NOIDA/DELHI
THE HINDU • MONDAY, NOVEMBER 7, 2016

India can take a leaf out of Sheffield

Disruptive transformation is taking place in the global manufacturing sector. This is led by new technologies that are developing rapidly and spreading through manufacturing hubs all over the world. In this scenario, India has the opportunity to become a key player in advanced manufacturing, provided we are able to reap the technology dividend along with our demographic dividend.

Advanced manufacturing is a broad term that includes new products and new processes. 'Smart' and 'intelligent' manufacturing ecosystems bring together both production and services. The concept applies to high-technology products as well as traditional manufacturing that may now be using more technology-intensive processes.

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For example, additive manufacturing is a process where thin layers of material are deposited in a pattern made by a digital design. Similarly, robotics is veering towards smaller and more complex robots that can operate alongside workers, and automation is rapidly gaining space.

All these forces lead to greater productivity, better asset utilisation, increased flexibility and customer-focus, and better working conditions. In India, high-tech manufacturing and innovation is taking place in various manufacturing hubs such as Pune and Bengaluru. To align with the evolving global knowledge economy, India will need to strengthen these processes.

The U.K. enjoys strengths in design, integration of science and engineering, and integrated automation solutions. — PHOTO: AFP

Low R&D ratio

India's R&D expenditure was estimated at $44 billion in 2014, the eighth largest in the world. Between 2006-07 and 2012-13, patent applications went up by a compound annual growth rate of close to 12 per cent from 137,900 to 269,500. Part of these would have filtered into the advanced manufacturing sectors.

However, we have a low ratio of R&D expenditure to GDP at 0.9 per cent, and this is further skewed by a larger proportion being undertaken by government agencies rather than the private sector. India also lags in the export of high technology manufactured goods, which comprise 8.6 per cent of its total manufactured exports in 2014, although this is double the share in 1990.

Building on its talent pool, India has the requisite capability for advanced manufacturing.

We are looking at greater engagement of the private sector in R&D for advanced manufacturing, and tie-ups with UK companies will be a force multiplier. For this, we must learn from leading players in the world, and the visit of Theresa May, Prime Minister of the United Kingdom (U.K.), with focus on the India-U.K. Tech Summit, which will give shape to India becoming a key player in advanced manufacturing.

India and the U.K. have embarked on a partnership for advanced manufacturing, a key focus outcome of Prime Minister Narendra Modi's visit in November 2015. The year 2016 was announced as the year of Education and Research, and it was decided to jointly take up projects for scientific and technological cooperation.

U.K.'s strengths

The U.K. enjoys strengths relating to design, integration of science and engineering, and integrated automation solutions. India's multiple language skills and software capabilities are also considered strengths. The areas of collaboration identified by lead agencies include automation, next-generation sensors for manufacturing, standards, materials design, and engineering-driven sustainable manufacturing.

The U.K. has recently commenced an initiative to create advanced manufacturing innovation districts which bring together research organisations, enterprises and incubators in urban centres.

The first such district is coming up in Sheffield. If we, in India, consider a similar strategy, the U.K.'s advanced manufacturing research centres could be taken as a model.

To propel advanced manufacturing in alignment with global developments, India would need to also develop the right business ecosystem to promote innovation and entrepreneurship.

(The author is Director General, Confederation of Indian Industry)