RESTART: Rebooting the Economy through Science, Technology and Research Translations

Science and technology have been at the forefront of our fight against Covid-19 in various ways and means to find solutions to challenges thrown towards us. The next big challenge is to re-open and reboot the economy and make use of science and technology for the same in order to ensure a sustainable future.

As the world adjusts to its new normal, business leaders world over are rethinking and devising new strategies to harness technologies that would help drive resilience and make them emerge from the crisis stronger.

The formula of 4Ts needs to be strictly adhered to for the opening up of the economy, that is, **Testing, Tagging, Tracing, and Tracking.** Each one of these involves the use of effective technology. The entire spectrum of economic activities one way or another is dependent on technology.

Rebooting Economy

The need of the hour is to formulate a comprehensive action plan to reboot the economy. Technology and innovation are the foundation on which policies are to be based. These technologies would include medical technologies, advanced technologies, and manufacturing that would prepare India for the post-Covid-19 time.

Self-reliance: In order to mitigate the widespread economic impact due to the present crisis and to prepare for a stronger recovery, **self-reliance** has to be the new mantra.

- There is a need to minimize the dependence on imports and the Indian industry to play a major role in the global supply chain.
- The Indian pharmaceutical industry is the world's third-largest drug producer by volume and the country's market manufactures 60 percent of vaccines globally.
- However, the industry is also heavily dependent on imports of some key ingredients for antibiotics and vitamins from countries like China.
- There is a need to encourage domestic firms to make these key ingredients, known as fermentation-based APIs.
- Recently, the Union Cabinet has approved two schemes, namely the scheme on **Promotion of Bulk Drug Parks and Production Linked Incentive (PLI) Scheme.**

Research and Development: Research needs to be brought closer to the Industry in overcoming the present challenge. The pandemic is a great opportunity for R&D and needs to be used for strengthening it.

- The Covid-19 crisis has unfolded some of the best medical advancements and innovations in history like **drug discovery, vaccines, and diagnostic tools, and other medical devices,** as well as ways to preserve electronic health records.
- **Research needs to quickly switch over from being capital intensive to knowledge-intensive and should be brought closer to industry.**
- The private-public model has encouraged R&D to greater heights. Plausible translations,

prototyping, start-ups, and Industry have seen immense growth.
- Wherever readymade solutions are not available, research and development needs to be more profound, relevant, speedy, impactful, and strongly connected to the industry.

Industries and Advanced Materials: The novel materials such as special-purpose alloys, engineering polymers & blends, graphene, composites, etc. will be the key to revamping the industry's product lines in the future.

- These materials will serve as the cornerstones for new-age technology solutions for complex functional problems.
- Investment in such knowledge-based value-added materials will go a long way in accelerating the economic activities and ensuring an attractive return for the industry.
- We need to empower the industry with knowledge and data.

Digital transformation in Manufacturing: The manufacturing companies are undergoing digital transformation due to the Covid-19 pandemic.

- The pandemic has forced the industries that were sitting on the fence to go for digital transformation, which has brought a tremendous change.
- The world is moving towards **mass customization and mass specialization** today, and technology like 3-D printing plays a major role in it.
- **Additive manufacturing** can change the fundamentals of manufacturing and hence needed to be adapted rapidly.

Additive Manufacturing

- Additive manufacturing, also known as 3D printing, is a transformative approach to industrial production that enables the creation of lighter, stronger parts and systems.
- Additive manufacturing uses data computer-aided-design (CAD) software or 3D object scanners to direct hardware to deposit material, layer upon layer, in precise geometric shapes.
- As its name implies, additive manufacturing adds material to create an object.
- By contrast, when you create an object by traditional means, it is often necessary to remove material through milling, machining, carving, shaping, or other means.

New age technology and 5G: Artificial intelligence (AI), machine learning (ML), the Internet of Things (IoT), and robotic process automation (RPA) are among the technologies that will make **Industrial Revolution 4.0.**

- ITI Aayog has released India's National Strategy for Artificial Intelligence **(NSAI)** in June 2018.
- The **fifth generation of mobile network** communication technology or 5G holds the promise of applications with high social and economic value, leading to a 'hyper-connected society' in which technology will play an even more important role in people's lives.
- **5G will also add a new dimension to the missions like Digital India and Smart Cities.** Many mobile companies are preparing to launch 5G phones in the country.
- The government envisages positioning India as a globally synchronized participant in the design, development, and manufacturing of 5G based technologies, products, and applications.
- A multi-disciplinary high-level forum has been constituted to suggest vision, mission, and goals for 5G India 2020 along with action plan and roadmap.
- The Department of Telecom is supporting research and study in 5G through financial assistance to institutions of national importance for the establishment of an Indigenous 5G Test Bed at IIT Chennai.

Way Forward

Sustain the Efforts: Covid-19 is here to stay for a longer duration, this means that we need to develop long-term mechanisms to sustain our efforts of social distancing and ensuring that crowding does not

occur at any place.

- For factories employing a large number of people, some physical barriers that integrate with the machinery of the factory need to be put in place to ensure social distancing.
- Similar systems will be required for schools and colleges.

Policy Initiatives: One of the reasons that India's response to the pandemic so far has been praiseworthy is that it provided a common purpose and clear direction where all stakeholders came together to achieve a common goal and there was a market for it.

- There is a need to translate this kind of collaboration and direction into well-defined policies.
- Leveraging new-age technologies, appropriate national missions, programs, and schemes to get into quick action.
- Find the weaker areas and ensure the ecosystem to transfer end to end knowledge to the industry.
- Moreover, there is a need for transparent and homogenous regulations in order to ensure the smooth working of the entire industry and research ecosystem.

Cooperate and collaborate: Collaboration and cooperation between industry and academia are most important in this period.

- Increased partnership between govt laboratories and industries with focussed output is something that has come out of this pandemic. This partnership has to get deeper.

Relook FDI policy: A large number of companies will be moving out of china

- Our FDI policy should be such that it incentivizes these industries in terms of power, land, transport, capital, line of credit, etc.

In today's scenario, virtual collaboration is the key to connect globally to fight against the common challenge of Covid-19, and collaboration between countries must continue with much vigour.