

Minutes of the 2nd meeting of the Prime Minister's Science, Technology and Innovation Advisory Council (PM-STIAC)

Date: 13th November 2018

Venue: Vigyan Bhavan Annexe

Maulana Azad Road

New Delhi- 110011

The 2nd meeting of the Prime Minister's Science, Technology and Innovation Advisory Council (PM-STIAC), chaired by Professor K. VijayRaghavan, Principal Scientific Advisor to the Government of India was held on 13th November 2018. The list of participants is in **Annexure I**.

In his opening remarks, the Chair welcomed the Council Members and briefed them on the agenda of the meeting with the Prime Minister. This was followed by a review of presentations to be made by various Council Members to the PM.

The Council Members departed for the Prime Minister's residence at around 10:20 am. The meeting was reconvened post lunch with the Chairman reiterating some of the thoughts and visions of the Prime Minister which the Council needed to keep in mind while deliberating. The decisions taken by the Prime Minister will be conveyed to the Council at its next meeting. Thereafter each agenda item (**Annexure II**) was presented by respective Council members followed by discussions, which led to following recommendations and action points.

(i) Expanding the footprint of Science, technology and Innovation ecosystem in India (Professor Ashutosh Sharma, Secretary DST)

India's technology and innovation ecosystem needs more interventions which stimulate scientific curiosity among young students. A shift from tool-centric interventions to problem-centric interventions may help in addressing this problem.

Action Points (DST):

- (a) Design interventions at school level to incorporate curiosity and passion among young students to pursue research and innovation. There is a necessity for mentorship programs which can provide guidance and a dynamic platform to novice innovators to present and transform their ideas.
- (b) Stimulate private investments into start-ups by enabling incubators and accelerators with Government funding which can set a precedent for funding innovative technologies including in 'EduTech' in India.

- (c) Encourage students to pursue PhD in currently relevant and also in futuristic areas and stimulate them to join start-ups by creating an ecosystem where their expertise in specific fields will be valued by the Indian industry.
- (d) Establish a process to weed out fake scientific journals is necessary to improve the quality and image of research in India.

Recommendations:

- (a) More programs such as NIDHI (which provides support to young innovators, and launched by the Department of Science and Technology) and the Atal Tinkering Labs under the Atal Innovation Mission should be initiated by the Government to inculcate an aptitude for research and innovation among young students since a young age.
- (b) PhD research projects should address important scientific or technological questions or address important national needs.
- (c) The numbers of fellowships and research grants to PhD students should be increased and opportunities for post-doctoral research and employment in India should be greatly enhanced.
- (d) PhDs should be encouraged to produce write-ups which popularize and relay their research pursuit and outcome to citizens at large. A central portal can publish the best write-ups and award the best 'Science Journalists'.
- (e) Visual platforms such as Doordarshan National should be utilized to convey interesting Science and Technology stories to citizens.

(ii) Developing Research Capacity of Quality in Undergraduate, Graduate University and R&D Institutions (Shri Baba N. Kalyani)

India researchers are currently working on a very wide range of science. Yet, there is often a disconnect between the needs of industry and of society and the nature of research which is being undertaken by research institutes. There is an urgent need to use intelligent manufacturing methods, 'precision' agriculture to improve the productivity of farmers, develop water management system and Nano devices to make healthcare more accessible. The existing resources should be effectively utilized to improve the functioning of our research institutions and colleges.

Action Points (CSIR, except where indicated below):

- (a) Map laboratories and academic institutions to identify the ones which can align to address national needs through scientific and technological interventions.
- (b) Establish collaboration between academic and R&D institutions with industry partners to work on problems which are relevant to address the socio-economic needs.
- (c) Incentivise academic institutions to begin mentoring programs for PhD students in developing futuristic technologies.
- (d) Applied Sciences Research capabilities need to be identified over the next five to seven years in India in emerging fields such as Advanced Manufacturing, Precision Agriculture, Precision Health, Cyber Security, Electric Vehicles, Power Electronics and Waste management.
- (e) The curriculum and infrastructure of the Indian higher education need to be upgraded and aligned with the evolving scientific and research developments across the world. (DST/MHRD)
- (f) Launch of 'Moon-shot' programs which can generate new capabilities by initiating synergy projects between researchers and private companies. (All agencies/PSA)

Recommendations:

- (a) Central Government research laboratories should become design centric organisations whose research focuses on developing state of the art technologies by collaborating with premier academic institutions such as Indian Institute of Technology and others.
- (b) Small percentage of funds allotted to institutions such as Defence Research and Development Organisation should be redirected to support relevant R&D projects in academic ecosystem.
- (c) Fraunhafer model of Germany, which is an excellent example of an institute which is connected to both industry and academia and is aware of their needs, should be set up in India to promote applied sciences research and problem solving projects in the country.

- (d) Outcome based research should be promoted in India led by Indian scientists who are working abroad by establishing incentive mechanisms to invite them to establish research groups in the country.
- (e) Centres similar to 'Catapult Centres' in United Kingdom should be established at multiple locations in the country to translate innovative ideas into real time products through collaborative academia-industry projects.
- (f) A funding model in which research cost of a project which has socio-economic relevance is borne by both the Government and industry partners should be developed to push more investments into applied sciences R&D.

(iii) Approaches to enhancing academic research in India (Professor Manjul Bhargava)

The state of research quality in India has immense scope for improvement. The focus on increasing the number of PhDs in the country is digressing from the real issue of the quality and relevance of research produced in Indian institutions. There is also a need to reassess the parameters which are used by Indian institutions to award promotions to the research faculty. More importantly, a central organisation to oversee research development and funding in the country and track the progress of scientific advancement should be established. This body can also help in balancing the depth of research in various fields. India currently also lags behind countries such as China and USA in publishing high quality research papers and patenting technologies. The investment in R&D in India is ten times lesser than that of the investment made by innovative and advanced countries such as Israel.

Action Points:

- (a) Initiate discussion to establish a central body such as a National Research Foundation which can seed and grow research in academic institutions both at the central and state level. Meanwhile the National Science and Engineering Research Board should start implementing recommendations. (MHRD/DST)
- (b) Monitor the projects happening in various scientific fields and initiate action to ensure that there is equitable distribution of R&D projects supported both on scientific and social sciences. (MHRD/DST)

- (c) Create cluster of institutions to connect colleges and state universities to the nearest premier research hubs in order to establish a uniform progress and impetus to R&D activities across the country. (PSA and Science Agencies)

Recommendations:

- (a) Research faculty and thesis advisers should be promoted based on quality of research produced by them and community service instead of seniority. This is important to ensure that the faculties providing guidance to the PhD students are aware of the research ecosystem in the country.
- (b) The suggested National Research Foundation should promote synergy projects which deal with interdisciplinary issues combining elements of both science and humanities.
- (c) Government support should continue to fund long term curiosity driven research projects which over time will capture the attention of industry partners too.
- (d) Retired scientists should be reabsorbed into the academic system to lead R&D initiatives in the colleges and state universities at local level.
- (e) PhD scholars should be incentivized through private sector initiatives to work on projects which can help them in resolving real world economic and social problems.
- (f) Best state universities and mentors should be recognized and felicitated at the national level to encourage healthy competition among various academic institutions.
- (g) Centre-State partnership models should be developed to fund technology development and socially relevant projects in which the cost of the project is shared by State Governments, Central Government along with Industry Partners.

Conclusion:

The Chairman summarized the following points which were agreed upon by the Council Members to be further discussed in the next meeting:

- (a) Detailed review of the action taken and the progress made on the decisions taken in the past meeting.
- (b) Aligning the goals of the National Research Foundation with existing institutions which are already functioning in promoting the R&D ecosystem in the country.
- (c) Presentation by Sh. R Subramanyam, Secretary, Department of Higher Education on the recent initiatives undertaken by MHRD to promote scientific research in the country.
- (d) The 3rd and next meeting of the PM-STIAC will be held on 11 December 2018.

The meeting ended with a vote of thanks to the Chair, all Council Members and special invitees.

Annexure I

2nd MEETING OF THE PRIME MINISTER'S SCIENCE, TECHNOLOGY AND INNOVATION ADVISORY COUNCIL (PM-STIAC).

Date : 13th of November 2018
Time : 0900 hr – 1535 hr
Venue : Committee Room 'A', Vigyan Bhawan Annexe,
Maulana Azad Road, New Delhi - 110011

List of Participants

S.No	Name, Designation and Organization	Status
1.	Prof. K. VijayRaghavan , Principal Scientific Adviser to the Government of India, 318, Vigyan Bhawan Annexe, Maulana Azad Road, New Delhi- 110 011.	Chairman
2.	Prof. A. K. Sood , Professor, Indian Institute of Science,	Member

	CV Raman Rd, Bengaluru, Karnataka - 560012.	
3.	Maj. Gen. Madhuri Kanitkar , Dean, Armed Forces Medical College (AFMC), Southern Command, Near Race Course, Solapur Road, Wanowrie, Pune, Maharashtra - 411040.	Member
4.	Prof. Sanghamitra Bandyopadhyay , Director, Indian Statistical Institute, Plot No. 203, Barrackpore Trunk Road, Baranagar, Kolkata, West Bengal - 700108.	Member
5.	Prof. Manjul Bhargava , Fields Medal, Professor, Princeton University, New Jersey, USA.	Member and Speaker
6.	Shri Babasaheb N. Kalyani , Chief Executive Officer and Managing Director, Bharat Forge Limited, State Highway 5, Mundhwa Industrial Area, Mundhwa, Pune, Maharashtra - 411036.	Member and Speaker
7.	Prof. Ashutosh Sharma , Secretary, Department of Science & Technology, Room No. 14-B, Technology Bhawan, S&T Block I, New Mehrauli Road, Block C, Adchini, New Delhi - 110016.	Special Invitee and Speaker
8.	Dr. Renu Swarup , Secretary, Department of Biotechnology, Ministry of Science and Technology, C.G.O Complex, Lodhi Road New Delhi - 110 003.	Special Invitee
9.	Prof. Balram Bhargava , Secretary, Department of Health Research, Ministry of Health & Family Welfare, 2nd Floor, IRCS Building, Red Cross Road, New Delhi - 110003.	Special Invitee
10.	Shri R. Subrahmanyam , Secretary, Department of Higher Education, Shastri Bhawan, Maulana Azad Rd, New Delhi – 110001.	Special Invitee
11.	Dr. Shekhar Mande , Secretary, Department of Scientific and Industrial Research, Anusandhan Bhawan, 2 Rafi Marg, New Delhi, Delhi 110001	Special Invitee
12.	Shri Ajay Prakash Sawhney , Secretary, Ministry of Electronics & Information Technology (Meity), Electronics Niketan, 6, CGO Complex, Lodhi Road, New Delhi - 110003.	Special Invitee
13.	Dr. Arabinda Mitra , Scientific Secretary, Office of Principal Scientific Advisor to the Government of India, 324, Vigyan Bhawan Annexe, Maulana Azad Road, New Delhi- 110 011.	Secretary PM-STIAC Secretariat

	Other Attendees	
14.	Mr. Phani Koundinta , AVP, Bharat Forge Ltd, State Highway 5, Mundhwa Industrial Area, Mundhwa, Pune, Maharashtra - 411036.	
15.	Shri Vijay Topa , Consultant, Office of the Principal Scientific Adviser to the Government of India, Vigyan Bhavan Annexe, Maulana Azad Road, New Delhi - 110 011.	
16.	Ms. Saloni Malhotra , Vice-President, Invest India and CEO, AGNli, Vigyan Bhavan Annexe, Maulana Azad Road, New Delhi – 110 011.	
	From O/o PSA	
17.	Shri Neeraj Sinha , Scientist 'G' / Adviser, Office of the Principal Scientific Adviser to the Government of India, 326, Vigyan Bhavan Annexe, Maulana Azad Road, New Delhi - 110 011.	PM-STIAC Sectt.
18.	Shri J.B. Mohapatra , Adviser, Office of the Principal Scientific Adviser to the Government of India, Vigyan Bhavan Annexe, Maulana Azad Road, New Delhi - 110 011.	
19.	Dr. Ketaki Bapat , Scientist 'F', Office of the Principal Scientific Adviser to the Government of India, Vigyan Bhavan Annexe, Maulana Azad Road, New Delhi - 110 011.	
20.	Shri Suresh Kumar K. , Scientist 'F', Office of the Principal Scientific Adviser to the Government of India, Vigyan Bhavan Annexe, Maulana Azad Road, New Delhi - 110 011.	
21.	Dr. Arun Bhardwaj , Scientist 'E', Office of the Principal Scientific Adviser to the Government of India, Vigyan Bhavan Annexe, Maulana Azad Road, New Delhi - 110 011.	
22.	Shri Shirish Panda , Scientist 'D', Office of the Principal Scientific Adviser to the Government of India, 324A, Vigyan Bhavan Annexe, Maulana Azad Road, New Delhi – 110 01 1.	PM-STIAC Sectt.
23.	Ms. Remya Haridasan , Scientist 'D', Office of the Principal Scientific Adviser to the Government of India, 324A, Vigyan Bhawan Annexe, Maulana Azad Road, New	PM-STIAC Sectt.

	Delhi – 110 011.	
24.	Ms. Anubha Singh , Associate, Office of the Principal Scientific Adviser to the Government of India, 324A, Vigyan Bhawan Annexe, Maulana Azad Road, New Delhi – 110 011.	PM-STIAC Sectt.

Annexure II

2nd meeting of the Prime Minister’s Science, Technology and Innovation Advisory Council (PM-STIAC)

Date: 13th November, 2018

Time: 0900 – 1535

Venue: Committee Room ‘A’, Vigyan Bhawan Annexe, Maulana Azad Road, New Delhi – 110 011

AGENDA

0900 – 0930 : Tea / Coffee at the venue

0930 – 1030 : Review of the sequence of the activities for meeting the Prime Minister / the Action Taken Report

1030 : **Departure for Lok Kalyan Marg**

1130 – 1230 : **Interaction meeting with the Prime Minister**

- 1245** : Departure for the Vigyan Bhawan Annexe
- 1300 – 1345** : **Lunch**
- 1350 – 1400** : “Expanding the footprint of Indian science, technology and innovation ecosystem” by **Professor Ashutosh Sharma, Secretary, Department of Science and Technology**
- 1400 – 1410** : “Developing research capacity of quality in under-graduate, graduate, University and R&D Institutions” by **Shri Baba N. Kalyani**
- 1410 – 1420** : “Approaches to enhancing academic research in India” by **Professor Manjul Bhargava**
- 1420 – 1520** : Discussion, leading to recommendation, with action points
- 1520 – 1530** : Summing up by the **Chairman**
- 1530 – 1535** : Vote of thanks by **Dr. Arabinda Mitra, Scientific Secretary, Office of the Principal Scientific Adviser to the Government of India**