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**News: National Strategy for Additive Manufacturing Policy**

- Recently, the Ministry of Electronics and Information Technology (MeitY) unveiled the National Strategy for Additive Manufacturing Policy.

**National Strategy for Additive Manufacturing Policy**

- The National Strategy for Additive Manufacturing Policy aims to **increase India's share in global additive manufacturing to 5% within the next three years and add USD 1 billion to the gross domestic product.**
- Further, it aims to **develop 50 India specific technologies for material, machine and software, 100 new startups for additive manufacturing, 500 new products and train at least 1 lakh new skilled workers.**
- The Policy postulates the tenets of **'Make in India' and 'Atmanirbhar Bharat Abhiyan'** that advocate self-reliance through the technological transformation of the production paradigm.

## **3D Printing**

- 3D printing is also known as additive manufacturing which uses materials such as plastics and metals to convert products envisaged on computer-aided design to real three-dimensional items.
- 3D printing is the opposite of subtractive manufacturing which is cutting out / hollowing out a piece of metal or plastic with, for instance, a milling machine.

## **Intersection of Technologies**

- Additive Manufacturing is the next generation of digital manufacturing that allows the intersection of computing electronics, imaging and the emerging areas of Artificial Intelligence, pattern recognition and will create intellectual property and export opportunities.

## **Possible Impact**

- Additive Manufacturing (AM) has immense potential to revolutionize India's manufacturing and industrial production landscape through digital processes, communication, imaging, architecture and engineering.
- The next wave of startups will emerge in this area.

## Usage

- 3D printing **traditionally has been used for prototyping**. 3D printing has a lot of **scope in making artificial limbs, stents, dental crowns, parts of automobiles and consumer goods, among others.**

## Opportunities for India

- **Eliminating Large Capital Investments:** Machines are cheaper, inventories can be small and space requirements are not large.
- Thus, jump-starting manufacturing does not face the massive hurdle of large capital requirement and the traditional small and medium enterprises can easily be adapted and retooled towards high technology manufacturing.
- **Leveraging India's IT Power:** The Indian software industry is well-established, and plans to increase connectivity are well underway as part of 'Digital India'.
- This would allow for the creation of additive manufacturing facilities in small towns and foster industrial development outside of major cities.
- **Uniform Quality Standards:** Maintaining uniform product quality is far easier because the entire system is built at the same time and assembly is not required.

## Associated Challenges

- **Lack of Standards:** Since 3D printing is a very niche and new domain, there are no global qualifications and certification norms.
- **Hesitation in Adoption:** Another challenge is to convince the industry and ministries to push for its adoption in their respective sectors as any new technology, which is not understood easily, faces a tough time.
- **Risk of Job Losses:** In the initial meetings on the subject, there was a lot of resistance on whether this technology would eat into the jobs of highly-skilled workers in the medical equipment or aerospace technology sectors.
- **High Costing:** Although actual printing is cheap, parts to build a 3D printer are very expensive as the equipment and manufacturing costs are very high. In addition, there is a concern about warranty hence; resource companies are hesitant to put 3D-printed parts into their machines if they are not covered for damage in case the parts fail.
- **Sector Specific Challenges:** Globally and even in India, the largest consumer of 3D printing is the automotive industry and right now it is going through a lot of changes like the introduction of BS-VI and electric vehicles. New vehicle design development has slowed and so has the demand for 3D printing.

## News: Lake Razzaza

- Iraq's Razzaza Lake was once a tourist attraction known for its beautiful scenery and an abundance of fish that locals depended on. Now, dead fish litter its shores and the once-fertile lands around it have turned into a barren desert.

## Lake Razzaza

- Razzaza Lake, also known as **Lake Milh, Arabic for Salt Lake**, is located **between Iraq's governorates of Anbar and Karbala**.
- It's the **second largest lake in Iraq after Lake Tharthar** and is part of a wide valley that includes the lakes of Habbaniyah, Tharthar and Bahr al-Najaf.
- The lake was constructed as a **measure to control floods in the Euphrates and to be used as a huge reservoir for irrigation purposes**.
- Euphrates River is the **longest river in southwest Asia**. It is one of the two main constituents of the Tigris-Euphrates river system. The river rises in Turkey and flows southeast across Syria and through Iraq.
- Iraqis and tourists frequented the lake as a **recreational spot to cool down during Iraq's hot summers**.
- In recent years, it has been affected not only by the **water shortage but by drought, neglect and increased evaporation during Iraq's hot summers**. It has

also been hit by pollution due to the diversion of sewage water into the lake and the theft of water quotas allocated to it.