Minutes of Meeting of Webinar on "Development of National STI Ecosystem: Role of Public and Private Enterprises"

Date: 14th September, 2021

Time: 3 pm onwards

Organized by

DST-Centre for Policy Research (DST-CPR) at Panjab University, Chandigarh

In Collaboration with

Chandigarh Region Innovation & Knowledge Cluster (CRIKC)

Speaker: Dr. Ranjana Aggarwal, Director, CSIR-National Institute of Science Communication and Policy Research, New Delhi.

A webinar to understand the significance of the National Science Technology (S&T) and Innovation ecosystem for research and development was conducted by DST-CPR on 14th September, 2021. The talk of the webinar aimed at well utilization of Indian heritage and indigenous scientific knowledge, skills and resources to compete globally and integrating them with current scientific infrastructure. Ms. Mamta Bhardwaj (Sr. Scientist C, DST-CPR) did the opening of the webinar while highlighting the objective of this webinar. It will help in adding value to our current products to compete globally in STI. Prof. C. Nirmala (Coordinator, DST-CPR) officially welcomed the keynote speaker Dr. Ranjana Aggarwal, Prof. Manmohan Gupta and all the participants. Prof. Nirmala mentioned that the current R&D and knowledge ecosystem gives lesser inputs for socio-economic development of the country. Therefore, DST-CPR has tapped this thrust area to contribute significantly towards socio-economic development of the country.

Prof. Manmohan Gupta appreciated efforts made by DST-CPR for acting as nodal agency for Public private partnership and as third party: policy makers, who are mandatory to look upon the pros and cons of any verified project proposed by researchers. This is because, for implementation of any project, appropriate feedback from all stakeholders and generating evidence based approaches for effective policy recommendations are indispensable. A first step

towards innovation is to develop effective manpower to understand the need and demand of a problem. Being a part of an academic institution, we should not work in silos and at the cutting edge of the knowledge, the government should support. Lots of innovative ideas are proposed by researchers and academicians, but confusions need to be articulated and focused towards thrust areas. Therefore, there is an imperative need to create the right policy framework and ecosystem for S&T ecosystem and student development. The students need to be channelized and should be trained as providers in the future and not only job seekers.

Dr. Ranjana Aggarwal is currently the Director at CSIR's National Institute of Science Communication & Policy Research, New Delhi. Previously, Dr. Aggarwal has served as Professor of Chemistry and Director of Women's Studies Research Centre at Kurukshetra University. She obtained her BSc, MSc and PhD degrees from Kurukshetra University as well. After carrying out postdoctoral research on erythromycin biosynthesis and Antibody Catalysis at Cambridge University, UK and Trieste University, Italy, respectively, she joined her Alma mater, Kurukshetra University in 1995 to serve as a lecturer. Subsequently, she worked in many well-known Labs such as Cambridge University as a Commonwealth Fellow, Trinity College Dublin, Ireland, Italy, etc. Her research contributions have been recognized in the form of awards, notably Dr Basudev Banerji Memorial Award by the Indian Chemical Society and Prof. S.S. Katiyar Endowment Award by the Indian Science Congress. She is a Visitor's Nominee for Delhi University and Central University, Assam and Chancellor's Nominee for many Haryana State Universities.

Dr. Ranjana Aggarwal dedicated her talk to 'Azadi Ka Amrit Mahotsav' and to Acharya Jagdish Chandra Bose, who was the first Indian in the pre-independence era to acknowledge the

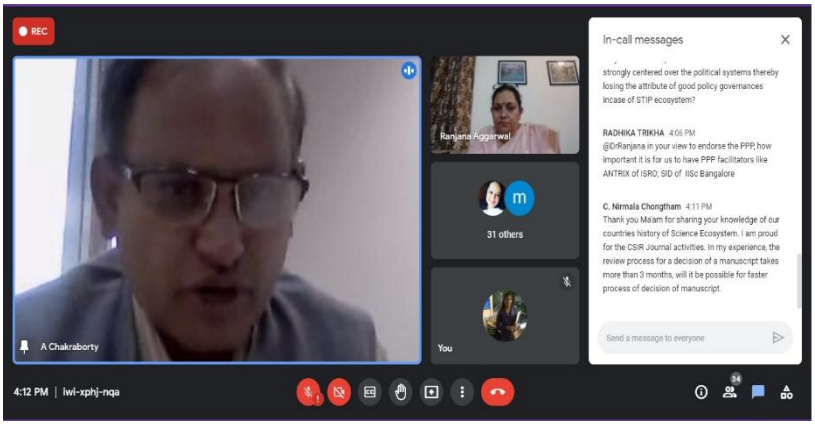
contribution of Indian Science. While highlighting the epitomes of Indian scientific heritage, she mentioned that in ancient India, each member of the community, irrespective of caste, age, religion and region contributed directly and in-directly in S&T. Various examples were demonstrated by her like a dancing girl (bronze sculpture), Aramula Kannadi handmade metal – alloy mirror made by Vishwakarma family, Kallanai Dam and many others. These examples elicited the significance of Indian heritage scientific knowledge in terms of depicting cultural and scientific integrity and role of the states in promoting S&T.

She discussed the following key points during her talk:

- Current Indian R&D has lost a feeling of self-respect in terms of scientific knowledge while giving credits to Britisher's at the expense of exploitation of Indian resources.
- In academic and research institutes, science education was provided to the technicians only to assist the scientists and researchers. Indian association of cultivation of science did not provide an appropriate infrastructure to the scientists to utilize and express their talents and skills. They will give tantra and yantra but not mantras. This means that they will provide you technology but not resources. Inspired by Vivekananda's thoughts, Ratan Tata developed infrastructure for S&T to create the necessary mantra for contributing significantly in R&D of India.
- The institutes built before independence are still leading institutions in the STI ecosystem. Initiatives taken by Tata before independence are still competitive in current digital India and globally as well. Entrepreneurial initiatives in the colonial period are also still contributing significantly in current R&D.
- Rational thinking needs to be inculcated among markets for stimulating S&T drivers in India.
- From 1930-1950s, discoveries related to individual researchers were emphasized, example the success story of Prof. C.V. Raman. From 1950-1970s, emphasis shifted to self-reliance, where India started developing industries. From 1970-1990s, technology denial drives were introduced, in which we created our own series of Param computers, cryogenic engines and development of space research. From 1990-2010 India had started giving competition at global level and from 2010 onwards, India started working towards global development.

- India has a robust S&T system, but when we come to R&D expenditure, the private sector contributes only 36.3 %. Therefore, there is a need to enhance the efficacy of the triple helix model.
- After globalization, competition increases and public components of STI and role of public enterprise and effective implementation of triple helix for appropriate interaction and feedback among government, industry and academia.
- Dr. Ranjana demonstrated the significance of public enterprises in R&D and the role of PPP while citing the example of IISc Bangalore, which is known as the hub of innovation. The contributions made by IKP knowledge park, Hyderabad, Pharmaceutical industries, for example Cipla Company which has provided amenable drugs for medical practices.
- India has established a lead in vaccines for the whole world. Covaxin developed by Bharat biotech and Covishield by ICMR has made ample progress in India and is contributing and competing globally.
- Coordination among various sectors and stakeholders is required to compete globally.
- National Education Policy (NEP) 2020 will be a booster for enhancement of quality education among youngsters.
- Vigyan Pragati, biggest science library and central repository of traditional knowledge is imperative to share knowledge and skills among various stakeholders.

Dr. Ranjana Aggarwal concluded her talk by emphasizing current researchers to take motivation from ancient scientists and Indian scientific heritage to work on STI and create a suitable ecosystem for the same.



Dr. A. Chakraborty, Fmr. Scientist 'H', CSIR-HRDG expresses his thoughts about the Indian STI ecosystem. He mentioned that knowledge comes freely but useful knowledge comes with a price tag. Therefore, we should know and understand where to compete and collaborate. He explained this notion while citing

the World Trade Organization (WTO) in which the price of a particular product varies from country to country due to contributions in STI and R&D. Therefore, we need to break the silos of industry-academia to compete globally in R&D.

Prof. V.K. Rattan, former head University Institute of Chemical Engineering and Technology (U.I.C.E.T), Vice Chancellor, GNA University, Phagwara, Punjab shared his views on the webinar. He said there is a need to sensitize teachers about industry needs and plan their research proposals accordingly. In accordance with this view point, NEP 2020 has given more stress on skill management.

Prof. G.S. Kaint (retired academician from IIT Kanpur) elaborated about the dwindling figures in IIT rankings and the imperative need to focus on the various parameters affecting global ranking of research institutes. Dr. A. Chakraborty expressed his opinions on this issue and recommended the lack of foreign students in IITs as one of the parameter dwindling rankings. Perception of people about the research and academic institute depends on these parameters and should therefore be tapped appropriately. Dr. Kaint also mentioned the normalization of citations of research papers depending on the number of faculty members working in a research institute to have an articulate picture of the ranking paradigm approach.

Prof. C. Nirmala, Coordinator, DST-CPR thanked the speaker for sharing her valuable thoughts on STI ecosystem and further amendments required for enhancing it. She also thanked Dr. A. Chakraborty and Prof. G.S. Kaint for integrating their inputs towards the national STI ecosystem and role of various parameters affecting quality of research institutes.