

## **Minutes of Meeting**

### **Webinar on ‘Scope & Relevance of Industry led Public-Private Partnership’**

**Date: 24<sup>th</sup> June, 2021**

#### **Organized by**

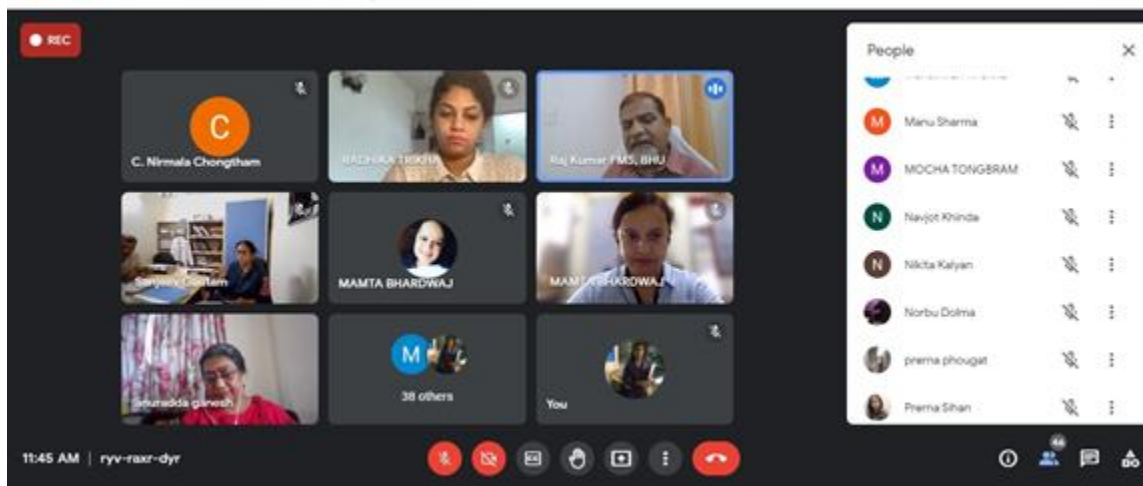
**DST-Centre for Policy Research (CPR) at Panjab University, Chandigarh**

**Speaker: Prof. Anuradda Ganesh, Director & Chief Technical Advisor, CTIPL, Pune**

A webinar to enlighten research scholars, academics, industries, policymakers, students and faculty about the significance of Public Private Partnership (PPPs) and incentives required for industries to collaborate with researchers was conducted by DST-CPR on 24<sup>th</sup> June, 2021. The objective of the webinar was to make participants understand the gaps for industrial partnership with researchers and academicians. The role of management and accounting training, in addition to research training, is imperative to compete in the current research and development (R&D) scenario. Ms. Mamta Bhardwaj (Sr. Scientist C) did the opening of the webinar while highlighting the objective of this webinar. Prof. C. Nirmala (Coordinator, DST-CPR) officially welcomed all the participants and thanked Prof. Raj Kumar, worthy Vice Chancellor, Panjab University, Chandigarh for sparing his valuable time to make significant contributions for this webinar. Prof. Raj Kumar highlighted the significance of PPP models and incentives required to collaborate with the industries. He suggested Panjab University academicians to utilize the clusters, platforms and infrastructure while creating appropriate chains for enhancing efficacy and well utilization of research collaborations, centres and human resources. For instance, he recommended Dr. Manu Sharma, Coordinator, CIIPP, Panjab University, Chandigarh and Technology Enabling Centre (TEC), PU, Chd. can give input about industries to the research centres and expected outcomes from them. It will help facilitate industry channels and

commercialization of research products developed in our host information. He emphasized suitable recognition and commercialization of the research efforts done by the academicians, research scholars and scientists of Panjab University, Chandigarh. He further added that the methodologies adopted to connect our research with industries should be planned in an appropriate manner such that the things should become ever-lasting.

Dr. Manu Sharma, highlighted that the main reasons for the gap between both the fraternity that the technical issues of the industries are not shared with the researchers. Moreover, a complete transparent paradigm of MoUs and technologies valuation are not conducted properly. Therefore, prior art research and prior-discussions with the industries are required from time to time to get desired inputs to conduct required research as per the expectations of industries. The researchers should get a good direction and timelines to conduct their research project while having before-hand brainstorming sessions with industries from time to time.

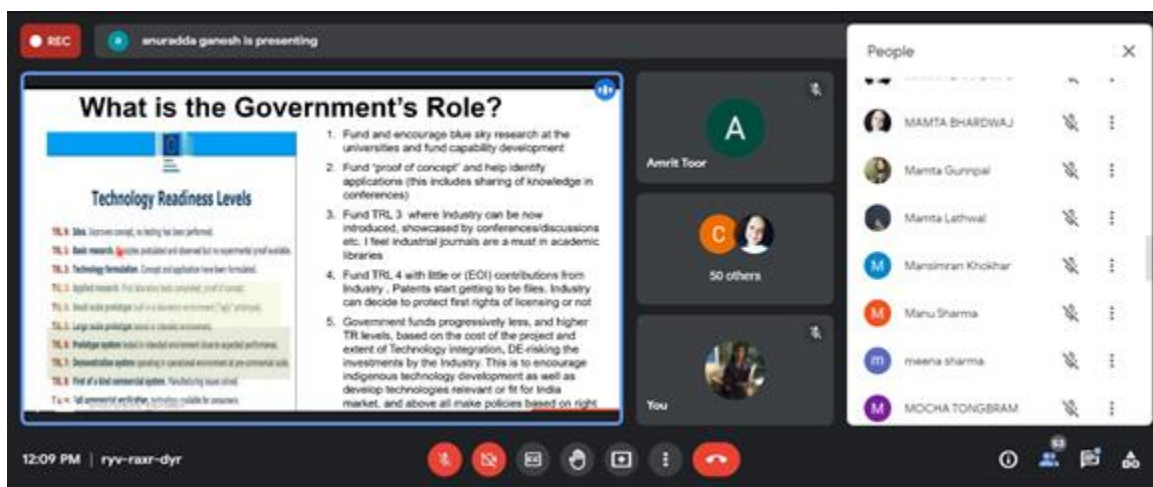


After introductory remarks by Prof. Raj Kumar and Dr. Manu Sharma, Ms. Mamta Bhardwaj introduced the speaker and requested her to share her valuable insights on the theme “Scope & Relevance of Industry led Public-Private Partnership ”. Highlights of the achievements of Prof. Anuradda are:

Prof. Anuradda Ganesh is the Director and Chief Advisor to India CTO at Cummins, India. She advises on the future technology trends, future regulatory policies and R&D and innovation policies and helps Cummins to build strategic technology and product pipelines. She also advises on University and Government collaboration areas and strategic partnerships. She is currently

serving in various National level Committees representing Cummins as Subject Matter Expert. With a Ph.D. in Chemical Engineering, she brings in a unique combination of excellence in academia as well as industry. Prior to joining Cummins, she was heading the Department of Energy Science and Engineering, and was a Professor at IIT Bombay for 25 years. She is a global expert on Biomass and Coal conversion, Alternate fuels and their applications and has contributed to intellectual property with over 60 journal publications with over 2000 citations, and granted patents.

Prof. Anuradha also has established the Centre for Research and Intellectual Entrepreneurship at Cummins College of Engineering for Women, wherein the objective is to inculcate research, innovation and entrepreneurship skills to Faculty as well as the women engineers in the making. She was conferred with the ‘**Best Woman Achiever for Excellence in Area of Expertise**’ for the year 2012 by **The Women Pilot Association**. Amongst other achievements, Ma’am has recently been elected as Fellow of the Indian National Academy of Engineering, (INAE) for this year.



So, Prof. Anuradha Ganesh discussed her various experiences to explain the gaps for Industrial partnership of academic institutes and research organizations. She highlighted following important points during her talk:

- Ø Knowledge, Creation and transfer ecosystem: Role of an experienced and well trained technical expertise team is required before initiating a research project. This is because, 1<sup>st</sup> part is industry and last part is enterprises and intermediates are the researchers who work as

per the guidelines, instructions, demand, expertise and monitoring of the expert committee. The first problem in the current research system is that the knowledge and a research idea is created without consulting enterprises. Moreover, it is not only imperative to have interaction and coordination between the university and enterprises, but also different universities to share knowledge, ideas and work in collaboration to deliver a useful product to society as per need, demand and requirement.



Ø She emphasized on concentrating more on interdisciplinary collaborations and synergistic effects. This is because our education system has a lack of orientation infrastructures for approaching industries.

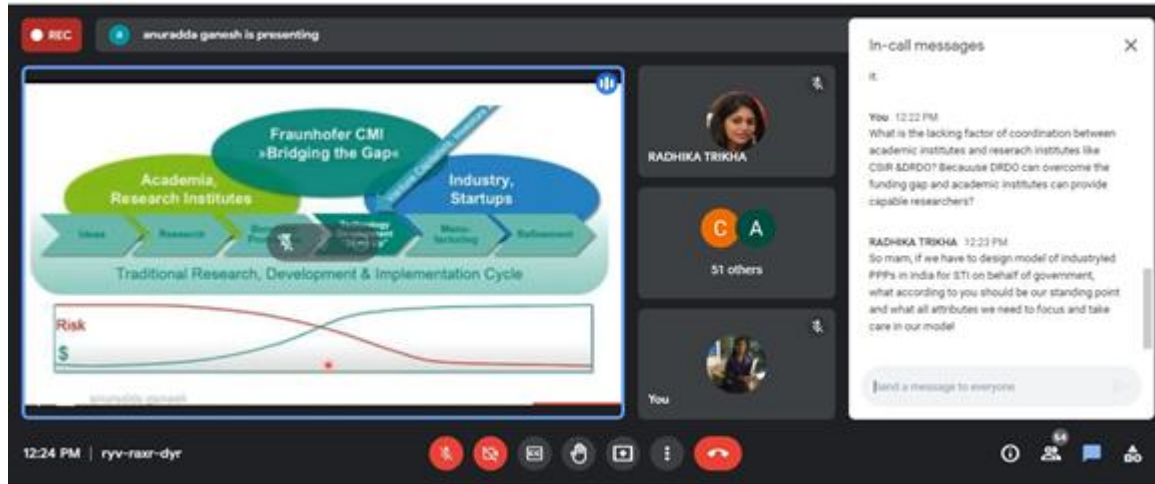
Ø 9 Technology Readiness Levels (TRL) required to overcome the manufacturing issues to make a sustainable technology ready to be commercialized were discussed as:

(i) **TRL 0: Unproven concept, no testing has been performed:** Industries do not find incentives to collaborate with researchers and academicians because a researcher cannot give 100 % guarantee whether the product will be successfully constructed and deliverable on the fixed timeline. Therefore, industries do not prefer risk behavior and hence are less interested to collaborate.

(ii) **TRL 1: Basic research:** Most of the researchers in academic institutes are doing basic research, which inculcates studying effect or basic observations, which can be utilized further for practical applications. A complete product delivery by an academic institute

requires creating appropriate coordination, guidance and necessary infrastructure. Moreover, the funding gap has to be overcome to give better innovative products.

- (iii) **TRL 2: Technology formulation:** Appropriate technical expertise is required to formulate the concept of application among researchers. A research conducted and product fabricated should have shaped it into a useful product form.

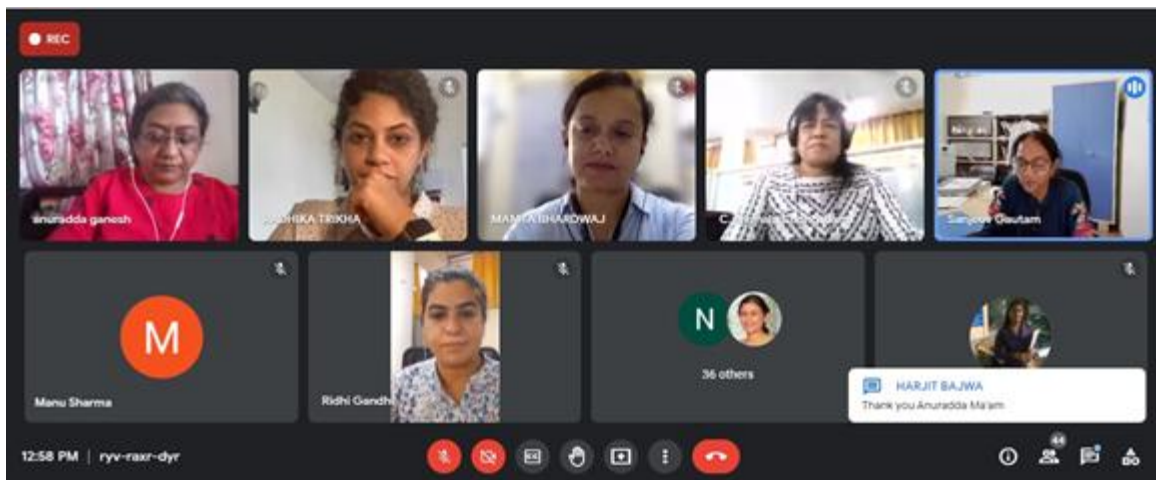


- (iv) **TRL 3: Applied Research:** In this first academicians give thermodynamic limit by providing initial laboratory tests and industrial gives practical limit by testing the laboratory tests and converting them into confirmatory tests.
- (v) **TRL 4: Small scale prototype:** We need industrial experience for proto-typing. For this, researchers and academicians need to have exposure through industrial journals. It will help them to get updates of the current product demand. Conferences and brainstorming sessions should be well utilized to get awareness and exposure to ongoing and proposed researchers in other organizations.
- (vi) **TRL 5: Large scale prototype:** Most of the industries don't want research, they just innovate, therefore the role of capable and efficient technical committee is required to undertake commercialized products. Therefore an intended environment and well established research infrastructure is required for product testing and testing its expected outcome for industrial application and commercialization.

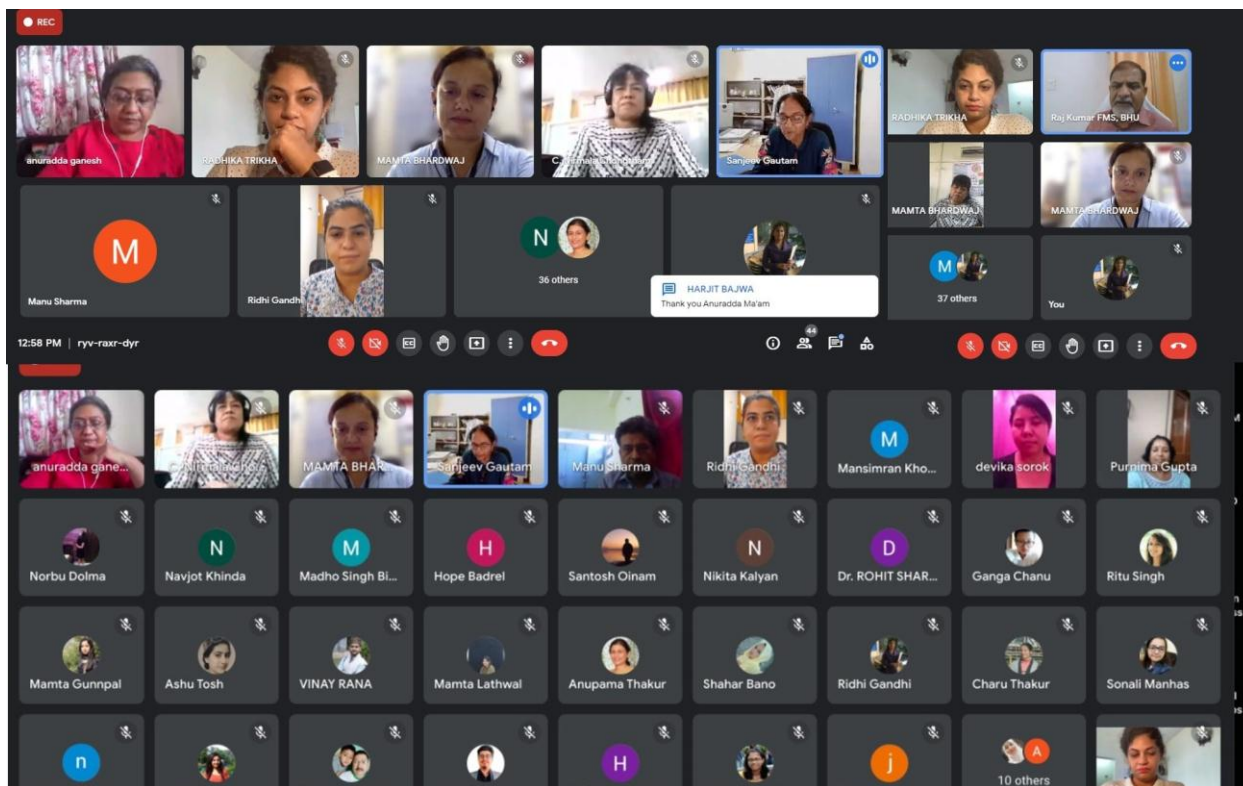
- (vii) **TRL 6: Prototype system:** Industry participation is mandatory in the prototype system and the government should involve industries as a compulsory consortium to collaborate with researchers. This is because a prototype system inculcates testing of the implementation stage of a delivered product.
  - (viii) **TRL 7: Demonstration system:** It involves operating in an operational environment at pre-commercial scale. Industrial expertise and product testing under different environmental conditions into which product is proposed to be commercialized should be done through proper channels and well established coordination. Research and academic institutes provide ample human resources, skilled expertise and research infrastructure for product testing and industrial partners establish marketing linkages, strategies, managing accounting, fair price values and other factors required for product management.
  - (ix) **TRL 8: First of a kind commercial system:** Sorting of manufacturing issues after product development is imperative to make sustainable and technology ready to be commercialized.
  - (x) **TRL 9: Full commercial application:** The last stage of enterprises and reaching the product to the consumers highly depends on the success rate of above mentioned TRLs. This is because the initial stage, intermediate stage and other integrating inputs constituting researchers, government and research organizations, and academic institutes govern the commercialized product implementation and success rate.
- Ø For Atma Nirbhar Bharat, industries should be partnered with researchers and not only asked to collaborate.
- Ø Brainstorming sessions and review from the industries is required from time to time for the efficacy of research work done by academicians and researchers and add value to it.
- Ø Differences between research, small scale project and large scale project should be well understood while proposing for a research project.

- Ø Attending symposiums and conferences with industries should be more emphasized to understand their expectations and demand and research problems should be planned, framed and monitored accordingly.
- Ø Thrust areas of focus should be informed well before meetings with industries. It will help to develop an articulate picture of proposing, presenting and discussing research problems with specific area industries. For instance, in a research institute working in different domains, industry of specific domain and expertise should be interacted with.
- Ø Communication is very imperative not only between universities and industries, but also between different universities, research organizations, top expert teams, accountability and financial sections, etc.
- Ø Department of Scientific and Industrial Research (DSIR) accredited industries and other accreditations incentivize PPP in R&D and hence should be more felicitated.
- Ø Current academic faculties are not trained for project management. They are just trained for research. Special training sessions should be given to the faculty in this regime. It will help in adding value to their research work.
- Ø As per the query by Prof. Manu Sharma regarding the un-utilized prototypes developed by researchers of University by the industries, Prof. Ganesh suggested modifying them while adding appropriate innovation to them. It will help in adding value to the developed prototypes and their utilization further.
- Ø She suggested making a record of the list of the top expert items required for planning of a commercialized based project proposal.
- Ø MSME can be inculcated among consortiums for the consultancy projects, but for incentivizing them, responsibility of accountability should be well maintained.





After completion of the talk, Dr. Radhika Trikha (Senior Policy Fellow, DST-CPR) moderated the question/ answer session. Prof. Amrit Pal Toor, Chairperson, U.I.C.E.T, Panjab University presented an official vote of thanks to the speaker.



Prof. Amrit Pal Toor thanked the speaker for enlightening the audience with the various gaps for technology transfer and lack of transfer of product from lab-to-market. Prof. Amrit Pal Toor also discussed the mutual interest issues of academicians, researchers and industries



that tend to club them to work under a common umbrella. She mentioned that to add value to our research in future, we need to have partnerships with industries. She also expressed the concerns and issues which Prof. Ganesh mentioned need to be acted upon to enable effective PPP for increasing R&D efficiency of our university.

Prof. C. Nirmala thanked the speaker and all the attendees for contributing significantly for this webinar. She also agreed upon the role of industries and technical expert committee in felicitating R&D in academic institutes and adding value to their research while making them capable of industrial applications. She also mentioned the role of collaborations at inter-university and intra-university level to foster growth and development of their research domain.