Hubs are industry specific. Therefore, it will be prudent to develop hubs in areas where defence laboratories and industrial units are already located. They should become the nucleus around which clusters should be developed by attracting newer enterprises of analogous business interests. It will be unwise either to relocate them or to duplicate the facilities.

Industry hubs are not new to India as well. Coimbatore is a major textile hub with more than 16,000 small, medium and large industries. ‘Jalandhar’ and Ludhiana are equally famous for sports and woolen goods, respectively. India’s thriving auto industry owes its growth to the clustering of automotive and associated sectors, especially in Pune and Chennai. However, the objective of mission ‘Make in India’ is to create a dense network of manufacturing hubs to develop and deploy new manufacturing technologies, to be anchored through collaborative R&D efforts between the industry, academia, government agencies and the end-users.

Prerequisites

However, for an industry hub to be able to deliver, it must have the following essential features:

- Adequate open storage, warehousing and handling facilities to reduce per-business costs.
- Support from investors.
- Generate employment.
- Nurturing technical excellence through focused but broad-based R&D.
- Ensure continuous workforce availability.
- Provide modern storage and transportation facilities.
- Improve visibility of smaller players in getting noticed for their niche competence and get financial support from investors.
- Reduce costs through the co-location of laboratories and test facilities.
- Ensure interdependence with other clusters.
- Every hub must be skill and knowledge specific.

Industry hubs are distinctly different. Unlike industrial-parks / industrial-estates / economic-zones, they are not located in a demarcated area. Industry hubs are clusters of complementary industries that are located in functional geographic proximity. The spread of a hub depends on the nature of industry, availability of area and the infrastructure. Hubs provide the following distinctive advantages:

- Facilitate co-location of system integrators and component manufacturers.
- Provide a fillip to ancillary industries.
- Promote small and medium sized industries through interfacing with large conglomerates.
- Provide favourable environment for innovations and technology upgradations.
- Nurturing technical excellence through focused but competitive R&D efforts.
- Generate employment.
- It is an accepted fact that innovations, both in technology and manufacturing processes, flourish in industry hubs. Concerned over decreasing manufacturing prowess of the US, President Obama, in the State of the Union address of February 2013, proposed the launch of a network of manufacturing hubs to develop and deploy new manufacturing technologies, to be anchored through collaborative R&D efforts between the industry, academia, and government agencies.

Some Suggested Hubs

Indian defence industry is in a nascent stage. It is dominated by nine public sector enterprises (including four shipyards) and thirty-nine ordnance factories. The private sector is a peripheral player. The story of Pune auto hub is educative. It started with the entry of Tata Motors and Bajaj Auto in the 1960s. A number of ancillary units came up to cater for the demands of the auto majors. Arrival of Mercedes-Benz, in a joint venture with the Tatas in the 1990s, marked the emergence of Pune as an attractive destination for the auto industry. Many global auto majors have since established their facilities at Pune, making it earn the epithet ‘Detroit of India’. As expected, auto component industry is also flourishing – there are about 7,000 auto ancillary units. Close to one lakh engineers are working in and around Pune. More investments continue to pour in.

Defence Needs Multiple Hubs

Learning from the success story of the auto industry, the defence industry should also aim at having industry hubs for different weapon systems and technologies. It is best to have all analogous and interdependent industries co-located. In other words, every hub must be skill and knowledge specific.
and Certification, HAL, the colossal that straddles the Indian aerospace sector, has many facilities located in Bangalore. It has already developed a large vendor base and helped the growth of ancillary industries.

**Combat Vehicles Hub.** Chennai is ideally suited for this purpose as it is a major auto hub, accounting for 60 per cent of India’s automotive exports. It houses companies like Ford, Hyundai, Renault, Mitsubishi, Nissan, BMW, Daimler and Datsun. The premier laboratories Combat Vehicles Research and Development Establishment are also located here. In addition, ordnance factories like Engine Factory and Hindustan Motors have their facilities nearby in Avadi.

**Ordnance Factories.** Kanpur and Ordnance Parachute Kanpur, Ordnance Equipment Factory Hazratpur, Kanpur. They include Ordnance Clothing Factory and have facilities nearby in Avadi.

**Missile Technologies Hub.** Hyderabad is the obvious choice for this hub. Defence Research and Development Establishment (DRDE) located in center Imarat are located here. In addition, Bharat Dynamics Ltd, the undisputed leader in the manufacture of anti-tank guided missiles, surface-to-air weapon systems, strategic weapons, launchers, underwater weapons, decoys and test equipment has its factories in Hyderabad. Equally significant is the presence of the BrahMos Integration Complex in Hyderabad. Requirement of super-alloys, titanium and other specialised metals can be sourced locally from Mishra Dhatu Nigam. Other specialised metals can be sourced locally from Mishra Dhatu Nigam.

**Opto-electronics and Electronic Devices Hub.** Due to the favourable climatic conditions and close proximity to Delhi, Dehradun lends itself for this hub. A number of important defence laboratories like Defence Electronics Laboratory and Instruments Research and Development Establishment are located at Dehradun. In addition, Opto Electronics Factory and Ordnance Factories (manufacturer of binoculars, telescopes and night vision devices) have their manufacturing units. Laser Science and Technology Centre and Scientific Analysis Group are located at a short distance at Delhi.

**Communication and Computational Systems Hub.** Bangalore is India’s Silicon Valley and is ideally suited for such a hub. In addition to the presence of a large number of IT companies, two premier research establishments in Centre for Artificial Intelligence and Robotics and Electronics and Radar Development Establishment are located here. BEL has large facilities (radars, electronic warfare systems, electronic countermeasures and tank electronics) in Bangalore which can be seamlessly integrated. Favourable climate will be an added advantage.

**Defence Research Establishment.** A cluster of defence manufacturing units exists in central India around Kanpur. They include Ordnance Clothing Factory Shahjahanpur, Ordnance Equipment Factory Fatehpur, Ordnance Factory Hapur, Ordnance Factory Hazratpur, Ordnance Factories and Ordnance Parachute Factory. The proposed hub can also draw benefit from the Defence Materials and Stores R&D Establishment at Kanpur as well.

The above list is purely indicative in nature. It is neither exhaustive nor inflexible. Many more hubs would be required to cater to other defence products.

The government will have to carry-out a technical **inter se** appraisal of all likely areas for various hubs and identify the ones that yield maximum benefits. In many fields, it may be prudent to have more than one hub in the country.

**The Way Forward.** Unlike other sectors, defence industry requires highly focused and well-considered treatment for four primary reasons. One, initial investments are heavy and gestation periods are long. Two, cutting-edge defence systems suffer from rapid obsolescence, thereby needing sustained R&D. More so as key imported technologies are vulnerable to embargos by foreign governments.

Three, stringent quality control is of paramount importance as defence systems cannot fail in operations. In a way, national defence potential is dependent on the quality of equipment produced. Finally, market is highly restricted.

Generally, government is the sole buyer and budgetary constraints can restrict its purchasing power. Vendors need to have adequate financial cushion to sustain them during the lean period.

A number of steps need to be taken to cater for the above mentioned attributes of the defence sector. In case India wants to develop its defence industrial potential, it has to adopt the route of industrial hubs. They can propel India towards the achievement of the status of a global manufacturing hub through the co-location of multiple system integrators and component suppliers, thereby facilitating synergy of operations and generating competition.

Dismal state of the indigenous defence industry is a matter of serious concern. Fortunately, it has been included in the list of 25 sectors identified for mission ‘Make in India’ to spur industrial growth. This golden opportunity should not be missed at any cost.

Finally, India should not be content with manufacturing prowess only. The litmus test of a nation’s defence industry is its ability to innovate and invest in new technologies and develop new systems. Manufacturing hubs should ultimately graduate into innovation hubs, both at the product and production levels. Achievement of technological excellence should be the key objective.

India can hope to reduce dependence on imports and ensure success of the ambitious ‘Make in India’ mission. A cluster of defence manufacturing units exists in central India around Kanpur. They include Ordnance Clothing Factory Shahjahanpur, Ordnance Equipment Factory Fatehpur, Ordnance Factory Hapur, Ordnance Factory Hazratpur, Ordnance Factories and Ordnance Parachute Factory. The proposed hub can also draw benefit from the Defence Materials and Stores R&D Establishment at Kanpur as well.

The above list is purely indicative in nature. It is neither exhaustive nor inflexible. Many more hubs would be required to cater to other defence products.

The government will have to carry-out a technical **inter se** appraisal of all likely areas for various hubs and identify the ones that yield maximum benefits. In many fields, it may be prudent to have more than one hub in the country.

**The Way Forward.** Unlike other sectors, defence industry requires highly focused and well-considered treatment for four primary reasons. One, initial investments are heavy and gestation periods are long. Two, cutting-edge defence systems suffer from rapid obsolescence, thereby needing sustained R&D. More so as key imported technologies are vulnerable to embargos by foreign governments.

Three, stringent quality control is of paramount importance as defence systems cannot fail in operations. In a way, national defence potential is dependent on the quality of equipment produced. Finally, market is highly restricted.

Generally, government is the sole buyer and budgetary constraints can restrict its purchasing power. Vendors need to have adequate financial cushion to sustain them during the lean period.

A number of steps need to be taken to cater for the above mentioned attributes of the defence sector. In case India wants to develop its defence industrial potential, it has to adopt the route of industrial hubs. They can propel India towards the achievement of the status of a global manufacturing hub through the co-location of multiple system integrators and component suppliers, thereby facilitating synergy of operations and generating competition.

Dismal state of the indigenous defence industry is a matter of serious concern. Fortunately, it has been included in the list of 25 sectors identified for mission ‘Make in India’ to spur industrial growth. This golden opportunity should not be missed at any cost.

Finally, India should not be content with manufacturing prowess only. The litmus test of a nation’s defence industry is its ability to innovate and invest in new technologies and develop new systems. Manufacturing hubs should ultimately graduate into innovation hubs, both at the product and production levels. Achievement of technological excellence should be the key objective.

India can hope to reduce dependence on imports and ensure success of the ambitious ‘Make in India’ mission.