Budget 2021 expectations: With integrated SDG interventions, we could exceed development goals despite COVID, says think tank head

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Union Budget 2021 expectations for climate: Talking to Financial Express Online's Bulbul Dhawan, Dr Jai Asundi, Executive Director of think tank CSTEP, shared his views on various domains, their outlook and Budget 2021 expectations for these fields.

Union Budget 2021-22 Expectations: As the announcement of Budget India 2021-22 nears, several expectations from it are also on a rise. The entire year of 2020 was largely dominated by concerns around coronavirus, however, several other areas, like climate, environment and sustainability, energy and power, materials and strategic studies and Artificial Intelligence (AI), also need to be looked at. Talking to Financial Express Online's Bulbul Dhawan, Dr Jai Asundi, Executive Director of think tank CSTEP, shared his views on these vast domains, their outlook and Budget 2021 expectations for these fields.

How did 2020 impact these areas and what new learnings emerged from it?

Although COVID-19 could push over one billion people into extreme poverty by 2030, a recent UN study conducted with the Pardee Center for International Futures, shows that with integrated SDG interventions – in the areas of social protection, governance, green economy and digitalisation – we could still achieve and even exceed the developmental goals.

During the pandemic, we saw both global CO2 emissions and air-pollution levels drop. A co-benefit from reducing pollution levels was the increased output from solar photovoltaics.

Another fallout of the pandemic has been an increase in malnutrition, stunting, and wasting in children across several states in India (National Family Health Survey 5 (2019-2020). However, Karnataka could beat the trend due to strategic policy interventions- many of which relied on digital technologies- to address specific challenges in achieving India's policy goal of reducing all forms of malnutrition by 2030.

The pandemic had an adverse impact on electricity distribution companies (DISCOMs). The companies faced severe cash deficits due to a reduction in their overall revenue. This was primarily due to the shutting down of many industrial and commercial establishments, and the inability of DISCOMs to collect payments through the normal (non-digital) means. The restrictions on movement had brought down manual payment collection drastically.

We witnessed the strength of our grid in terms of its capability to balance the fluctuations in the supply and demand of energy– especially during the sharp variation in electricity demand that occurred on April 5th, when Prime Minister Narendra Modi called for switching off the lights en masse to show the solidarity of the nation in fighting COVID-19. This has immense implications for the future, when an increasing amount of fluctuating and intermittent renewable energy will be added to the grid, as India moves towards becoming a renewable-energy-dominant country.

While the pandemic will go down in history as a metaphorical dark cloud, it also revealed a critical silver lining: with concerted global action, we can achieve our developmental aspirations, and more importantly, do it sustainably.

How India does this is critical. India's strategies—thanks to its diverse demographic and complex socio-economics—will reveal important lessons for other countries grappling with similar problems. It is imperative, therefore, that our strategies are backed by and centred on science.

Instances of attacks on the credibility of science, and miscommunications and fake news seen during the pandemic exposed the gullibility of the common man, and once again demonstrated why we all need to develop a scientific temper, and why policies need to be informed by scientific evidence.

The government's recent initiative towards revising its Science, Technology, and Innovation Policy (STIP 2020) is critical in this regard. The draft policy advocates an open science framework, making science inclusive and connected to society and the economy. Through STIP 2020, India aims to develop a sustainable pathway that includes economic development, social inclusion, and environmental sustainability for an Atmanirbhar Bharat.

What is some of the notable research that has been conducted in these fields?

CSTEP's research spans areas such as Climate, Environment and Sustainability; Energy and Power; Artificial Intelligence for Social Good; Materials and Strategic Applications; and building Computational Tools to support policy decisions.

In 2020, we launched a tool that identifies the most suitable location for setting up a rooftop solar plant, using aerial imagery. Called 'CSTEP's Rooftop Evaluation for Solar Tool' or 'CREST', the tool can help accelerate rooftop solar deployment by providing accurate information on the solar potential of rooftops in Bengaluru.

In line with the National Clean Air Programme announced by the centre in 2017, the Centre for Air Pollution Studies at CSTEP, conducted scientific assessments to develop customised clean air action plans for non-attainment cities. The Bihar State

Pollution Control Board is implementing the clean air action plans designed by CSTEP for Patna, Gaya, and Muzaffarpur. We also conducted a mobile monitoring of pollution levels to identify the air-pollution hotspots in the city of Bengaluru.

The decrease in air-pollution levels during the pandemic is largely attributed to decreased activity in the areas of transport and manufacturing. Transport-related reductions in air pollution observed during the pandemic have strong implications for the electric vehicle (EV) segment. We are working with the state public transport utilities in Karnataka to electrify their fleet by conducting feasibility studies for identifying optimal routes and strategies for deploying electric buses. We have also developed a planning tool to aid electric bus deployment. Further, we have initiated a study with the Bengaluru Electricity Supply Company for integrating rooftop solar with EV charging. We are also working with the electricity distribution companies (DISCOMs) in Karnataka to overcome their persisting financial challenges by reducing aggregate technical and commercial losses.

India's ambitious aspiration of a renewable-energy dominant future is possible with measures like strategic interventions for sector-coupling (for instance, electric vehicles charged using solar power), and by leveraging advanced technologies currently available for energy storage. CSTEP has initiated research on how complementary storage technologies can be deployed to help India achieve this dream. Through the India Energy Transformation Platform (for which CSTEP is the Secretariat), we have identified four areas where technological interventions can help transform India's energy sector by 2050. These are urban space cooling, decentralised energy systems, energy-efficient industrial heating, and technologies for a renewable-energy dominant future.

Accommodating a large amount of renewable energy in the power transmission system requires a strengthening of our power transmission infrastructure. CSTEP recently published the findings of a study that looked at the impact of high amounts of renewable energy on the grid infrastructure and identified the areas where the grid needs to be strengthened and revamped.

What are your views on the impact of lockdown on changes in the environment?

The pandemic has raised many questions on the way we plan our developmental pathways. While it is clear that a low-carbon developmental pathways is the only option to meet our desired quality of life sustainably, arriving at ways in which we can do this requires deep thinking. For instance, considering that this is unlikely to be our last pandemic, how do we plan cities that can accommodate physical distancing?

During the pandemic, more and more people turned to non-motorised modes of transport, such as cycling and walking. However, there was a drastic reduction in people using public transport such as buses and metros. What does ensuring citizens' safety in COVID times entail and how can we ensure that sustainable modes of transport become the norm.

Adapting quickly to digital technologies allowed many businesses to operate as close to normal as possible. This was true even for social sectors such as health,

education, electricity, and agriculture, where the increasing use of technology enabled better outcomes.

The lockdown disrupted the supply chain for deploying renewable-energy technologies, especially solar, drawing attention to the need for indigenous manufacturing to reduce import dependency for solar modules. On the bright side, decreased emissions from transport and industry improved air quality and resulted in increased energy generation from solar power plants because of the reduced dust impingement on panels. The lockdown made us understand how important it is for DISCOMs, regulators, grid operators, and other stakeholders to work in tandem for efficient management of power generation and supply. This lesson will help in managing future crises better. Adapting to digital technologies will be an important step in achieving this goal.

What according to you is the outlook for these areas in the near future?

In the renewables sector, residential consumers are expected to be aggressively targeted in India's future solar power strategies. Storage at distribution and transmission levels will also increasingly become a part of the government's RE deployment plans. For the grid operators and DISCOMs, a faster integration of technology into the billing, monitoring, and other processes will reduce such manual work that can be risky during the pandemic, while ensuring a smooth functioning.

The Ministry of Power's Smart Meter National Program (SMNP – 2009) is gaining significance due to the pandemic.

Stakeholders in the power sector are focusing on operational efficiencies to reduce the financial burdens caused by the pandemic.

The use of power electronics will continue to increase gradually in transmission via FACTS, HVDC; in generation via variable speed turbines; and in consumption via more efficient power converters. Also, extension and expansion of national level 'Security Constrained Economic Dispatch' has made significant reductions in cost of power.

There are glaring gaps in how science is communicated to people and we saw the impact that lack of scientific temper amongst a population can have on battling a global pandemic. It has become critical that we inculcate a 'scientific temper' amongst citizens, which, as our Constitution says, is a fundamental duty of every citizen.

Informed by the pandemic, the Indian government is revising the Science, Technology and Innovation Policy and has aligned it with the Central government's mission of an Atmanirbhar Bharat. The revised policy seeks to build a 'people-centric science, technology and innovation ecosystem' to establish India's technological self-reliance and become one of the world's top three scientific superpowers.

By making science, technology and innovation more accessible through an Open Science Framework, establishing a National STI Observatory, and through a

renewed focus on STI education, the policy hopes to make STI studies more inclusive and connected with both society and economy.

The policy has far-reaching implications for India's developmental aspirations. India needs to develop indigenous capabilities in critical sectors. This policy is a step in the right direction to ensure that India can build the future it aspires for.

The Union Budget 2021 is around the corner. What are you expecting from it for these areas?

The Budget should encourage investments in clean-energy sources and provide adequate Budget allocation to improve the power infrastructure. Adding additional funds in the SRISTI scheme can encourage residential consumers to take up rooftop solar with the help of capital subsidies. It is critical that we encourage the development of indigenous manufacturing capabilities and that government schemes focus on the renewables and electric vehicle components. Incentivising investments in R&D in renewables and storage space will be a welcome step.

The power distribution companies have been traditionally saved from their financial crisis through one-time bail packages. With Ujwal DISCOM Assurance Yojana, the government shifted its focus towards improving the operational efficiency of DISCOMs. However, DISCOMs still have some way to go for meeting the UDAY targets. It is, therefore, critical that our policies continue to strengthen the power distribution segment through appropriate supportive measures.

Renewable Energy is the future of energy, and policies to strengthen energy-storage projects that can ensure flexibility in the grid, are crucial to help manage the supply and demand of power effectively.