

## A 'fab' way to conduct India-Japan tech diplomacy

India and Japan, in July 2023, agreed to collaborate on semiconductors in a bid to create a more resilient supply chain for this critical technology and work together for the joint development of the semiconductor ecosystem. The partnership will focus on five areas: 'semiconductor design, manufacturing, equipment research, establishing resilience in the semiconductor supply chain, and talent development', paving the way for government-to-government and industry-to-industry collaborations.

### An alignment of policies

The deal comes in the wake of the rapid expansion in the semiconductor industry, particularly the importance of specialised chips, which has prompted the need for growing the pool of talent available in the industry alongside increasing the number of semiconductor fabrication plants (fabs). The partnership fosters the exchange of technical knowledge, research, and innovation between the Indian and Japanese semiconductor industries, facilitates technology transfer, and enables Tokyo and New Delhi to stay at the forefront of semiconductor advancements.

Both nations have aligned their policies to support semiconductor manufacturing and research. India's "Make in India" initiative and Japan's "Society 5.0" vision share the goal of technological self-reliance and innovation-driven growth. Bilateral agreements have been signed to promote technology transfer, cooperation in semiconductor research, and reciprocal trade in semiconductor-related products.

The collaboration stands as a testament to the power of strategic alliances and technological synergy. Both nations recognise the critical importance of semiconductor technology in driving innovation, economic growth, and national security. Japan, with its advanced semiconductor industry, has long been a global leader in chip manufacturing and research. India



**Harsh V. Pant**

is Vice President - Studies and Foreign Policy at the Observer Research Foundation, New Delhi and Professor of International Relations at King's College London



**Pratinashree Basu**

is an Associate Fellow with the Strategic Studies Programme at the Observer Research Foundation, Kolkata

Their collaboration highlights the power of strategic alliances and technological synergy

has a growing information technology sector and a burgeoning demand for semiconductor products across industries. The convergence of these strengths has laid the foundation for a mutually beneficial collaboration.

Supply chain disruptions and geopolitical tensions, which are of particular significance in the Indo-Pacific region, have underscored the need for diversifying semiconductor supply chains and cross-country collaboration. Joint research initiatives enable the pooling of resources and expertise to tackle complex challenges in semiconductor design, manufacturing processes, and materials science. This collaborative approach accelerates both innovation and the development of cutting-edge solutions. The partnership also emphasises human resource development through skill exchange programmes, workshops, and training.

### The American partnership

India's strength in semiconductor design and packaging offers scope for it to join forces with leaders in the industry. The agreement with Japan follows close on the heels of the charting of a technology partnership for the future between the United States and India which also covers investment, innovation, and workforce development, facilitating the long-term strategic development of complementary semiconductor ecosystems. As part of the agreement with Washington, New Delhi is set to sign an agreement with Georgia Tech University. All this also follows from investments by Micron Technology and Applied Materials to set up a semiconductor unit and a research and development centre.

The India-Japan partnership is poised to play a pivotal role in shaping the global semiconductor landscape. As technology continues to evolve, their collaboration will remain dynamic, addressing new challenges such as semiconductor miniaturisation, AI integration,

and quantum computing. This partnership will also have far-reaching implications for the global technology ecosystem and the dimensions of geopolitical partnerships in the Indo-Pacific. Coming in the wake of the U.S.'s CHIPS and Science Act of 2022, which places strategic curbs on the expansion of semiconductor manufacturing by countries posing a direct threat to the U.S., including China, the bilateral agreements of both Washington and Tokyo with New Delhi demonstrate the consolidation among like-minded partners in the Indo-Pacific towards critical technologies and the acknowledgment of the same vis-à-vis geostrategic and national security concerns.

In January 2023, Japan and the Netherlands joined the U.S. in restricting exports of semiconductor manufacturing materials required in the making of advanced chips to China. Tighter export controls on China's chip manufacturing ability is among the Joe Biden administration's key diplomatic pursuits in the Indo-Pacific. Although the move is expected to affect the sales of Japanese chip companies which rely on sales to China, Tokyo is on board because of the geopolitical concerns over China's expanding chip-making capabilities. This is also why the partnership with India is significant as a means of diversifying the landscape of the semiconductor industry.

Both agreements indicate the confidence placed in India by the two Quad countries (The Quad has India, Japan, Australia and the U.S.) and also signal the coming of age of India's own capabilities in the development of semiconductors and related technologies. By combining Japan's technological prowess and India's innovation and design capacities, the collaboration on semiconductors paves the way for a future characterised by advanced electronics, enhanced connectivity, and a shared commitment to pushing the boundaries of technological excellence.

## The issue is not about India's GDP, but its JDP

**P**articipating in the debate on the motion of no-confidence in Parliament last week, Union Finance Minister Nirmala Sitharaman waxed eloquent about India's Gross Domestic Product (GDP) growing in double digits, the Indian economy being the world's fastest, and also highlighted glowing reports by foreign institutions such as the International Monetary Fund (IMF) and Morgan Stanley. Former Union Finance Minister P. Chidambaram countered Ms. Sitharaman by pointing out that annual GDP growth under the United Progressive Alliance was higher. Economist-politician Subramanian Swamy too has weighed in about India's abysmal economic performance by giving suggestions, largely outlandish, to improve GDP growth. The whole debate among India's leading economic policymakers has revolved around whose GDP growth was higher (i.e. the National Democratic Alliance or the UPA), or what must be done to achieve higher growth. But no one has really asked the question, whose GDP growth is it in the first place?

### The issue is job potential

If India's economy is growing so rapidly, then why is the demand for minimum wage work under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) scheme also growing so fast? After all, only those who have absolutely no alternative sources of income will ask to toil in the sun the whole day for bare minimum wages. Ever since the Narendra Modi government took office, India's real GDP has grown 5.3% (annualised), but demand for MGNREGA work also grew at 5.4% every year. That is, when India was apparently the fastest growing economy in the world, more and more people were also clamouring for MGNREGA work. If the economy is doing well, it should be creating many jobs, which should then lower the demand for minimum wage MGNREGA work. MGNREGA demand should be inversely proportional to economic growth.

Clearly, there is a big dissonance between GDP growth and its translation into actual jobs and incomes for people.

Further, even the jobs that are being created tend to exacerbate India's social fissures. People from higher castes constitute nearly three quarters of the formal service sector jobs that GDP growth produces while 80% of workers under the MGNREGA programme are from the oppressed castes of Dalits, tribals and backward castes.

Analysis of data from the Reserve Bank of India shows that in the decade 1980 to 1990, every percentage point of GDP growth produced two lakh formal jobs. This halved to just one lakh jobs for every percentage of GDP growth in the 1990s,



**Praveen Chakravarty**  
is a senior office-bearer of the Congress party

Political leaders need to question whether headline grabbing GDP numbers actually ensure true economic prosperity to all

and halved further in every subsequent decade. There is an alarming decline in the number of jobs that are being created with every percentage growth in GDP. This is a function of the poor quality of GDP growth, rapid increase in productivity and extreme automation. To be clear, this phenomenon is not unique to India or the Narendra Modi government, but a global economic problem.

Thus, it is important to focus on the job intensity of economic initiatives rather than merely chase headline GDP growth. For example, there has been much hullabaloo recently about India's foray into semiconductor manufacturing, with a lot of taxpayer money being spent to lure foreign companies to set up factories to make electronic chips. While there may be sound strategic reasons for defence and diplomacy in this initiative, the economic rationale is weak. Semiconductor manufacturing is highly automated and does not produce many jobs, especially for low-skilled workers. The world's largest (contract) electronics manufacturer, Foxconn, nearly doubled its revenues between 2010 and 2020 but its total number of workers remained roughly the same. Traditional manufacturing such as automobile, steel, cement and semiconductors have lost their ability to create as many low-skilled jobs as they did earlier, primarily due to automation. While these economic activities may contribute meaningfully to headline GDP numbers, it matters very little to the millions of Indians who are looking for jobs and incomes.

### The Mines and Minerals Bill, India's future

In this context, the Narendra Modi government's new Mines and Minerals (Development and Regulation) Amendment Bill, 2023, or the MMA Bill, can be a potential booster shot in India's economic arm, if administered properly. The world is in the midst of an inevitable transition to electric mobility. While electronic chips and equipment are key to this transition, the fountainhead for this change are minerals such as lithium, cobalt, graphite and other 'rare earths'. These minerals are the foundation for the whole electric mobility supply chain which countries such as China are pursuing aggressively. China dominates this supply chain through a belligerent geo-economic policy of sourcing, extracting and refining these minerals from various parts of the world. *The Washington Post* reported recently that nearly a trillion dollars worth of a vast wealth of lithium and other minerals have been found in the Hindu Kush mountain range in Nurestan. It is little wonder that China is working closely with the Taliban regime to gain access to this strategic asset.

Various studies have shown that India's topography is very conducive to finding similar

mineral deposits as found in Afghanistan and Western Australia. But India has not explored even 10% of its potential mineral deposits below the earth and has mined even less. With a coastline that is over 7,000 kilometres long, India's potential in finding rich strategic minerals can be even greater through deep sea mining. However, lack of access to latest mining technologies, environmental concerns and previous incidents of labour exploitation in mines have prevented India thus far from exploring this opportunity. The new MMA Bill promises to change that through private sector participation in exploration of strategic minerals including lithium.

More importantly, mining, unlike semiconductor manufacturing, can create large numbers of jobs that are both local and low skilled. It can also be socially more inclusive by absorbing large numbers of people from the oppressed castes (Other Backward Classes, Scheduled Castes and Scheduled Tribes) in the workforce. In the global transition to electric mobility, by exploring India's vast untapped mining potential, there is an opportunity for India to achieve true inclusive economic development and also become a strategic powerhouse in the world through control of critical minerals.

But it is still too early to tell. While the new MMA Bill promises to unlock India's mining potential through the private sector, it lacks details and as always, the devil is in the details. There needs to be strong guardrails against labour exploitation and environmental hazards. But rather than being doe-eyed about initiatives such as 'SemiconIndia' or 'Make in India', the government should be more discerning and critical in its evaluation of where to spend India's limited resources to extract maximum social returns.

### Change the discourse

It is very important for political leaders to change the nation's economic discourse and abandon this blind quest for headline GDP growth. Economists, technocrats and the IMF peddle GDP growth, since it is a convenient measure to compare what they can forecast through excel models on their computers. For political leaders who are entrusted with people's real welfare, it is critical not to fall prey and question whether such headline GDP delivers true economic prosperity to all its people. The Finance Minister has convened a 'chintan shivir' (thought workshop) of all top economic policy officials, apparently to discuss ideas for a high GDP growth rate. Perhaps, more importantly, this *chintan shivir* should ask not what our nation's GDP growth should be, but instead ask what our JDP should be - i.e., Jobs Data Product.