

"Innovation in disruptive & emerging tech is important to build new affordable products"

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As has been stated one of the major achievements during this pandemic has been the building of a robust innovation and translation ecosystem for biopharma products specially diagnostics, vaccines and other affordable healthcare interventions. During the initial days of the outbreak, it was unimaginable that in less than 12 months we would be on the verge of having a vaccine ready for use. However, India's scientific community rose to the occasion and delivered.

In conversation with BioSpectrum, Dr Renu Swarup, Former Secretary, Department of Biotechnology, Government of India, New Delhi shares more on this development. Edited excerpts;

What have been some of the unique achievements or highlights during the pandemic within the biotech sector?

2020 was marked by challenges posed by COVID-19. In a year that tested our resilience, we witnessed how science and technology took giant strides to help India as well as the global community to mitigate the impact of the virus. India has been at the forefront of the global fight against COVID-19 to deliver innovative solutions at scale not just for itself, but also the world. The learnings and successes from the year, such as ramping up indigenous testing capacities and collaborating across sectors and communities for innovation and development of vaccines and other interventions for healthcare, have helped us build a stronger ecosystem to fight health crises in the future. S&T interventions to fight the pandemic have been successfully developed and deployed during the two years of this pandemic.

The COVID-19 vaccines have clearly been the major success story which has not only been responsible for saving lives but has also put the country on the Global map. India was one of the few countries to have supported a basket of vaccine candidates - we had different platforms with involvement of different research institutes and industries at different stages of development. Mission COVID Suraksha was announced by the Government as a part of AtmaNirbhar Bharat. What was delivered is a story every citizen of the country is proud of — 3 Made in India Vaccines, the world's largest Immunisation

programme with over 150 crore vaccine doses delivered, the world's first DNA Vaccine. We have another 4-5 vaccines moving rapidly towards approval - the mRNA, Nasal and thermostable vaccine candidates. This has given us a level of confidence that not only is India the world's largest Vaccine Manufacturer, but also a global research player.

Another significant success story was in the diagnostic development. In March 2020, when widespread testing began, India was completely reliant on imported kits. With supply chain disruptions and a global demand for diagnostic kits, it was important for us to develop indigenous capacity for their production. The challenge was taken up by startups and researchers across the country and within 60 days RT-PCR kits were developed. Today we have over 100 indigenously manufactured antibodies, antigen and other novel technology based diagnostics in the market. Not only are we self-reliant but also ready to export. The key innovation was on the development of raw material for this indigenous kit development

As part of the effort to address the shortage of critical healthcare technologies in India and move towards self-sufficiency, the DBT-AMTZ COMManD (COVID Medtech Manufacturing Development) Consortia was set up. Among its successful initiatives was the building of India's first I-Lab (Infectious disease diagnostic lab), a mobile testing facility to conduct COVID-19 testing across

The vibrant startup ecosystem also responded with over 200 solutions. From PPEs to Sanitisers to Ventilators and Patient Monitoring systems, Vaccine carriers, there were a range of such innovations which have been deployed. The year 2020-21 was a challenge but a huge opportunity for startups and for promoting innovation

Amidst the major developments, what are the bottle-necks that are still hindering the process of bio-innovation in India, as compared to the global counterparts?

Innovation is a dynamically evolving process, which requires a continuous development of enabling policies. The last few years have seen a number of policies being brought out which have helped to build a robust innovation ecosystem in the country. We are moving towards becoming a global leader and the pandemic has clearly put India in the spotlight. The effort, now, is to ensure not just scale up of this ecosystem but also sustainability of this ecosystem. The way we have moved from Start up India to Make in India, it is now imperative that we focus on exponential growth and not just incremental changes. Key areas which need special attention are Innovation policies focussing on

- Innovation Investment
- Innovation capacity building —both human resource and infrastructure
- Innovation scale up and validation for deployment
- Innovation through disruptive cutting edge technology.

How do you foresee the growth of the biotech industry in 2022 and beyond?

There is an Ambitious target laid out by the National Biotech Development Strategy 2021 —a \$150 billion Biotech Industry by 2025. We are well poised to achieve this. From Human Resource to Infrastructure there is now a need to map the domestic and global needs, identify gaps, and strengthen the existing framework of Research Institutions, Universities, Incubators and Industries. Knowledge translational clusters and Technology clusters will facilitate seamless movement of ideas from proof of concept to product. Technology management is crucial and critical to enable academic research to move out of laboratories.

To fuel the innovation pipeline continuously, it is imperative that we do not move our focus away from knowledge generation. Innovation in disruptive and emerging technologies is important to build new affordable products. Recent examples in Healthcare of Cell and regenerative medicine, organ culture, genomic markers for precision medicine have been very successful. Similarly, areas of Agriculture technology, climate change and clean energy also need special continued focus for both domestic and global challenges.

India's Bio-Economy is on its way to achieve a \$150-billion target from the current \$70 billion by 2025'. What are your views on the strategies in place to achieve this target?

Our target of the Indian Biotech Sector becoming a \$150 billion Bioeconomy by 2025 and a Global biomanufacturing Hub seems achievable but the COVID actually gives us the confidence that. This may be underestimated. The National Biotech Development Strategy 2021 has a set of key recommendations to achieve this. Primarily the focus has to be on capacity building — both Human Resource and Infrastructure .and also on strengthening the robust translational ecosystem. We have to now focus on Prioritising the target products which would help reduce import substitution and enhance export potential. It is

also important to create biomanufacturing zones which not only connect technical resource centres with translational centres but provide a complete ecosystem for process optimisation and scale up with both forward and backward integration. The National Biopharma Mission of the Department of Biotechnology with World Bank implemented by Biotechnology Industry Research Assistance Council (BIRAC) is one such successful model which needs to be replicated for other areas .The success of our Biopharma sector in its response to the pandemic is also because we had a well laid out foundation and we quickly built on it to meet our needs.

Our systems are in place, our targets have been set, we now have to ensure timely implementation in a collaborative, cohesive manner with complete coordination and collaboration of all stakeholders.

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