

29th Meeting of the Scientific Advisory Committee to the Cabinet (SAC-C) held at Hall No. 1, Vigyan Bhawan on March 15, 2017.

1. The 29th meeting of the Scientific Advisory Committee to the Cabinet (SAC-C) was held at Hall No. 1, Vigyan Bhawan on March 15, 2017. The agenda of the meeting and the list of the participants are placed as Annexure-I and Annexure-II respectively.

2. Scientific Secretary, Office of the Principal Scientific Adviser to the Government of India in her welcome remark said that SAC-C has been providing the forum for deliberating important national challenges in science and technology with possible solutions including policy imperatives. She said a meeting was held with the secretaries of the scientific ministries, strategic departments and Presidents of Science Academia during October 2016 which focussed on certain challenges that will be deliberated further at SAC-C for its finalization. She then requested the Chairman of SAC-C to address the participants.

3. PSA and Chairman, SAC-C welcomed all the members and recalled that the last SAC-C meeting, held on December 11th, 2014 had the single theme agenda of 'Enabling policies for rapid growth of S&T in the country'. The broad theme included topics ranging from mobility of researchers, enhancing academia-industry interactions, start-up companies, joint appointments, Flexible Complementing Scheme (FCS) for scientists, trail funding for major R&D projects, recruitment of foreign nationals, etc. One of the related issues discussed was careers for talented youngsters taking up scientific research within the country. In this context, he briefly mentioned about the INSPIRE scheme of Department of Science and Technology (DST). He also emphasized the need for conducive research environment for risk-taking and to be the first introducer of new technologies / products from the start-ups. The Chairman further recalled that the last SAC-C meeting constituted four Sub-Groups to develop background notes on (i) Processes, (ii) Faculty, (iii) Careers and (iv) Technology. He further stated that background material was subsequently

prepared and circulated by the Sub-Group Chairmen and one of the Sub-Group reports was completed. He opined that many of these topics were further discussed during October 27, 2016 (hereinafter referred to as 'SAC-C sub-group' meeting) meeting, and thus, the 'actionable points' need to be finalised after due endorsement by SAC-C.

4.1 Trail funding and sustained funding

Large projects should continue with trail funding for a further time period, subject to due review and diligence, so that equipment does not remain idle. The concept of "permanent establishment" out of project fund along with justification of manpower for its appropriate utilization could be accordingly addressed. The concept of revolving fund is another possibility to take care of sustainable trail funding. Similar steps to be undertaken for small and important projects.

The trail funding requirement needs to specify its period beyond completion of the core project. The entire fund requirement should be projected accordingly during the project submission.

Action: A communication in this regard will be sent by O/O PSA to Secretaries of various Ministries and Departments who fund various projects to take care of the trail funding in most appropriate manner.

4.2 Manpower management issues

The Mobility of scientists among various scientific departments, national laboratories, research institutions, academia is highly desirable for overall development and intellectual growth of the country. Dr. Saraswat, Member – Niti Ayog, strongly recommended the cross-movement of scientists. For this to happen, appropriate mechanism need to be in place which can be exercised with ease and seamless manner. In this regard, the issue of non-uniformity of retirement age was also discussed. Secretary, DoS underlined the challenges pertaining to mobility as there are certain additional incentives that are linked with some departments. There is a need to address this issue especially with the mission oriented programs and strategic areas. Chairman expressed his concern about "discontinuity of knowledge"

with superannuation in strategic sectors.

In order to provide job opportunity to youngsters, in absence of regular jobs, the remuneration of contractual positions was also discussed. With more and more high end equipment facilities being created across the country, there is ever increasing need for retaining both the scientific manpower and technical personnel exposed to such facilities. Secretary, DST pointed out that project personnel who are essentially required for an institution, do get absorbed by the institution at an appropriate level. This is specifically true in the academic system. Although IITs have this flexibility to have additional positions to absorb them, National laboratories face the challenge of recruiting the project manpower on a regular basis. In institutions where post creation is cumbersome, it is essential to have some mechanism for creation of additional post in order to address these needs. The project manpower in major facilities or centres of excellences has to be differentiated from a typical time bound project. Therefore, it may be prudent to build-in the sanctioned and scheduled manpower *ab initio*.

It was brought out by Chairman (AEC) and Secretary DAE that at any given point, significant share of sanctioned scientific manpower remains vacant and on an average is around 10%. One possibility is that the project manpower may be absorbed against these vacancies. The other model is to employ appropriate manpower at higher salaries on a contract basis

It was pointed out that recruitment needs and situations vastly differ from academic institutions to the national laboratories and the scientific departments. Therefore, flexibility to device RR specific to the recruitments of an institution/organization is imperative that may be appropriately designed. It was suggested by Secretary, MDONER that the existing RRs also need to be optimally utilized.

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| i) | A Committee Comprising Secretary DST, Secretary DBT and Chairman AEC/ Secretary DAE and Shri Naveen Verma, Secretary MDONER is to be constituted. |
| ii) | Regarding 'retirement age', DST and DBT will provide relevant inputs to the |

O/o PSA in this context. Subsequently, O/o PSA will write an appropriate letter to the Cabinet Secretariat.

4.3 Recruitment of foreign nationals and related issues

It was observed that there are different categories of foreigners including Person of Indian Origin (PIO), Overseas Citizen of India (OCI) and foreigners who do not have any India lineage. Prof. (Mrs.) Vijayalakshmi stressed the importance for engaging experts from other countries in frontier research areas through systems or mechanisms such as joint laboratories, as there existed a large pool of such S&T experts keen to contribute to the nation by working in India. Prof Patibha Jolly recalled that 'Research Scientists' scheme of UGC once provided a flexible platform for scientists to carry out focussed research in their areas of interest along with a teaching component. The scheme was not so popular as these positions were on contract basis. The scheme may be revisited. It was also pointed out that the Principal Investigator (PI) for any project has necessarily to be an Indian citizen as the person should be working in a regular capacity.

In order to leverage the expertise of these foreign nationals in various scientific activities and academic arena, appropriate mechanism need to be in place. It was indicated by Secretary, DBT that although employing OCI and PIO is possible in any field except Army and other strategic sectors, more clarity is required for implementation of the same. For non-OCI/non-PIO foreign nationals, a streamlined permission mechanism need to be framed which may be different for strategic and non-strategic sectors. In academic institutions, they could be recruited against regular positions on yearly contract basis, in tune with the annual VISA renewal process. Streamlining of the process of three levels of clearances are required for such recruitment cases that involves Ministry of Home Affairs (MHA), Ministry of External Affairs (MEA) and the State Government.

A Committee comprising Secretary DST, Secretary DBT, President IAS, Prof Devang Khakar and Prof. Pratibha Jolly, to be constituted. The report may be prepared with appropriate inputs from MHA and MEA and other agencies.

4.4 Satisfying career for talented young people

There is a challenge of retaining talented science students coming out of premier institutions such as IISERs with master degree in science. It was noted with concern that a majority of them migrate abroad for pursuing doctorate and choose to stay back. This needs to be addressed.

The issue of providing a satisfactory career to talented young persons is not simply to provide a job alone, but to provide a satisfactory career path. Prof. Akhilesh K. Tyagi pointed out that a large number of science faculty in the university system do not have access to good research facilities, that limit their research and innovation pursuits. This can be greatly improved by opening up existing national lab facilities to a cluster of institutions / universities / colleges in proximity or setting up new central facilities in appropriate institutions, wherever necessary.

The Committee deliberated at length the employment opportunities within the country, un-employability more often of master degree students from science in industry, lack of strong doctorate programmes, jobs versus academic career challenges, etc. Prof Khakar opined that the challenge is in triggering higher demand for qualified scientists in the Industry, through a strong program and suitable policy measures oriented towards industrial growth.

The following action points were made:

- i) Strong proactive inter-institutional Ph.D. programmes comparable to the western doctorate programmes, with due financial support from the central departments.
- ii) A scheme allowing doctorate students to teach in an educational institution while providing opportunity to simultaneously pursue research in a proximate R&D institution.
- iii) An appropriate post-doctorate programme in a collaborative mode with academic institutions / R&D institutions abroad
- iv) A scheme for the post-doctorates to return and work with some centres of excellence in the country.
- v) A strong inter-departmental government programme to create a vibrant R&D ecosystem within country for the private sector be active.

5. Mega-Science Projects

The SAC-C members were then briefed about two sub-group decisions viz. taking forward the India based Neutrino Observatory (INO) and to explore setting up a new Synchrotron facility. Regarding INO, Secretary DAE informed SAC-C that efforts were on to take the state government of Tamil Nadu into confidence. DAE is flexible to examine the change of location, if approval did not come from the state government. Subsequently, on behalf of DAE, Prof. Milan Sanyal, Former Director, Saha Institute of Nuclear Physics (SINP) made presentation on a proposal to establish a new Synchrotron facility.

5.1 Proposal for a new Synchrotron facility

Prof Sanyal made the presentation on the proposed establishment of 'Indian Synchrotron for Materials and Energy Research (ISMER) '. The Indus-2 has been serving the research needs of the scientists in the country for the last six years. However, for pursuing high level research requiring higher energy synchrotron facilities, Indian scientists are dependent on Japan and other countries. Though this is being facilitated by DST and DBT schemes, very often, this upsets the time schedule of projects resulting in delayed research outcomes and other deliverables. Dr. Saraswat, mentioned that the project is challenging, has strategic defence oriented utility, as well as research uses. He said its implementation would place the country in a higher technology plateau as many different technologies and systems would have to be indigenously developed for the first time. The members agreed that there was a need for establishment of such a state-of-the-art facility in the country.

The indigenously-built third-generation synchrotron will have a 6 GeV ring of bending magnets and have the size of a cricket stadium. The proposal comprised of different components of the facility, including in-house research teams in the areas ranging from physical sciences to engineering and biological science and complementary research laboratories.

It was pointed out that comprehensive planning is required for establishing the facility, its operation, maintenance and utilization. Deliberations were also made on

its possible location, lead institution, implementing mechanism, etc. The expertise of the RRCAT, Indore, land availability at RRCAT, etc. were also discussed. Chairman, SAC-C suggested that an advisory group, comprising experts from India as well as from countries like Germany, France, USA, etc., needs to be formed. The following are the conclusions:

- i) The project will be implemented on mission mode with DAE as the implementing agency.
- ii) Location for the new synchrotron will be decided by the DAE
- iii) DAE would leverage expertise available in the country and will collaborate with other stakeholders, both national and international, as deemed essential.
- iv) The DPR to be comprehensive, including operation, maintenance, training, etc.
- v) A formal Advisory Group to be constituted, including experts from abroad. The experts would represent different components of the project

5.2 Medium Size fab-labs

Chairman mentioned that based on the earlier SAC-C deliberations, two world class Nano fabrication facilities were set up at the Centres for Nano-Science (CeNs) in IISc Bangalore and IIT Bombay, with financial support from the Ministry of Electronics and Information Technology (MeitY). More such centres have come up now. Further, it was discussed that the Government has recently decided to incentivise foreign companies to set up mega-fabs in the country. India's strength is in chips with high design content for very specific applications. These are high design content products, though demand volume may be low. The members agreed that there is an immediate need to set-up a medium-size fab-lab for fabricating such chips. Proposals in this regard are expected from IISc Bangalore and IIT Bombay.

6. Office of PSA and SAC-C

Chairman then briefly mentioned about the SAC-C and the role of Office of PSA which functions as a secretariat to SAC-C. SAC-C has members comprising of Secretaries of all Science Departments/Ministries, Presidents of Indian Science and Engineering academics, Presidents of Industry Associations, eminent technocrats

from industry and senior faculty from academia. The Office of PSA endeavours to bring in synergy among the various scientific departments and other ministries in creating an enabling S&T eco-system that encourages innovations across disciplines. It encourages R&D projects in 'advanced high quality basic research', 'directed basic research', as well as 'pre-competitive applied research' through effective academia – industry interactions. The development of specific projects, usually in partnership with other departments, revolves around this basic philosophy. Chairman stated that Secretaries of MDoNER, DHI & DoC have been specially invited as some of the current activities undertaken involve close interactions with them. Thus, Office of PSA along with SAC-C has a comprehensive advisory system representing all the stakeholders in the Science Technology and Innovation (STI) landscape. The Office of PSA currently has 26 honorary scientific consultants to draw advice and inputs concerning different areas of STI, including strategic domains.

7. Enhancing academia industry interaction

To enhance Academia-Industry interactions effectively, close interaction and coordination with academic institutions, national laboratories, industries and PSUs are pertinent. One of the success stories is the implementation of the high precision grinding machine tool project by IIT-M resulting in the Institute being granted a substantial amount of funding, by the Department of Heavy Industry for implementation of cutting-edge machine tool development projects on a cost sharing basis with the industry. In another case, based on the successful outcome of 10 pre-project activities supported by the Office of PSA to a consortium of the IGCAR, DAE, BHEL and NTPC, Cabinet has recently approved Rs. 1,554 crore project for Phase I building of an 800 MWe Advanced Ultra Supercritical (AUSC) technology based thermal power plant (first of its kind) with funding from Department of Heavy Industry (DHI). The plant is expected to reduce CO₂ emission by 20% and reduce coal consumption, as compared to conventional coal based thermal power plants. Shri Atul Sobti, Chairman and Managing director, BHEL thanked the efforts of Office of PSA and also other departments of Government of India for supporting the cause.

Shri Sobti further brought to the attention of the Committee, the recent reduction in the weighted percentage cost of expenditure incurred by industries in R&D for income tax purpose. From next year onwards, the weighted percentage cost is being reduced from 200% to 150% across the entire spectrum of industries. BHEL, being the largest R&D spender amongst Indian industries and a R&D based manufacturing industry, this will be a dampener. He wondered if SAC-C could take up the matter appropriately and recommend rolling back of the same. The Committee unanimously felt that this need to be addressed in the national context for encouraging enhanced R&D especially pertaining to manufacturing industries.

O/o PSA would send an appropriate letter to the Ministry of Finance in the context of factoring R&D expenses for taxation purposes.

The Chairman then mentioned about the Department of Commerce (DoC) initiative of identifying technologically upgradable engineer goods in the context of India's share in the international market. Out of the 99 product categories, three products / domains viz. i) electric motors, ii) Industrial valves, and iii) Biomedical devices and related areas, have been taken up by Office of PSA for technology upgradation. In electric motors, two separate projects are lined up. In the first case, an induction based 5 HP electric motors of premium efficiency will be developed by Electrical Research Development Association (ERDA), Vadodara with technical support from BARC, DRDO, IITs and IISc. In parallel, BARC would lead a project to develop Permanent Magnet (PM) based 5HP AC motor of ultra-premium efficiency jointly with identified commercial industrial partners). Secretary DAE said that BARC has developed PM Brushless DC (PMBLDC) motors of efficiency more than 92%, which have already been put to use for solar powered pump application. This PMBLDC technology can be adapted for mass production by the local industry at competitive cost.

In the case of industrial valves, the valve cluster in Hubli required state-of-art machining and testing equipment. Access to latest designing software platform, knowledge transfer and skill development are other requirements. The valve cluster in Hubli is preparing a DPR for setting up a common engineering facility for funding

by the Government. In the biomedical and related areas, a brainstorming session organized by Office of PSA amongst stakeholders underlined technology gaps in the area. The technology up-gradation initiative will be led by DBT. Priority list of critical components have been identified stakeholders include the biomedical wings of Sree Chitra Tirunal Institute for Medical Sciences (DST), AIIMS, IIT Madras (DBT), DRDO, CSIO (CSIR). Matching industrial capacities to the industry needs is being facilitated.

Shri B.S. Bhalla, Joint Secretary, DoC stressed the need for enhancing the high-value engineering goods exports, which was less than 5% of a total ₹ 58 billion worth of Indian exports during the year 2015-16. He recalled the interactions of DoC with PSA's office in this regard and appreciated the role of Office of PSA in taking up specific engineering products with partnership from industries and scientists from national lab and academic institutions. He further said that through the Engineering Export Promotion Council (EEPC), the Department has been organizing industry-academia meets for different industrial clusters. The scientists and faculty from scientific departments and academia, including IITs, are invited to this interactive meets and industrial needs are identified through subsequent follow up meetings. He wondered how more R&D institutions could be involved. Secretary DST suggested that Science and Engineering Research Board (SERB) would be able to identify resource persons from academia and R&D laboratories in this regard. Chairman advised that the scientific departments could identify potential products for technology upgradation based on the expertise/capabilities available in their various labs. DoC could share the updated list of engineering products groupings/list with all scientific departments.

Accordingly, it was decided that DoC will share the 99 product groupings with seven departments of DST, DBT, ICAR, CSIR, DAE, DRDO and ISRO.
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8. Interaction with Ministry of Development of North Eastern Region (MDoNER)

Chairman, SAC-C informed the members that Office of PSA is closely interacting with MDoNER for appropriate S&T interventions in the North East. The solid waste management technology developed by BARC called 'Nisaraguna' is being adopted in the North East, starting with Tripura. RuTAG IIT Guwahati organized an interactive

meet with self-help groups of the North East Rural Livelihood Project (NERLP) in which select RuTAG technologies were demonstrated. A special session on 'appropriate technology relevant to North East' was held in Chandigarh on March 7, 2017 during 'Destination North East, 2017', in which identified RuTAG technologies / products, as well as CSIR technologies were demonstrated.

Secretary MDoNER. Shri Naveen Verma, opined that most of the research work within the public funded institutions / academia do not to reach the society and more so in the eight States in the North-East Region (NER). He thanked Office of PSA for working with the Ministry. He informed that as a result of the interaction, the Nisaraguna system for solid waste management developed by BARC will now be utilized in all the eight states of NER. The process has been initiated in this regard. He mentioned about the RuTAG technologies that have been identified for NER. He stated that he would be happy to facilitate in aggregating fabricators from NER for getting them trained in the concerned innovative machine / device in any of the national labs and institutions. He further stated that his Ministry is in dialog with CSIR as well for identifying technologies relevant to NER. Lack of technology and facilities in the NER have been the main challenge that includes storage, packaging, food processing of fruits and vegetable for which farmers do not get good value for the produce. Technologies such as the cold chain storage are being imported for the purpose. Chairman, SAC-C enquired whether ICAR has technologies for cold chain storage to which Shri Bansal replied in affirmative.

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| <ul style="list-style-type: none">i) ICAR to furnish details of specific technologies relevant to the region. ICAR also will provide MDONER basic information about ICAR institutions in and around the region.ii) DST would identify at least a dozen deployable technologies that are relevant for the region |
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9. Other issues

9.1 Report of the Group of Secretaries

Secretary, DBT briefly mentioned about the report made by the group of secretaries of science departments, which was constituted to look at broad S&T issues, as a part

of a number of groups set up to look at broad general issues before the nation. The report has been brought out involving Secretaries of the Department of DAE, Office of PSA, DRDO, DoS, MoES, DSIR (CSIR) and DST.

The report includes implementation plan to create opportunities in scientific research and development work, establishment of virtual research hubs along with encouragement to youngsters to pursue their career in science with special provision for girls. An overarching mechanism has been suggested that would report to the PM called SPARK (Sustainable Progress through Application of Research and Knowledge). This overarching mechanism would converge and integrate central ministries, academia and industries and ensure effective implementation of mission mode programs that are inter-ministerial in nature. (SPARK)

SPARK needs to integrate appropriately with the relevant activities of the office of PSA and the existing SAC-C mechanism to address issues pertaining to synergy and the commercialization of technologies developed by the scientific fraternity. The detailed document of the overarching mechanism is being worked out.

9.2 Science and Technology Managers

Prof. Shashidhara, IISER Pune, pointed out that there was a need to create a new breed of trained professionals in planning, executing, assessing and communicating (to the policy makers, finance people and public at large) various educational and research activities in S&T. In USA and Europe, professionals run Universities and research organisations, while practising Scientists take care of academics and research interests.

With the expansion of S&T enterprise in the country, there is a need for such people in institutes, Universities, IITs, IISERs, funding agencies etc. They can also work as consultants. When IT sector expanded, many engineering graduates started getting training in management, which is now top most attraction to bright students in all IITs and engineering colleges. They can combine their technical knowledge and management expertise to run large organisations (both for their survival and

progress) and steer through the innovation landscape.

With the aim to bring such career prospects to young scientists of India, who have leadership and natural skills for management, IISER, Pune is conducting (at pilot scale) some workshops. Experts from Britain and India are part of the resource persons. Each workshop is conducted at three levels of depth and then an internship opportunity is offered to the interested trainees to get on the job experience so that they would be ready to be hired by our S&T organisations.

IISER, Pune is in a position to make it a regular and formal program and after due consideration by SAC-C. SAC-C welcomed this activity. Dr. Saraswat mentioned that Niti Aayog has already done some thinking along these lines.

Prof. Shashidhara was requested to send the details of the initiative to Office of PSA and Niti Aayog.

Chairman then asked the members if they had any specific suggestions for conducting Brainstorming meetings in future which are inter disciplinary in nature. Topics on 'Artificial Intelligence' and 'Internet of Things', 'Disruptive Technologies for Climate Change' and 'Energy Storage' were indicated.

The members can send their proposal/suggestion to the SAC-C secretariat for taking it forward

The meeting concluded thanking the Chair.

Scientific Advisory Committee to the Cabinet (SAC-C)

Date : March 15th, 2017 (Wednesday)

Time : 10:00 - 13:30 hrs.

**Venue: Hall No. 1, Vigyan Bhawan
Maulana Azad Road, New Delhi**

AGENDA

10:15 AM	Welcome address	Dr. Swati Basu, Scientific Secretary, Office of the Principal Scientific Adviser to the Government of India
10:25 AM	Introductory remarks	Principal Scientific Adviser to the Government of India
10:40 AM	Discussion	
10:50 AM	Decisions made by the SAC-C Sub-Group meeting held on October 27, 2016	
11:00 AM	Discussion	
11:10 AM	Report of the Group of Secretaries on Science and Technology	Prof. VijayRaghavan, Secretary, DBT
11:25 AM	Discussion	
11:40 AM	Proposal for New Synchrotron facility	Prof. Milan Sanyal, former Director, SINP, Kolkata
11:50 PM	Enhancing academia-industry interactions	Secretary, DHI & Secretary, DoC
12:15 PM	Discussion	
12:45 PM	S&T activities for development of the North East	Shri Naveen Verma, Secretary, MDoNER
01:00 PM	Any other matter	
01:30 PM	Lunch	

Annexure-II

List of Participants for the meeting of SAC-C held on 15th of March, 2017

S. No.	Details
1.	Dr. R. Chidambaram, Principal Scientific Adviser to the Government of India, New Delhi.
2.	Dr. V.K. Saraswat, Member, Niti Ayog, Parliament Street, New Delhi.
3.	Prof. Ashutosh Sharma, Secretary, Department of Science & Technology, Technology Bhawan, New Mehrauli Road, New Delhi.
4.	Prof K VijayRaghavan, Secretary, Department of Biotechnology, 6th-8th Floor, Block 2 CGO Complex, Lodhi Road, New Delhi.
5.	Dr. Sekhar Basu, Chairman, Atomic Energy Commission and Secretary, Department of Atomic Energy, Anushakti Bhavan, C.S.M. Marg, Mumbai.
6.	Shri A.S. Kiran Kumar, Secretary, Department of Space, Antariksh Bhavan, New BEL Road, Bangalore.
7.	Dr. Swati Basu, Scientific Secretary, Office of the Principal Scientific Adviser to the Government of India, New Delhi.
8.	Shri Naveen Verma, Secretary, Ministry of Development of North Eastern Region, Room No. 233, Vigyan Bhawan Annexe, Maulana Azad Road, New Delhi.
9.	Shri Bhupinder S. Bhalla, Joint Secretary, Department of Commerce, Ministry of Commerce and Industry, 143, Udyog Bhawan, New Delhi.
10.	Shri Bhaskar Jyoti Mahanta, Joint Secretary, Department of Heavy Industry, Udyog Bhawan, New Delhi.
11.	Prof. (Mrs.) Vijayalakshmi Ravindranath, Professor, Centre for Neurosciences, Indian Institute of Science, Bengaluru.
12.	Dr. Pratibha Jolly, Principal, Miranda House, University College for Women, University of Delhi, Delhi.
13.	Prof. Devang Khakhar, Director, Indian Institute of Technology Mumbai, Powai, Mumbai.
14.	Dr. R. Ramaswamy, President, Indian Academy of Sciences, C. V. Raman Avenue, Post Box No. 8005, Raman Research Institute Campus, Sadashivanagar, Bengaluru.
15.	Shri Atul Sobti, Chairman and Managing Director, Bharat Heavy Electricals Limited, BHEL House, Siri Fort, New Delhi.
16.	Dr. Sudeep Kumar, Head Mission Directorate, Council of Scientific & Industrial Research (CSIR), Anusandhan Bhawan, 2 Rafi Marg, New Delhi.

17.	Prof. L S Shashidhara, Professor and Chair, Biology, Indian Institute of Science Education and Research, Dr. Homi Bhabha Road, Pashan, Pune.
18.	Dr. S.K. Sikka, Scientific Consultant, Office of the Principal Scientific Adviser to the Government of India, Former Homi Bhabha Chair Professor, BARC, House No. 538, Sector-17 Faridabad Haryana.
19.	Dr. Panjab Singh, President, National Academy of Agricultural Sciences, NASC Complex, DPS Marg, Pusa, New Delhi.
20.	Shri Piyush Srivastava, Additional Development Commissioner, Ministry of Micro, Small and Medium Enterprises, Udyog Bhawan, Rafi Marg, New Delhi.
21.	Dr. K.C. Bansal, OSD (National Agricultural Education Project) Indian Council of Agricultural Research, Krishi Bhavan, New Delhi.
22.	Prof. Akhilesh K. Tyagi, Immediate Past President, NASI, Department of Plant Molecular Biology, University of Delhi South Campus, New Delhi.
23.	Dr. M.S. Raghunathan, Head, National Centre for Mathematics, Indian Institute of Technology, Mumbai, Powai, Mumbai.
24.	Shri Subrata Biswas Director (Engg.,R&D), Bharat Heavy Electricals Limited, BHEL House, Siri Fort, New Delhi.
25.	Dr. Sunita Siwach, Joint Secretary, University Grants Commission, Bahadur Shah Zafar Marg, New Delhi.
26.	Dr. Prodipto Ghosh, Distinguished Fellow, The Energy and Resources Institute and former Secretary, Department of Environment and Forests, Darbari Seth Block, IHC Complex, Lodhi Road, New Delhi.
27.	Prof. Milan K Sanyal, Former Director, Saha Institute of Nuclear Physics, Saltlake, Kolkata.
28.	Shri Neeraj Sinha, Scientist 'G', Office of the Principal Scientific Adviser to the Government of India, New Delhi.
29.	Dr. Ketaki Bapat, Scientist 'F', Office of the Principal Scientific Adviser to the Government of India, New Delhi.
30.	Shri Suresh Kumar K. Scientist 'F', Office of the Principal Scientific Adviser to the Government of India, New Delhi.
31.	Dr. Arun Bhardwaj, Scientist 'E', Office of the Principal Scientific Adviser to the Government of India, New Delhi.