

# Needed: a solar manufacturing strategy

Despite making significant progress in solar power generation, India still relies on China for equipment



SANTOSH MEHROTRA

India has made significant progress in creating capacity for solar energy generation in the last few years. The Prime Minister's emphasis since 2014 has given a new fillip to solar power installation. The unit costs of solar power have fallen, and solar energy has become increasingly competitive with alternative sources of energy. India expanded its solar generation capacity eight times from 2,650 MW on May 26, 2014 to over 20 GW on January 31, 2018, and 28.18 GW on March 31, 2019. The government had an initial target of 20 GW of solar capacity by 2022, which was achieved four years ahead of schedule. In 2015, the target was raised to 100 GW of solar capacity by 2022.

## Relying on imports

This rapid progress should have been made earlier, however. India is energy deficient, yet blessed with plenty of sunlight for most of the year. It should have taken a lead in solar panel manufacture to generate solar energy long ago. Despite the new policy focus on solar plant installation, India is still not a solar panel manufacturer. Just as India has had no overall industrial policy since economic reforms began, there is no real plan in place to ensure solar panel manufacture. The share of all manufacturing in GDP was 16% in 1991; it remained the same in 2017. The solar power potential offers a manufacturing opportunity. The government is a near monopolistic buyer. India is regarded by the global solar industry as one of the most promising markets, but low-cost Chinese imports have undercut its ambitions to develop its own solar technology suppliers. Imports, mostly from China, accounted for 90% of 2017 sales, up from 86% in 2014.

Substituting for imports requires human capabilities, technological capabilities and capital in the form of finance. On the first two capabilities, the supply chain of solar photovoltaic panel manufacturing is as follows: silicon production from sili-



"Low-cost Chinese imports have undercut India's ambitions to develop its own solar technology suppliers." A solar panel being installed on the rooftop of a house in Nada, a village near Mangaluru. ■ AP

cates (sand); production of solar grade silicon ingots; solar wafer manufacturing; and PV module assembly. The capital expenditure and technical know-how needed for these processes decreases from the first item to the last, i.e. silicon production is more capital-intensive than module assembly. Most Indian companies are engaged in only module assembly or wafer manufacturing and module assembly. No Indian company is involved in silicon production, although a few are making strides towards it. According to the Ministry of New and Renewable Energy (2018), India has an annual solar cell manufacturing capacity of about 3 GW while the average annual demand is 20 GW. The shortfall is met by imports of solar panels.

So we may not see domestic players, in the short term at least, replacing imported ones. While the safeguard duty now puts locally made panels on par with imported ones in terms of cost, the domestic sector needs to do a lot more to be effective. For instance, it will have to go down the supply chain and make the input components locally instead of importing them and putting the modules together here. Public procurement is the way forward. The government is still free to call out bids for solar power plants with the requirement that these be made fully in India. This will not violate any World Trade Organization commitment. However, no bids will be received as manufacturing facilities for these do not exist in the country. But

as Ajay Shankar, former Secretary, Department of Industrial Policy and Promotion, argues, if the bids were large enough with supplies spread over years, which gives enough time for a green field investment to be made for manufacturing in India, then bidders will emerge and local manufacturing can begin.

## Lessons from China

China's cost advantage derives from capabilities on three fronts. The first is core competence. The six largest Chinese manufacturers had core technical competence in semiconductor before they turned to manufacturing solar cells at the turn of the century. It takes time for companies to learn and put in action new technologies. When the solar industry in China began to grow, Chinese companies already possessed the know-how. Experts suggest that the human and technical learning curve could be five to 10 years. Indian companies had no learning background in semiconductors when the solar industry in India began to grow from 2011. State governments need to support semiconductor production as part of a determined industrial policy to develop this capacity for the future.

The second source of cost advantage for China comes from government policy. The Chinese government has subsidised land acquisition, raw material, labour and export, among others. None of this is matched by the Indian government. Perhaps even more important is commitment by the government to

procure over the long run – without that the investment in building up the design and manufacturing for each of the four stages of production of solar power equipment would come to nought.

The third is the cost of capital. The cost of debt in India (11%) is highest in the Asia-Pacific region, while in China it is about 5%.

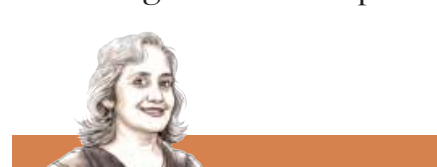
Fifteen years ago, the Chinese could also have remained dependent upon imports from Korea or Germany; they did not. Remaining dependent on imports only leads to short-term benefits for India. A continuation of the current approach means India's energy sector will be in the same condition as its defence industry, where enormous amounts of money have been spent procuring weaponry – so much so that India has been the world's second largest importer of defence equipment for years.

In the solar panel manufacturing sector, the Indian government allows 100% foreign investment as equity and it qualifies for automatic approval. The government is also encouraging foreign investors to set up renewable energy-based power generation projects on build-own-operate basis. But the Chinese government is clearly adopting an aggressive stance while the demand for solar power in India continues to grow, as does the government's commitment to renewables. In 2018, China cut financial support to developers and halted approval for new solar projects. As a result, Chinese producers will cut prices to sustain their manufacturing plant capacity utilisation by sustaining exports to India. In other words, the Chinese strategy is to undercut any planned effort by India to develop the entire supply chain capacity within India so that dependence on imports from China continues. As a counter, India needs a solar manufacturing strategy, perhaps like the Automotive Mission Plan (2006-2016), which is credited with making India one of the largest manufacturers of two-wheelers, three-wheelers, four-wheelers and lorries in the world. This would also be a jobs-generating strategy for an increasingly better educated youth, both rural and urban.

Santosh Mehrotra is Professor of Economics, JNU, New Delhi

# Helping strangers

Only by cultivating a strong sense of citizenship and respect for the rights of all can philanthropy in India grow



RAJNI BAKSHI

After the din of a bitterly contested election, it is easy to forget that society is the foundation on which political parties and the entire edifice of democracy actually stand.

One indicator of the vibrancy of Indian society is the 'Everyday Giving in India Report 2019' which shows that Indians, some of them not even in the middle class, donate a total of about ₹34,000 crore every year to help others, mostly strangers. And according to the World Giving Index of 2018, by the U.K.-based Charities Aid Foundation, India tops the list of countries in the number of people donating money (although it ranks only 89th for participation rates when calculated as a proportion of the population). India is followed by the U.S. and China. However, it is significant to note that 90% of India's 'everyday giving' is to religion and community; only 10% goes to social purpose organisations.

## Increase in everyday giving

The good news of the 'Everyday Giving in India Report 2019', conducted by the Bengaluru-based Sattva, is that over the last 10 years there has been a significant increase in citizen engagement and volunteering – not just the act of giving money. Present-day 'everyday giving' is largely a continuation of a long-standing Indian tradition of citizens giving money to religious and caste-based organisations. India's freedom struggle inaugurated the practice of donating in cash or kind for larger social causes and for the welfare of underprivileged communities without religious or caste considerations. This kind of donation saw some decline immediately after Independence, but has re-emerged over the last few decades. One of the most famous examples of this is Child Rights and You (CRY), an organisation founded in the 1979 by Ripan Kapur, an airline purser who in his spare time sold greeting cards to raise money for disadvantaged children. Over 40 years, CRY has benefited millions of children of all religions, castes and regions, by raising small donations from lakhs of supporters.

With the earning capacity of both Indian residents and the Indian diaspora rising, India's 'everyday giving' has the potential to grow four times in the next 3-5 years, accord-

ing to Sattva.

What drives people to donate? About 74% of respondents in the Sattva survey said they are moved to support a cause that needs urgent attention. Some givers said they felt a sense of affiliation to a cause, whether related to health, environment or education. Half of those surveyed said they went by the recommendations of friends and family.

Among the most common ways of collecting donations are door-to-door collections, telemarketing, payroll giving, crowdfunding, and e-commerce-based giving. All of these are projected to grow strongly.

However, many of the people surveyed said their willingness to engage with social causes was impeded by lack of information on reliable organisations. More significantly, the report says few civil society organisations make citizen engagement the core of their mission; they instead prefer to reach out to large donors (high-net-worth individuals) or international funding agencies.

There is indeed a big role to be played by large-scale philanthropy by the rich.

For instance, the rich can help to plug a part of India's ₹533 lakh crore funding shortfall to meet the targets set by the United Nations Sustainable Development Goals by 2030. But as Chairman of the Mahindra Group, Anand Mahindra, says in this report, the Indian context needs "a billion givers rather than a billion dollars by a single giver".

## Supporting good ideas

This potential of a billion givers can only fully be realised if the giving is connected to cultivating a strong sense of citizenship and respect for the rights of all. At present, NGOs which foster this commitment to citizenship receive a small fraction of everyday giving. Secularised organisations need to reach out much more to engage the everyday giver. At the same time, religious and community-based institutions that are recipients of large-scale everyday giving need to expand beyond welfare programmes directed at their 'own' congregations to include work that cultivates respect for constitutional guarantees – most importantly, the right to dignity for all.

This report is of interest because it highlights the importance of making it easy for large numbers of people to support good ideas, good individuals and good institutions. In a society that appears to be bitterly polarised today, this is important.

Rajni Bakshi is a Mumbai-based writer

## SINGLE FILE

# Language discrimination

It is incredible that India should think of privileging the language of the most recent migrants

PULAPRE BALAKRISHNAN



The first draft of the National Education Policy gathered controversy. This is no disqualification of course, as we should expect some disagreement on how to structure education in so large and diverse a country. Anyhow, the original draft had proposed that school-children learn three languages, namely their mother tongue, English and Hindi when Hindi is not their mother tongue and Hindi, English and a 'modern Indian language' in case their mother tongue is Hindi. This met with opposition from south India's politicians who see in mandatory Hindi a discrimination vis-à-vis the southern States. They are entirely right to protest.

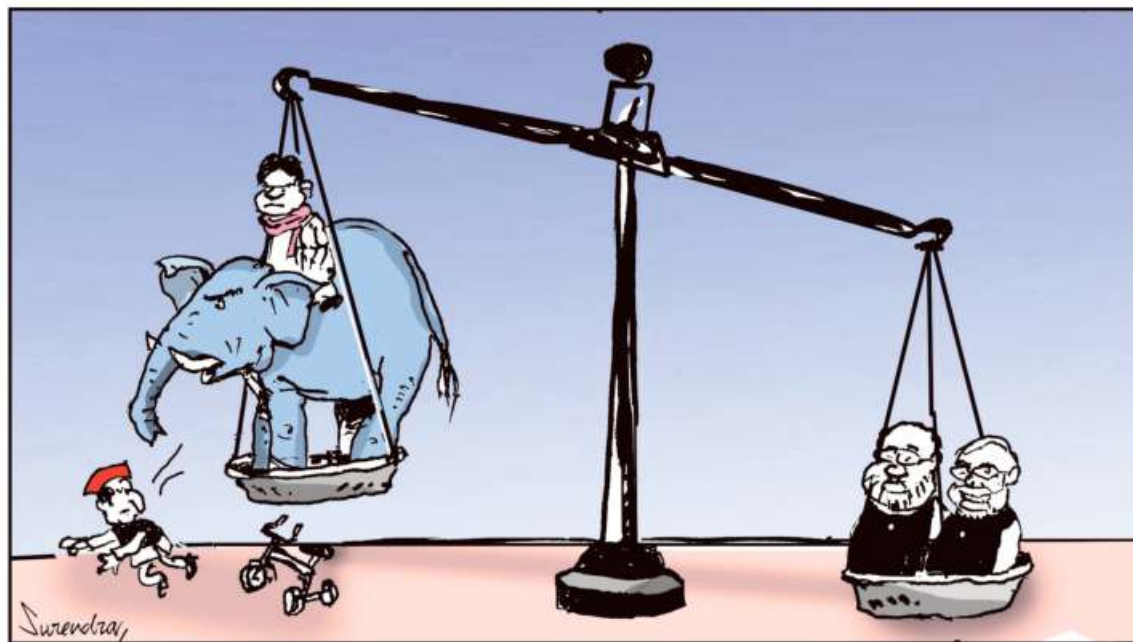
There is no credible basis on which to insist that south Indians learn to speak Hindi while north Indians are exempted from learning a language spoken in the south. The original draft policy had stated that Hindi speakers could study any modern Indian language as their third language, and not necessarily one spoken in south India. It is not difficult to see that this is discriminatory. But to see why it is not credible either we would need to travel further.

Hindi belongs to the family of Indo-European languages. It is only one of the several spoken in India even in this group. Indians also speak languages that belong to the Dravidian family. There are also groups, patronisingly termed 'tribal', which speak languages belonging to neither family, but they are so marginalised that they have little hope of having their voice heard. The contention is thus between those privileging Hindi through its imposition and promotion by the Indian state and speakers of Dravidian languages.

How incredible is this insistence on Hindi may be seen through the light of recent scientific advances. Population genetics combined with DNA evidence points to the role of migration in constituting the Indian stock. The findings from this exercise have been gathered by Tony Joseph in his recent book *Early Indians: The Story of Our Ancestors and Where We Came From*. In chronological order, these migrations may be termed Out of Africa, West Asian including Dravidian, East Asian, and Aryan. 'Aryan' is the self-description of speakers of Indo-European languages.

So, we are all immigrants here, with the Aryans being the most recent. It is incredible that India should even suggest a language policy that privileges the language of the most recent migrant. Unless we believe that majoritarianism would be kosher in a democracy, that is. Had he been alive, an ancestor who had cooled his heels in Vellore Jail during the Quit India Movement is sure to have murmured, "This is not what I had meant at all."

Pulapre Balakrishnan is Professor of Ashoka University, Sonapat and Senior Fellow of IIM Kozhikode



## DATA POINT

# Fallen forts, safe havens

The BJP wave in the 2019 Lok Sabha election breached the "safe seats" of many parties. As many as five seats won by the Congress in the past four elections (1999 to 2014) were won by the BJP in 2019. The Communist Party of India (Marxist) also lost four such seats – two of them to the BJP and the other two to the Congress. However, several other bastions weathered the BJP storm. **By Sumant Sen**

**YET TO CRACK** The table lists the seats which have been won by the same party for the past five elections (1999 to 2019)

Constituency	Party	2019 winner	Constituency	Party	2019 winner
Hyderabad	AIMIM	Asaduddin Owaisi	Satara	NCP	Udayan Bhonsle
Rae Bareilly	INC	Sonia Gandhi	Ponnani	IUML	E.T. Mohammed Basheer
Kallabor	INC	Gaurav Gogoi	Kendrapada	BJD	Anubhav Mohanty
Aska	BJD	Pramila Bisoyi	Jajpur	BJD	Sarmistha Sethi
Mainpuri	SP	Mulayam Singh Yadav	Cuttack	BJD	Bhartruhari Mahtab
Shillong	INC	Vincent Pala	Puri	BJD	Pinaki Misra
Baramati	NCP	Supriya Sule	Chhindwara	INC	Nakul Nath
Nalanda	JD(U)	Kaushlendra Kumar			

Only the top 15 seats with the highest winning vote shares are listed

■ Nakul Nath bagged the lone win (Chhindwara) for the Congress in M.P. His father Kamal Nath had represented the constituency for nine terms

■ AIMIM President Asaduddin Owaisi won Hyderabad for the fourth consecutive term. Prior to 2004, his father Salahuddin Owaisi won every term since 1984

## BREACHED THE GATES

The BJP toppled long-reigning parties in several constituencies. It wrested Tripura East and Tripura West from the CPI(M). It won Kolar, which had been a Congress bastion since 1989. It also won Kannauj, a bastion of Mulayam Singh Yadav and his family. The Congress, which marginally improved its 2014 performance, won Bastar, a BJP stronghold, and Kasaragod and Palakkad, strongholds of the CPI(M)

Constituency	1999 to 2014	2019	2019 loser	2019 winner
Amethi	INC	BJP	Rahul Gandhi	Smriti Irani
Chikkballapur	INC	BJP	M. Veerappa Moily	B.N. Bache Gowda
Kolar	INC	BJP	K.H. Muniyappa	S. Muniswamy
Tripura East	CPI(M)	BJP	Jitendra Chaudhary	Rebati Tripura
Tripura West	CPI(M)	BJP	Sankar Prasad Datta	Pratima Bhoumik
Kasaragod	CPI(M)	INC	K.P. Sathishchandran	Rajmohan Unnithan
Palakkad	CPI(M)	INC	M.B. Rajesh	V.K. Sreekandan
Kannauj	SP	BJP	Dimple Yadav	Subrat Pathak
Bastar	BJP	INC	Baidu Ram Kashyap	Deepak Baij
Guna	INC	BJP	Jyotiraditya Scindia	Krishna Pat Singh Yadav
Bhubaneswar	BJD	BJP	Arup Patnaik	Aparajita Sarangi
Gulbarga	INC	BJP	Mallikarjun Kharge	Dr. Umesh Jadhav
Nowgong	BJP	INC	Rupak Sharma	Pradyut Bordoloi

The table above lists seats which changed hands to either the BJP or the Congress in the 2019 election

Source: ECI, Trivedi Centre for Political Data, Election Atlas of India

## FROM The Hindu. ARCHIVES

FIFTY YEARS AGO JUNE 6, 1969

### PM's poignant meeting with Ghaffar Khan

The Prime Minister Mrs. Indira Gandhi received an unprecedentedly warm welcome from the Afghan Government and people on her arrival here (Kabul) to-day (June 5) on a five-day visit to this country with which India has had the closest ties from the days of the Rig Veda, Buddhist philosophy and the early Islamic influence. Immediately on her arrival here, Mrs. Gandhi called on Khan Abdul Ghaffar Khan. Tens of thousands of students and common people lined the 12 kilometre route from the airport to the Royal guest house cheering her all the way and showering her with rose petals at important road junctions. Even the striking students of the Kabul colleges and schools took some time off from their demonstrations to welcome her as the motorcade passed through the crowded city.

A HUNDRED YEARS AGO JUNE 6, 1919.

### Mysore and War.

The Mysore Blue Book Journal, in giving a record of the part played by Mysore State towards winning the War, refers to the work of the Imperial Service Lancers in Suez Canal zone and in Palestine and to the work of Mysore transport corps, at Sanjaya and that trained horses were supplied to the Imperial Government and the state had recruited 5000 men by the time the armistice was signed. As regards money contributions, the total amount contributed or made available by the Mysore State and the people amounted to over two crores. Among other work, some 19,000 army blankets were supplied up to the 30th September. Special investigations were made by the state mines department in regard to the supply or increase in the output of particular minerals required in the munition making. 150,000 cubic feet of rosewood were supplied by the State to the Gun Carriage factory at Jubbulpore and 30,000 teak metre gauge sleepers for railway construction in Messo-potamia.

## CONCEPTUAL

### Social jet lag

SOCIOLOGY

This refers to the difference in the sleep patterns of people between weekends and weekdays. Social jet lag is seen by many as caused by the modern lifestyle which requires that people operate within a strict time schedule on weekdays unlike on weekends. On weekends, people are generally free to sleep longer and in sync with their body's natural sleep cycle. This frequent change in sleep pattern is considered to be similar to the change in sleep pattern witnessed when people travel across time zones. Researchers believe that such a disrupted sleep pattern can have harmful effects on health.

## MORE ON THE WEB

Rivers in India: a reality check

<http://bit.ly/RiversIndia>