bureau
CHENNAI

Chief Minister M.K. Stalin on Wednesday virtually inaugurated 3,010 new housing units constructed by the Tamil Nadu Urban Habitat Development Board (TNUHDB) in Chennai and five other districts at a cost of ₹358.15 crore.

These buildings included 410 units constructed as a 14-storey apartment at Santosh Nagar in Chennai after the old TNUHDB houses were pulled down; 150 units constructed

at the same locality in a separate project; and 1,044 units constructed at Moolakothalam in Chennai in nine-storey and 11-storey buildings.

Mr. Stalin also inaugurated 480 units constructed as seven-storey buildings at TNUHDB's resettlement site at Perumbakkam in Chengalpattu district. He inaugurated 256 units at two more sites in Chengalpattu district, 304 units in Vellore, 192 units in Dharmapuri, 110 units in Theni, and 64 units in Kanniyakumari. He handed over house allocation orders to five of the 902



Chief Minister M.K. Stalin inaugurating housing units constructed by TNUHDB in Chennai on Wednesday. SPECIAL ARRANGEMENT

beneficiaries selected as of now for the allocation of these houses. A government release said 15,505 housing units, con-

structed at a cost of ₹1,583.41 crore, had so far been inaugurated. Mr. Stalin handed over ₹25,000 each in scholarship to

five students from TNUHDB tenements. This was part of the scholarship offered by DBS Bank to 100 such students under its corporate social responsibility initiative. Minister T.M. Anbarasan; Chief Secretary Shiv Das Meena; Housing Secretary Selvi Apoorva; TNUHDB Managing Director P. Sankar and DBS Bank executive director Bharath Mani were present.

The Chief Minister handed over ₹5.97 crore in incentives to a total of 90 sports persons who secured medals at international and national events.

Kalaigarn Centenary Library to be inaugurated on July 15

The Hindu Bureau
CHENNAI

The Kalaigarn Centenary Library, the six-storeyed state-of-the-art building to be inaugurated in Madurai on July 15, would house nearly 3.3 lakh books and have various amenities and services.

Spread over 2.13 lakh sq.ft., the library, which would be inaugurated by Chief Minister M.K. Stalin, on New Natham Road would serve as a landmark structure in Madurai on the lines of Anna Centenary Library in Chennai.

Officials of the Public Works Department, which is the executing agency of the



Wide range: The library will house nearly 3.3 lakh books and have various amenities and services.

₹150.91-crore project, said the project cost was revised to accommodate additional amenities and furniture. The library would offer reference books,

journals and publications in various sections, including science, history, medicine and technology.

It would house some of the

rare titles and journals like 'Saduragaradhi' first edition published in 1824; about 50 titles brought out by Dravidian leaders and Justice, English newspaper published in London in 1918.

The library would have sections, including book rentals, read your own books, children's section designed with vibrant paintings, one for competitive exams and rare titles and would also have disabled-friendly features.

K.P.Sathyamurthy, Engineer-in-Chief, PWD said the civil structure of the library was constructed in five months with latest construction techniques, including

curing compound that reduced waiting time. The project was completed within 12 months.

The library would house several other amenities, such as art gallery, multi-purpose hall, children's theatre with interactive floors, conference hall with capacity to accommodate 700 persons. Some of the attractive features in the library, include virtual reality experience of operating a flight.

The library has been aesthetically designed to attract readers and even has a large dome with chandelier measuring eight feet in diameter, he said.

Tomato price went up by around 300% in a year in Tamil Nadu

As against its average retail price of ₹25.85 a kg in June last year, tomato was sold at ₹103.6 a kg as on July 5 this year. The price went up by 27% from June to July this year. Officials say it is only a matter of time before the price comes down

T. Ramakrishnan
CHENNAI

Tomato price went up by around 300% in the last one year in Tamil Nadu, topping the list of select essential commodities.

As against its average price of ₹25.85 a kg in the retail market in June last year, tomato was sold at ₹103.6 a kg as on July 5 this year. The price went up by 27% from June to July this year.

Dip in area

Several reasons – fall in production, unseasonal rain and change of crop due to unrewarding price – are cited for the situation.

According to the season and crop report of Tamil Nadu, the area under tomato went down from 44,918 hectares in 2020-21 to 41,455 hectares in 2021-22. Consequently, production declined from around 9.35 lakh tonnes to 8.15 lakh tonnes. To contain the price, the State government has begun selling the vegetable through fair

Fluctuating rates

A comparison of the prices of some essential commodities

Commodity	Price as of July 5, 2023 (in ₹)	Price as of June 28, 2023 (in ₹)	Price as of June 29, 2022 (in ₹)	Price difference compared to the previous month (in %)	Price difference compared to the previous year (in %)
Tomato	103.6	81.65	25.85	26.88	300.77
Tur dal	152.93	152.89	104.15	0.03	46.84
Urad dal	129.2	129.19	109.65	0.01	17.83
Bengal gram	74.87	75.11	73.6	-0.32	1.73
Moong dal	116.13	115.67	102.75	0.4	13.02
Boiled rice (common variety)	39.53	39.69	33.8	-0.4	16.95
Raw rice (common variety)	39	38.81	34.83	0.49	11.97
Groundnut oil (per litre)	216.87	217.11	195.4	-0.11	10.99
Gingelly oil (per litre)	323.87	321.02	256.45	0.89	26.29

Note: The table pertains to average prices of certain commodities in the retail market of Tamil Nadu



B. JOTHI RAMALINGAM

price shops and farm fresh outlets. In the last two days, 30 tonnes of tomato was sold at a subsidised rate through 302 fair price shops and 62 farm fresh outlets. On Wednesday, the quantity sold was 17 tonnes.

An official says many other shops, too, are informally selling tomatoes. In May last year too, there was a perceptible increase in the price of tomato, and it was brought under con-

The government has begun selling the vegetable through fair price shops and farm fresh outlets

trol through similar measures. Pointing out that the prices of vegetables generally go up during May-July every year, a senior policy-maker says the government is planning to boost vegetable production

through a special drive to be launched by the Agriculture Department around January. "Our idea is to avoid next year what we are experiencing now," says the official.

Request to the Centre
Separately, referring to Chief Minister M.K. Stalin's request to Union Food Minister Piyush Goyal for 10,000 tonnes of tur dal a month, the officials say that if the request is ap-

proved, this will be in addition to what is being sold (20,000 tonnes a month to ration cardholders) through fair price shops.

Several other measures are being taken by tapping into the resources under the Price Stabilisation Fund to contain the prices of essential commodities, the officials add, expressing the hope that it is only a matter of time before the price of tomato comes down to its normal level.

Swollen Yamuna poses a danger to many low-lying areas in Delhi

The Hindu Bureau
NEW DELHI

With water level of Yamuna in Delhi hitting a 60-year-high, Chief Minister Arvind Kejriwal on Wednesday urged the Union government to intervene to ensure that the level does not rise further and if possible, release less water from the Hathnikund barrage in Haryana.

The water level of the Yamuna in Delhi rose steadily during the day and was 207.89 metres at 8 p.m. on Wednesday and it is expected to rise to 207.99 metres by 5 a.m. on Thursday, the Central Water Commission said.

Mr. Kejriwal, after a meeting with senior officials, urged people living in low-lying areas close to the Yamuna to evacuate their houses without waiting.

Several low-lying areas in the city close to the river, including Boat Club, Monastery Market, Yamuna Bazaar, Geeta Ghat and the stretch from Majnu Ka Tilla to Wazirabad, have been flooded by river water. Mr. Kejriwal said that there could be back flow from Yamuna to some drains and it could lead to flooding in areas away from the river. The water released from the Hathnikund barrage has come down from 3.59 lakh cusecs on Tuesday (which was the highest this week) to 1.47 lakh cusecs at on



To the rescue: Army personnel rescue flood-affected people who were stuck in the Urban Estate area of Patiala on Tuesday. **ANI**

Wednesday, according to Delhi government data. Water level of the Yamuna in Delhi depends heavily on the amount of water being released from Hathnikund barrage, which is upstream of Delhi.

As on Wednesday evening, most parts of the city were unaffected by the swollen river.

"Currently, the river's embankments have not been broken and only low-lying areas close to the river have been flooded. The government is in the process of evacuating 41,000 people living close to the river. Over 7,000 people were evacuated till Tuesday night. A total of 50 boats have been stationed from Palla to Okhla.

293 people stranded in Lahaul-Spiti district

The Hindu Bureau
CHANDIGARH

At least 293 people were stranded in the Chandertal Lake area in the tribal district of Lahaul-Spiti in Himachal Pradesh, even as torrential rain rained on Wednesday, accelerating the rescue operations. Chief Minister Sukhvinder Singh Sukhu conducted an aerial survey of Sissu, Chandertal and Losar in the tribal Lahaul-Spiti district and Manali region of Kullu district to take stock of the destruction caused

by the relentless rain.

From June 24 to July 11, the State has seen 51 instances of landslips and 32 incidents of flash floods. At least 88 people have lost their lives, while 16 are missing.

Haryana Chief Minister announced a compensation of ₹4 lakh for the families who lost their members in the flash flood.

In Punjab 1,058 villages of 14 districts have been ravaged by the flood fury. During the past 24 hours, three people died, it added.

Welfare schemes may help poor children's brains grow normally

The relationship between brain development and low income is relatively well-established, but the role of anti-poverty policies in this relationship is not. A recent study, based on the brain scans of over 10,000 children aged 9-11, located in 17 U.S. states, filled this gap

Sayantan Datta

In 1844, Friedrich Engels remarked in a book that the "physical effects of the living conditions of the poor had their effects from early life". He had seen scrofula (tuberculosis of the neck), rickets, typhus, cholera, and smallpox as representative of the ways in which poverty is embodied in the bodies of the members of the working classes. In the 1990s, neuroscientists began finding evidence that growing up poor could affect how a young brain develops. Marian Diamond, then a neuroscientist at the University of California, Berkeley, showed that rats that grew up in an "impoverished" environment had "hampered" brain development and learning abilities.

Poverty's affect on the brain

In 2015, three studies reported that human children and young adults growing up in low-income families had lower cortical volume and did relatively poorly in tests for academic performance. The cortex is the outer layer of the brain.

Together with the cortex, one of the 2015 studies focused on another area: the hippocampus. Kimberley Noble, from Columbia University, and her colleagues found that the volume of this deep-seated convoluted structure, widely regarded by scientists as the "seat for learning and memory", correlated positively with a family's socioeconomic status, but not parental income.

Now, a study by researchers from Harvard University and Washington University, published in May 2023 in the journal *Nature Communications*, has demonstrated that children growing up in low-income families indeed risk a smaller hippocampus. The researchers, led by David Weissman, a postdoctoral fellow at the Stress and Development Lab, showed that generous anti-poverty policies substantially lower this risk.

The finding highlights how state-level public policies can potentially address the correlation between brain development and low income.

The study emphasises "how household finances are connected to brain development in children," Akash Gautam, a University of Hyderabad neuroscientist who works on hippocampal development, told *The Hindu*. Children from low-income families might have a smaller hippocampus, which in turn might relate to later "inequities in [their] physical and mental health outcomes."

How was the study conducted?

The relationship between brain development and low income is relatively well-established, but the role of anti-poverty policies in this relationship is not.

The researchers used data from the Adolescent Brain Cognitive Development (ABCD) study, the "largest long-term study of brain development and child health in the United States."

Here, the authors looked at the brain scans of over 10,000 children aged 9-11 years, located in 17 U.S. states. These states had different costs of living and anti-poverty programmes of varying generosity.

The programmes that the authors considered included two cash-assistance



A child carries leftover food from a hotel in Andhra Pradesh's Adilabad town. Studies have reported that children and young adults growing up in low-income families had lower cortical volume and did relatively poorly in tests for academic performance. The Hindu

schemes and Medicaid, a health insurance programme.

The researchers found that the hippocampal volume was indeed larger for participants belonging to families with relatively higher income.

Impaired hippocampal development has been associated with higher risk of psychopathologies, such as major depressive disorder and post-traumatic stress disorder. So the researchers also tested the relationship between family income and the incidence of internalising (e.g. depressive disorders, anxiety, etc.) and externalising psychopathologies (e.g. drug abuse, violent behaviour, etc.) in children. They found that family income was "negatively associated" with the incidence of these psychopathologies: higher the family income, lower the incidence of internalising and externalising psychopathologies in the children.

The authors noted that the strengths of these associations varied across the 17 states where the data was available, so they found out whether the costs of living and anti-poverty policies in these states could influence these associations.

"We observed a three-way interaction between family income, cost of living, and generosity of cash assistance programs in predicting hippocampal volume," the paper stated. If one were living in a low-income household in a state with a higher cost of living, and received generous cash benefits, their hippocampal volumes were, on average, 34% larger than those who lived in low-income households in states with a relatively higher cost of living and lower cash benefits.

Similarly, the authors found that for children growing up in low-income households, "more generous cash benefits are associated with greater reductions in internalising problems".

So the study found that poverty could shape biological properties, like brain development, and highlighted the role governments and public policy could have in ameliorating the biological effects of poverty.

Did the study have shortcomings?

Poverty is often a symptom of more systematic discrimination. For example, in 2007-2011, American Indians, Alaska Natives, and African-Americans had the highest poverty rates in the U.S. Similarly, in India, communities listed as Scheduled Tribes (STs), Scheduled Castes (SCs) and Other Backward Classes (OBCs) are significantly poorer than those not listed in these categories, according to a recent study.

So, what if the patterns the study uncovered were not due to poverty but due to racism? In an email to *The Hindu*, Dr. Weissman agreed to the possibility, adding that they tried to rule out as many alternative explanations as possible, including racial and ethnic makeup of the sample, using supplemental analyses.

"The results held consistently across these analyses," he said, adding that the results may not be directly applicable in India, because the "macroeconomic conditions in India are very different".

However, Dr. Weissman said that their findings supported something "intuitive" that could be generalisable, "that policies or economic conditions that have a direct influence on a family's financial resources matter for children's brain development."

The study also worked with the ABCD database, which allowed them to sample brain scans only from 17 out of the 50 U.S. states. Rohan Sarkar, a PhD scholar at the Indian Institute of Science Education and Research, Kolkata, said that despite the dataset being broader than in previous studies, the data being limited to 17 states limited the "power of the inference provided".

How can welfare help?

Mr. Sarkar and Dr. Gautam both said that the relationship between socioeconomic status and hippocampal development might not be "so simple". According to Dr. Gautam, while hippocampal size is correlated to cognitive development and the incidence of psychopathologies, a smaller hippocampus wouldn't necessarily indicate that a child will experience significant impairments in



Poverty can shape biological properties, like brain development, and governments could have a role in ameliorating the biological effects of poverty

these areas".

"The brain is a complex and adaptable organ, and compensatory mechanisms can sometimes mitigate these effects," he added. According to the new paper, more generous anti-poverty policies could "amplify or reduce stressors associated with low income". That is, having access to more financial resources could "shield families from experiencing some of the chronic stressors associated with low income that can influence hippocampal development". Finally, "generous" anti-poverty policies don't just increase family income; they can also allow "families to make decisions that lead to a decrease in wages but that also reduce stress, such as working fewer hours," per the new paper.

What is the study's future?

The authors of the current paper worked with data collected in 2017-2018. But according to Dr. Weissman, its youth participants have returned every year, allowing the researchers to study how "policy changes that have occurred since these data were collected... has influenced the trajectories of the youth's mental health and brain development".

The study also illustrated how "investments in social safety net programs" could lower the high cost of "addressing mental health, educational, and economic challenges resulting from socioeconomic disparities in neurodevelopment" tomorrow.

Sayantan Datta (they/them) are a queer-trans freelance science writer, communicator and journalist. They currently work with the feminist multimedia science collective TheLifeScience.com and tweet at @queersprings.

When will Chandrayaan mission start and end?

Arkatapa Basu

The Indian Space Research Organisation (ISRO) is scheduled to launch its Chandrayaan-3 mission at 2.35 pm IST on July 14 from Sriharikota.

The lunar mission is a follow-up to the Chandrayaan-2, launched in September 2019 and which failed to complete the soft landing due to problems with the onboard computer and the propulsion system, and crashed on the moon's surface.

The Chandrayaan-3 mission plans to demonstrate end-to-end capability in safe landing and roving on the lunar surface. It will forego the orbiter from the previous mission but will largely retain the same lander and rover design.

ISRO first announced Chandrayaan-3 in January 2020. Initially slated for 2021, the development and assembling of the spacecraft was delayed due by the COVID-19 pandemic. The second wave of the pandemic caused further delays even though the manufacturing and testing of the propulsion systems were almost done by May 2021.

With the date finally being set on July

The module will take approximately a month to reach the moon from the time of launch. The landing is scheduled for August 23-24 although this may change depending on when the Sun rises over the moon

2023, the spacecraft will be launched onboard the Launch Vehicle Mark 3 (LVM 3) rocket.

Consisting of a separate lander and rover module, the spacecraft is likely to land near the moon's South Pole and operate for one lunar day, equivalent to 14 earth days. Among other things, its lander will have more robust impact legs than its predecessor.

The mission will also follow the same trajectory as Chandrayaan-2, where the propulsion module will orbit earth several times before slingshotting towards the moon. Once within the moon's gravitational pull, the module will lower itself to a 100 x 100 km circular orbit. Then, the lander will detach and descend to the surface.

The module will take approximately a month to reach the moon from the time of launch. The landing is scheduled for August 23-24, although this may change depending on when the Sun rises over the Moon. If there is a delay, ISRO will reschedule the landing for September.

The previous ISRO chairperson K. Sivan has described the descent as "15 minutes of terror".

Once on the lunar surface, the lander, called 'Vikram' (after Vikram Sarabhai), will deploy its four scientific payloads to study the moon's surface temperature and subterranean characteristics. The module has an instrument called 'Spectro-polarimetry of Habitable Planet Earth' (SHAPE), to collect data about the light emitted and reflected by the earth.

The rover, called 'Pragyan', will study the lunar surface using chemical and visual tests.

What is the National Research Foundation?

How is the body going to be funded? Is the funding too less when compared to the nation's GDP? How is the NRF planning to make research and development easier?

Binay Panda

The story so far:

The Union Cabinet has approved the introduction of the National Research Foundation (NRF) Bill in Parliament, placing once again the debate on science and technology funding in the spotlight.

What is the NRF?

Setting up the NRF was one of the key recommendations of the National Education Policy 2020.

The NRF intends to act as a coordinating agency between researchers, various government bodies and industry, thus bringing industry into the mainstream of research.

In addition to providing research grants to individuals, the NRF plans to seed, grow and facilitate research in India's universities, especially State universities, by funding research infrastructure and researchers.

How will it be funded?

The NRF will operate with a budget of ₹50,000 crore for five years, of which 28% (₹14,000 crore) will be the government's share, and the remaining 72% (₹36,000 crore) will come from the private sector. The NRF draft proposes the government's share to increase eventually to ₹20,000 crore per year. Out of the government's share, ₹4,000 crore will be used from the existing Science and Engineering Research Board's budget, which will be subsumed under the NRF. Therefore, the government has earmarked an additional 10,000 crore over the next five years for the NRF.

However, this increase in the nation's gross domestic expenditure on research and development (GERD) seems too meagre, (less than 2% of GERD) especially if one compares the GDP and the comparative spending in other big economies, such as the U.S. and China. As per the last available statistics (2017-18), India's GERD was ₹1,13,825 crore. While

India's GDP was 7.6 and 5.1 times smaller than that of the U.S and China respectively, India's GERD was nearly 24 times less than both these countries during the same period. And in the last five years, that gap has further widened.

How can the NRF facilitate the "ease of doing science"?

First, the time between applying for a research grant and receiving the money must be minimal, preferably within six months. Although the NRF draft mentions that the peer-review process will be completed within six months, releasing funds may take time, pending financial clearance. Second, all the paperwork must be digitally processed without sending stacks of papers in hard copies to the NRF. Third, all finance-related queries, paperwork, approval, and acceptance need to be between the NRF and the finance department of the university/research institution keeping the scientist free to focus on research.

Fourth, the NRF needs explicit spending guidelines away from the General Financial Rules (GFR) and the government's e-Marketplace (GeM) usage. Scientific research needs independent guidelines for spending money, which provides flexibility while making scientists accountable. Finally, the release of money needs to be timely. Although the NRF draft mentions timely disbursement of funds, a mechanism needs to be in place to facilitate and implement this.

While the participation of the private industry in the NRF is an important and welcome step, it is unclear how the government will raise ₹36,000 crore from the industry. Although the NRF describes a legislative route to facilitate this, a more detailed plan and establishing mechanisms akin to escrow accounts will reassure the scientific community.

What next?

The proposed NRF is largely modelled after the National Science Foundation of the U.S. It borrows some of the best practices from the German, U.K., Swiss, Norwegian, South Korean, and Singapore science agencies. Even if the NRF draft discusses critical thinking, creativity, and bringing innovation to the forefront, it is unclear how the NRF will transparently seed, fund and coordinate research across institutions. The success of NRF will lie in how the government sets rules and implements the same, different from what already exists.

The writer is a professor at JNU, New Delhi.