

EDITORIAL

Use science for betterment of society

In a rapidly changing world where scientific and technological advancements are reshaping societies, the annual celebration of National Day of Science holds immense significance for several reasons. A national celebration commemorating the discovery of Raman Effect is akin to honoring the whole scientific community of our nation. This encourages them to foster their scientific endeavors. Outreach programs organized as part of National Day of Science celebrations help broaden public understanding of various scientific concepts and recent advancements. Various lectures, debates, quizzes, and exhibitions held on this day educate people about the latest scientific advancements and inculcate scientific temper and rational thinking in them. National Science Day serves as a showcase for the latest achievements and initiatives in various scientific fields across India. This fosters national pride and inspires future generations to pursue scientific careers. By celebrating science nationally, India demonstrates its commitment to scientific progress and opens doors for collaborations with international scientific communities. By inspiring future generations to contribute to scientific progress and address global challenges through science, it strengthens the scientific foundation of our nation. Much more than just a commemoration of the historic scientific discovery of Raman Effect, the significance of National Science Day celebration lies in reflecting India's ongoing journey to becoming a global scientific superpower. By honoring the past, celebrating the present, and envisioning the future, it plays a crucial role in shaping India's scientific progress. It is a day that reaffirms the nation's collective aspiration to explore and innovate for a better tomorrow where science and technology are harnessed to create a more equitable, sustainable, and prosperous world for all. This day serves as a reminder of the power of scientific inquiry and innovation in shaping the world we live in today. It not only commemorates a historic achievement but also encourages young minds to explore, question, and contribute to the ever-evolving world of science. Science is all around us. From the alarm clock that wakes us up in the morning to the internet that connects us with the world, everything is driven by scientific advancements. It has played a crucial role in medical discoveries, space exploration, and technological innovations that have made our lives easier and better. Students must develop a scientific temper and curiosity to explore the world around them. Science is not just about textbooks; it is about questioning, experimenting, and finding solutions. Let us take inspiration from great scientists and work towards using science for the betterment of society. On this special occasion, let us pledge to contribute to the world of science by nurturing creativity, innovation, and critical thinking.

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Finding money for 'freebies': BJP faces an uphill task

BY UTTAM GUPTA

The challenge now is not just about delivering on electoral promises but also about balancing an already precarious fiscal equation that could see deficits skyrocket

Having swept the polls in the National Capital Territory (NCT) of Delhi with a clinching 2/3rd majority, Rekha Gupta-led BJP - government faces the daunting challenge of having to find money to fulfil its poll promises. Amongst others, the BJP had promised Rs 2,500 a month to women under Mahila Samridhi Yojana (MSY); Rs 21,000 to pregnant women; LPG cylinders for Rs 500 and free cylinder on Holi and Diwali; a stipend of Rs 1000 a month to SC students pursuing technical and vocational courses; free education for needy students from KG to PG; free travel for students on Delhi Metro; Atal Canteens in Jhuggi Basti clusters providing nutritional meals for Rs 5 only; implementation of Ayushman Bharat scheme and additional cover of Rs 5 lakh for senior citizens. BJP had also vowed to continue all existing schemes such as free electricity and free water (for monthly consumption up to a specified threshold) run by the erstwhile AAP - dispensation under the then Chief Minister, Arvind Kejriwal.

How much will these freebies cost? Let us look at the Mahila Samridhi Yojana (MSY) under

which the party has promised to give cash assistance of Rs 2500 per month to every woman. The number of women above the age of 18 years in Delhi is around 6700,000. @ Rs 2500 per month or Rs 30,000 annually to each woman, giving cash assistance to them all will require Rs 20,100 crore per annum (0.67x30,000). The assistance to pregnant women @Rs 21,000 per woman, taking a total of about 1500,000 pregnant women will cost around Rs 3150 crore annually.

As for subsidy on LPG, take consumption of 4 cylinders (14 kg each) per household (HH) in a year. The current cost of supplying a cylinder is around Rs 1000. For two cylinders (Holi and Diwali) promised to be given free, the subsidy will be Rs 2000 whereas for the other two to be given @ Rs 500 each, the outgo will be Rs 1000. This gives an annual subsidy of Rs 3000 per HH.

The current population of Delhi is 330 lakh. Taking an average of 4 members per HH, we get a total of over 82.5 lakh HHs. Multiplied by Rs 3000 being the subsidy per HH, the annual outgo comes to Rs 2500 crore. Look at free education for needy students from KG to PG. According to the latest data available, around 10 per cent of Delhi's population was considered below the poverty line in 2011-12. On this basis, the number of poor persons comes to 33 lakh (330x0.1). About one-third of this or 11 lakh would be persons in the studying age 4 - 25 years. Taking the average expense of educating a child in India at the bare minimum of Rs 20,000 per annum, the total annual expense on "needy students" in the city would be about

Rs 2200 crore (0.11x20,000). The additional burden of these four promises alone on the Delhi government's budget is Rs 27,950 crore (20,100+3150+2500+2200). Other freebies would bloat this figure by several thousand crore. Let us take the total to be around Rs 30,000 crore.

What is the current state of Delhi's finances?

For the current financial year (FY) 2024-25, the total expenditure of the Delhi government is estimated at Rs 76,000 crore. This includes revenue expenditure (RE) of Rs 61,000 crore and capital expenditure (CE) of Rs 15,000 crore. Against this, the total revenue receipts or RR (tax plus non-tax receipts including transfer from the Central government) is estimated at around Rs 58,000 crore. That leaves a revenue deficit or RD (RR - RE) of Rs 3000 crore. This is disconcerting when seen in the backdrop of Delhi's potential to generate substantial surplus given two fundamental factors working to its advantage.

First, due to its special status of being NCT, three major functions namely law and order, police and land come under the Centre's jurisdiction hence, the latter foots the bill for expenses on those functions. Second, Delhi being a major hub of economic activity, its propensity to garner its tax revenue in terms of higher GST collection besides VAT on petrol and diesel and excise duty and VAT on alcohol (these products are outside the GST regime) is greater.

The RD will increase drastically when we consider the cost of servicing the loans taken by various departments of the Delhi government such



as the Delhi Jal Board (DJB): over Rs 70,000 crore and Delhi Transport Corporation (DTC): Rs 60,000 crore (according to the CAG, these are cumulative losses of DTC as at end of FY 2021-22 and would have ballooned further during the following three FYs till end March 2025).

The liability for servicing those debts is vested entirely in the NCT government and should be reflected in its balance sheet. Look at the fiscal deficit (FD) which is the excess of total receipts over total expenditure. For FY 2024-25, it is estimated at Rs 18,000 crore which is 80 per cent higher than the FD during FY 2023-24 at Rs 10,000 crore. The surge is despite a steep reduction of over 30 per cent in CE from the budget estimate (BE) of Rs 22,000 crore for FY 2023-24 to Rs 15,000 crore for FY 2024-25.

If interest payments on loans taken by DJB and DTC (Rs 130,000 crore plus) which are merely adding to the mountain of debt on the books of those departments year after year

are also included, the FD would be much higher. The situation had come to such a pass that the then CM Atishi had approached the Centre seeking a loan of Rs 10,000 crore from the National Small Savings Fund (NSSF). The precariousness of the state's finances has a lot to do with the galloping freebies and irregularities and mismanagement in running various schemes and overall governance on a monumental scale. During 2024-25, the cost of free electricity and free water alone is estimated to be about Rs 11,000 crore. According to CAG, during 2015-16 and 2021-22, the losses of DTC went up by Rs 35,000 crore and that was due to both free bus rides and mismanagement.

Now, consider the impact of BJP promises. Modi has guaranteed that existing schemes won't be discontinued. So, free electricity/water costing Rs 11,000 crore will stay. Add to this, the fresh guarantees which would be at least about Rs 30,000 crore. This takes the RE from Rs 61,000 crore during FY

2024-25 to Rs 91,000 crore during FY 2025-26 (assuming all other things remain unchanged). The RR is Rs 58,000 crore, we get RD of Rs 33,000 crore - up from Rs 3000 crore budgeted for FY 2024-25.

The incumbent government has also promised to clean Yamuna River, clean the air, renovate/build roads, cleanse the drainage systems, build and renovate hospitals and schools in fact, take up and complete a host of physical and social infrastructure projects needed for ensuring a good quality life for Delhiites. That means even if CE is restored to 2023-24 level Rs 22,000 crore, that won't be enough. Even with this insufficient level, the total expenditure will be Rs 113,000 crore. Minus RR of Rs 58,000 crore, we get FD of Rs 55,000 crore. Put simply, the Centre will have to arrange for at least Rs 55,000 crore to enable the BJP to live up to its promises for Delhi.

(The writer is a policy analyst; views are personal)

India's solar surge: Powering the journey to net zero 2070

BY DISHA SHARMA

India is charting an ambitious course toward Net Zero 2070, with solar energy emerging as the mainstay of its renewable revolution

India's steadfast commitment to achieving Net Zero by 2070 is catalysing a dramatic shift in its energy sector, with solar power emerging as the principal driver of this transformation. Abundant sunlight, rapidly decreasing technology costs, strong government support, and an expanding skilled workforce have combined to place solar energy at the heart of India's renewable strategy. While the country has celebrated significant milestones in solar adoption, it also faces multifaceted challenges

that require innovative policy interventions and strategic foresight to sustain its momentum.

Over the past decade, India has achieved remarkable progress in solar energy. The nation not only met its ambitious renewable targets but exceeded them, with solar power now accounting for over 60 per cent of its renewable energy mix. By 2024, India surpassed the 100 GW milestone, establishing itself as a global leader in solar energy. For example, Rajasthan's solar capacity exceeds 24 GW. Rapid expansion is evident in a 19 per cent increase in solar generation from 2023 to 2024, with solar installations making up over two-thirds of new renewable capacity. India's role in the International Solar Alliance underscores its commitment to global solar collaboration, as the initiative seeks to mobilise over \$1 trillion in investments for developing countries. National agencies, particularly the Solar Energy Corporation of India,

have been vital in driving the development and implementation of solar projects under the National Solar Mission.

Despite these impressive achievements, significant obstacles remain on the path to full solar integration. One major challenge is the limited connection of solar installations to the national grid, with only 16 per cent of capacity currently integrated. This gap restricts the country's ability to fully exploit its vast solar potential. Moreover, there are stark regional disparities in solar development. While states like Rajasthan and Gujarat lead the charge, many eastern and northeastern regions lag behind, resulting in an uneven distribution of renewable resources.

Financial hurdles also pose serious challenges. Although government subsidies help reduce costs, the high initial capital required for large-scale installations, coupled with elevated interest rates and delayed payments,

discourages private investment. Manufacturers struggle with a shortage of competitively priced solar cells, a problem compounded by strict Domestic Content Requirements that strain production capabilities. These financial constraints not only hinder current project deployment but also threaten future expansion in the sector.

Another critical issue is India's heavy reliance on imported components. Despite having a domestic module production capacity of around 11 GW, India still depends on global supply chains for essential items such as polysilicon, wafers, and solar cells. This dependency leaves the country vulnerable to supply chain disruptions, particularly amid geopolitical tensions and trade imbalances, as China continues to dominate global solar manufacturing. Furthermore, the scarcity of critical minerals like cobalt, nickel, and lithium—vital for solar panel production—further complicates efforts to

build a self-sufficient solar industry.

Local challenges add another layer of complexity. Land acquisition for solar projects often faces resistance from local communities and farmers, leading to protests, legal disputes, and, in some cases, violent confrontations. In Rajasthan, disputes over land rights have led to project cancellations, highlighting the need for transparent and inclusive processes that respect local interests and ensure fair compensation. Addressing these local concerns is essential for fostering community support and facilitating smoother project implementation.

To overcome these challenges, India must adopt a multifaceted strategy. Strengthening policy frameworks to provide long-term stability is crucial, as is enhancing inter-state cooperation and ensuring reliable access to energy data for effective monitoring. Public-private partnerships can expand solar adoption in underserved

regions by providing risk mitigation instruments to attract investment. Promoting domestic manufacturing of solar panels and key components will reduce import dependency and bolster energy security. Additionally, investing in workforce development to build a skilled labor pool for solar installation, maintenance, and manufacturing will be vital for sustaining industry growth. By focusing on robust policy support, financial innovation, domestic manufacturing, and community engagement, India can significantly unlock the full potential of its solar resources. With sustained government backing and strategic collaboration between public and private sectors, the nation is well-positioned to lead the global solar revolution.

(The writer is assistant professor IIM Mumbai; views are personal. Inputs from Supriya Kaushik and Asmita Tewari)