

# HOW INDIA CAN BECOME SELF-RELIANT

Relevant for: Indian Economy | Topic: Issues relating to Planning & Economic Reforms

Addressing the nation on the [COVID-19 pandemic](#), Prime Minister Narendra Modi emphasised the necessity of a [self-reliant India](#). He said the need was brought home by the absence of domestic production of personal protective equipment (PPE) when COVID-19 struck, but India initiated and quickly ramped up PPE production. Mr. Modi said there needs to be improvement in quality and domestic supply chains going forward. If this is to happen though, India will have to make major course changes in development strategies.

Much has changed since the self-reliance model of the Nehruvian era, so a perspective for Indian self-reliance in science and technology (S&T) and industry in a globalised world is long overdue.

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Self-reliance in state-run heavy industries and strategic sectors in the decades following independence had placed India ahead of most developing countries. In the 1970s and 80s, however, India did not modernise these industries to climb higher up the technological ladder. The private sector, which had backed the state-run core sector approach in its Bombay Plan, stayed content with near-monopoly conditions in non-core sectors in a protected market. Little effort was made to modernise light industries or develop contemporary consumer products. India's industrial ecosystem was thus characterised by low productivity, poor quality and low technology, and was globally uncompetitive.

India completely missed out on the 'third industrial revolution' comprising electronic goods, micro-processors, personal computers, mobile phones and decentralised manufacturing and global value chains during the so-called lost decade(s). Today, India is the world's second largest smartphone market. However, it does not make any of these phones itself, and manufactures only a small fraction of solar photovoltaic cells and modules currently used, with ambitious future targets.

At the turn of the millennium, when India embarked on liberalisation, privatisation and globalisation, the very concept of self-reliance was rubbished, in the belief that it was tantamount to reinventing the wheel when advanced technologies could simply be bought from anywhere at lower costs. Two related ideas have prevailed since then, and neither delivered the desired results. The first was that public sector undertakings (PSUs) are, by definition, inefficient and sluggish for the competitive globalised scenario. No effort was made to engender either real autonomy or a transition to new technological directions. Instead, PSUs with capability and scale for the task were undermined or abandoned, along with many nascent research and development (R&D) efforts (for instance, in photovoltaics, semiconductors and advanced materials). On the other hand, the private sector displayed little interest in these heavy industries and showed no appetite for technology upgradation. With entry of foreign corporations, most Indian private companies retreated into technology imports or collaborations. Even today, most R&D in India is conducted by PSUs, and much of the smaller but rising proportion of private sector R&D is by foreign corporations in information technology and biotechnology/pharma. Given the disinclination of most of the private sector towards R&D and high-tech manufacturing, significant government reinvestment in PSUs and R&D is essential for self-reliance.

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The second idea was that inviting foreign direct investment and manufacturing by foreign majors would bring new technologies into India's industrial ecosystem, obviating the need for indigenous efforts towards self-reliance. However, mere setting up of manufacturing facilities in India is no guarantee of absorption of technologies (the ability to independently take them to higher levels). There is no evidence from any sector that this has taken place or has even been attempted. The fact is, foreign majors jealously guard commercially significant or strategic technologies in off-shore manufacturing bases. The key problem of self-reliance is therefore neither external finance nor domestic off-shore manufacturing, but resolute indigenous endeavour including R&D.

Experience and achievements in other countries in Asia attest to this, and also contradict the notion that self-reliance is a hangover from Nehruvian 'socialism'. Learning from Japan's post-war success, countries like South Korea, Taiwan, Singapore and Hong Kong took huge technological and industrial strides in the 1970s and 80s. South Korea, in particular, climbed determinedly up the technology ladder and value chains in electronic goods, consumer durables, automobiles, micro-processors, personal computers and heavy machinery. It emerged as a global powerhouse in manufacturing, but also in indigenously developed technologies. Taiwan developed technologies and manufacturing capacities in robotics and micro-processors, while Singapore and Hong Kong adapted advanced technologies in niche areas. These self-reliant capabilities were enabled, among other factors, by planned state investments in R&D including basic research (3-5% of GDP), technology and policy support to private corporations, infrastructure and, importantly, education and skill development (4-6% of GDP).

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Countries like Thailand, Malaysia, Indonesia and Vietnam have focused on off-shore manufacturing lower down the value chain and without the thrust on self-reliance. This is useful for job creation but is an unsuitable model for a country of India's size and aspirations.

China is, of course, unique in scale and in its determination to become a superpower not just geopolitically but also in self-reliant S&T and industrial capability. China advanced purposefully from low-end mass manufacturing to a dominant role in global supply chains. It has now decided on shifting to advanced manufacturing and has set itself a target of becoming a world leader by 2035 in 5G, supercomputing, Internet of Things, artificial intelligence (AI), autonomous vehicles, biotech/pharma and other technologies of the 'fourth industrial revolution'.

Unfortunately, India may well have missed the bus in many of these technologies in which the U.S., Europe and China have established perhaps insurmountable leads. Yet self-reliant capabilities in electric and fuel cell vehicles, electricity storage systems, solar cells and modules, aircraft including UAVs, AI, robotics and automation, biotech/pharma and others are well within reach.

Large-scale concerted endeavours would, however, be required, since self-reliance will not happen by itself. State-funded R&D, including in basic research, by PSUs and research institutions and universities needs to be scaled-up significantly, well above the dismal 1% of GDP currently. Upgraded and reoriented PSUs would also be crucial given their distinctive place in the ecosystem. Private sector delivery-oriented R&D could also be supported, linked to meaningful participation in manufacturing at appropriate levels of the supply chain.

Finally, India's meagre public expenditure on education needs to be substantially ramped up (as against current trends of privatisation which would only shrink access), including in skill development. No country has achieved self-reliance without mass quality public education. And no country has developed without a much stronger public health system than what we have in

India.

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