

## Inputs for NASI

### A. Organization Particulars

1. Name of the Institute : **The National Academy of Sciences, India**
2. Established in the year : **1930**
3. Number of regular scientists/faculty : **N/A**
4. Number of regular (FCS-governed) Engineers (if any): **N/A**
5. Total number of regular employees : Sanctioned: **18**
6. Total number of regular women scientists/faculty/(FCS-governed) engineers: **N/A**
7. Total number of regular women employees: **2**
8. Total number of regular scientists/faculty belonging to SC/ST/OBC: **N/A**
9. Total number of regular employees belonging to SC: **01**; OBC: **05**
10. Total number of “Research Scientists”: **35** (on an Hon. of Rs 30,000/month to each for five years) + JRF/SRF/RA- **35**
11. Total number of “Development Scientists”: **06** (Higher Level as NASI-Chairs on Honorarium)
12. Number of other post-doctoral research staff : Men: **3** Technical Editors on contract for three journals of NASI + **2** Ganga researchers; Women: **1** Ganga researcher + **2** Research Scientists with NASI-DST Chair for Women Scientist Total: **08** only

### B. Research Profile of the Organization

1. Areas of Research Focus - **Promotion & Popularisation of Science & Technology; to aid & advise in Policy Making**  
:
2. Major Research Accomplishments (from calendar year 2010 to 2014) :

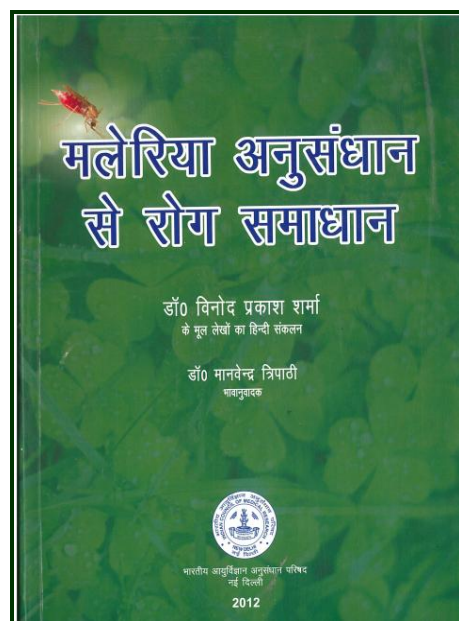
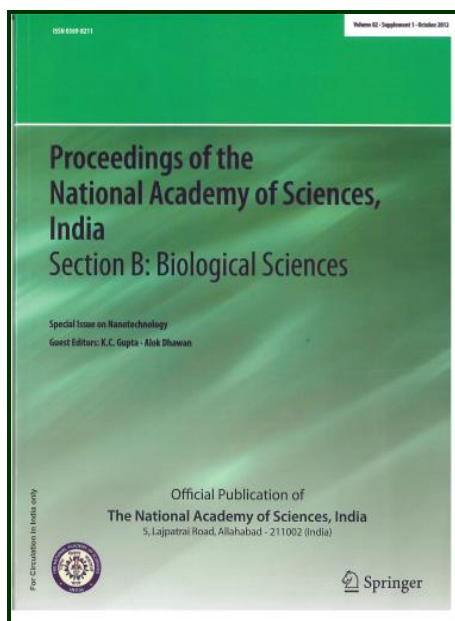
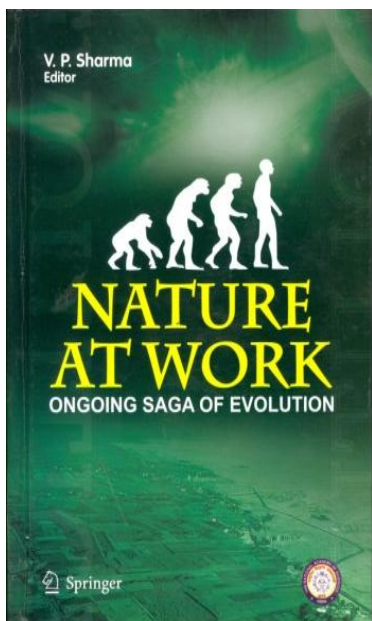
#### Publications

- The Academy published the **History of Science in India** in 10 volumes, covering the following areas-

#### Published volumes

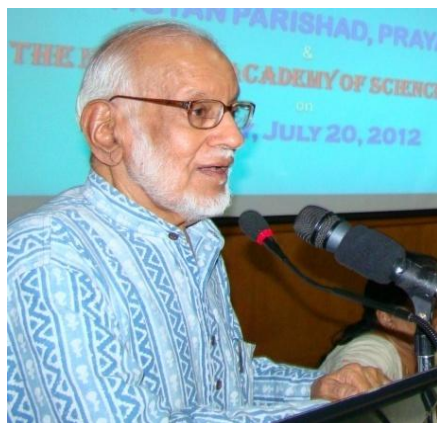
- **Vol. 1: Physical Sciences, Astronomy and Mathematics**
- **Vol. 2: Medicine and Pharmacology**
- **Vol. 3: Chemical Sciences**
- **Vol. 4 (having two parts): Biological Sciences Part-I: Plant Part-II: Animal**
- **Vol. 5: Agricultural Sciences**
- **Vol. 6: Earth Sciences (Geography, Geology, Oceanic, Environment)**
- **Vol. 7: Engineering Science**
- **Vol. 8 :Bio-Chemistry, Bio-Physics and Molecular Biology**
- **Vol. 9 :Introduction of the History of Science in India**
- Apart from regular publications (Proceedings of NASI-Sections A & B; and the Science Letters), in collaboration with the Springer, the Academy also published the ‘spl. Issues/books’ on a) **Darwin**, b) **Safe Water**, c) **Biodiversity**, d) **Nematode Infestations (in three parts)**, e) **Nanoscience & Technology for mankind**, f) **Human Viral Infections and on g) Marine Biology**. The reviews published in the **Proceedings** and **Science Letters** of the Academy covered the most discussed areas of research from **Nanotechnology to Biotechnology; and Material Science to Transformational Technologies**.
- The other noted publication (in Hindi) on **Malaria** (600 pages), published by the Academy in joint collaboration with the ICMR, New Delhi is worth mentioning here, as this book is the first

of its kind for making the people aware about the consequences of malaria. The manuscript of another book on **Dengue (in Hindi)** of about **400 pages** has also been prepared to be published in collaboration with the ICMR, N Delhi. A **book-Chapter on Ganga** was also published by the Springer.



### **Science Communication Activities**

- The highlights of activities were **Children Science Meet, Summer & Winter Schools, Vocational Training Programmes, Workshops, Vigyan, Jal & Health Chaupals, Seminars, National Technology Day, National Science Day and World Environment Day** etc. The Academy also encouraged the teachers for out of the class science activities by recognizing their talent and giving away **NASI-Science Teacher's Awards** to them.
- NASI-HQ and its 17 Chapters organized hundreds of science communication activities, in and around their region throughout these years, the details of which have already been published in the Annual Reports of NASI.
- Not only that, a series of **workshops on Scientific Paper Writing** was organized by the Academy to train the young researchers for expressing their views and research findings in an appropriate manner. So far, 8 such workshops have been organized at BHU, SGPGI, NASI, Udaipur, Mumbai, Dehradun and Pune.



Prof M G K Menon addressing the students in a Children Science Meet held at NASI in the year 2011

### **Science Education Programmes in joint collaboration of other National Science Academies**

The NASI together with other two Science Academies - Indian National Science Academy, New Delhi and Indian Academy of Sciences, Bangalore is jointly sponsoring the Summer Research Fellowship under the joint Science Education Panel to provide opportunities to bright under-and post-graduate students and teachers to usefully spend their summer/winter vacations.

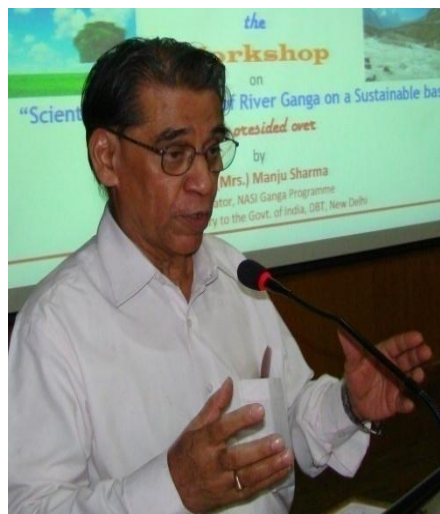
### **Annual Session/Symposia/Seminars & Scientific Discussions**

The Academy organized about 20 Symposia/Seminars/Discussions in last five years. The Academy published the proceedings of its earlier symposium held at Trivandrum on **Biodiversity**; and organized another Symposium on **Nano-science & Technology for the Mankind** at Varanasi, attended by a large number of national and international participants; the proceedings of this has also been published and posted on the web. Recently, the Symposium on **Space for Human Welfare** was organized at Goa University, Goa from December 5-7, 2013, which was inaugurated by the Hon'ble Governor, Goa and addressed by Prof M G K Menon, Dr K Kasturirangan, Dr K Rardhakrishnan and several other space scientists. **The Academy also organized a symposium on "Desert Science- Opportunities and Challenges"** at Jai Narayan Vyas University, Jodhpur, Rajasthan on December 4 - 6, 2014, during its 84<sup>th</sup> Annual Session. Several other symposia and workshops were also organized at the headquarters and also at the Chapters of the Academy, as **Brainstorming Session on Safe Water & Sanitation**, several Sensitization programmes/Workshops on **Nutrition & Health; Environment, Pollution & Conservation issues etc.**



A group photograph of NASI Session at Varanasi in 2012





Secretary, DST, New Delhi speaking on the occasion of workshop on Environment at NASI, Allahabad



A group photograph of the participants of Scientific Paper Writing Workshop at CIFE, Mumbai

### **Fellowship / Membership**

To recognize the outstanding scientific contributions of the scientists, the Academy awarded the prestigious Fellowship/Membership to the scientists working in different areas of science & technology, selected from all across the country. It also awarded a few Foreign Fellowships to the scientists working in different countries in collaboration with the scientists in India.

### **Singhania Library**

Library services were enriched through digitization of the library, subscribing more books and by providing facilities of storage, reading room and citation etc. Internet facility for educational purpose is also being provided to the students free-of-cost. **The library has been connected to National Knowledge Network (NKN).**

### **Recognition and Awards**

Several Fellowships and Awards were given during these years; a few are mentioned for example:

- NASI-Reliance Industries Platinum Jubilee Awards (2010 - 14) for the Application Oriented Innovations covering both Physical and Biological Sciences.

- NASI-Young Scientist Platinum Jubilee Awards (2010 - 14) in the fields of Biological/Physical/Chemical Sciences.
- NASI-Senior Scientist Platinum Jubilee Fellowships (2010 - 14)- Awarded.
- NASI – Swarna Jayanti Puruskars (2010 - 14) for Best Paper Presentation in the Annual Session
- NASI Scopus Awards (2010 - 14)
- NASI – Science and Maths Teacher Awards (2010 - 14) by NASI HQ and some of its Chapters in their respective region
- NASI-Memorial Lecture Awards (2010-14)- given to about 40 eminent scientists



A view of the dais during the NASI Award lecture programme at Miranda House, New Delhi

### Local Chapters

The 17 Chapters of the Academy have undertaken a **hundreds of science communication/education activities** for the furtherance of the Academy's objectives. Detailed reports of the Chapters have included in the Annual Reports of the Academy.

### Establishment of Ganga-gallery at Allahabad & Brahmaputra Gallery at Guwahati, Assam

The river Ganga occupies an unique position in the cultural ethos of India. From times immemorial, the Ganges has been India's river of faith, devotion and worship. But the holy river *Ganga*'s existence is under threat, due to enormously increasing load of pollution year by year. Therefore, the Council of the Academy during the Presidentship of **Prof Asis Datta**, Former Vice Chancellor, J N U, New Delhi, decided to adopt ways to make the people aware for the conservation and restoration of the holy river Ganges by establishing a Ganga-gallery with well defined objectives in order to highlight the religious, cultural, socio-economic and scientific aspects of the holy river. **Prof M S Swaminathan**, **Prof M G K Menon** and **Prof Manju Sharma** (Past Presidents, NASI), immensely contributed by rendering their valuable advices in developing the gallery in a systematic and scientific manner. The gallery was inaugurated by **Hon'ble Minister** for Science & Tech., Govt. of India on April 15, 2011 during the Presidentship of **Prof. A.K. Sharma**. Now, it is the centre of attraction for the visitors; and regularly about 50-60 students/public visit the gallery every day. After the establishment of Ganga-gallery at Allahabad, the Academy established another river-gallery on **Brahmaputra** river at Assam. The work on third gallery (on river Cauvery) is to be started soon at Mysore, Karnataka.





A panoramic view of the Ganga-gallery at NASI, Allahabad & it's Inaugural Function

### **Sensitization Programmes for Women Researchers/Scientists & Conducting DISHA Programme**

The Academy organized more than 11 workshops on Technological Empowerment of Women at different centres of the country in past five years ; also organized meetings of DISHA (DST Scheme) for selecting the women scientists/researchers, for SoRF Scheme. About 2000 women scientists/researchers were sensitized under this programme and a booklet was published with pragmatic solutions to the problems of women scientists/researchers. Also, collaborations were established with ICAR & ICMR for developing some mechanisms to reduce the problem of malnutrition and drudgery of farm/rural women.



Prof. Manju Sharma felicitating Dr. Vinita Sharma after chairing the session; and a view of the audience during the workshop on Sensitization of Women

### **Safe Water Project**

After organizing several Brainstormings on Safe Water & Sanitation at NASI; and organizing the workshops all across the country, the Academy has started rejuvenating the **baolies** (step-wells) of Bundelkhand area of M.P. for ensuring Safe Water for the people of the area; the project is being guided by **Prof. K J Nath, NASI-Fellow & Prof. V. P. Sharma, Past President.**



**Baoli-befor & after rejuvenation at Bundelkhand**

### **Other Projects & Schemes**

The Academy also organised Science Awareness programme in collaboration with the Army Personnel for the welfare of the **Jawans**; and also a joint programme of NASI & ICAR on Farm Mechanization/ Implementation, was started this year with an institution of Award of Rs. one lac in this sector.

### **3. Important Highlights of Major Research Programmes (from calendar year 2010 to 2014):**

- a) **Science Communication Activities** : The highlights of activities were **Children Science Meet, Summer & Winter Schools, Vocational Training Programmes, Workshops, Vigyan & Health Chaupals, Seminars, National Technology Day, National Science Day and World Environment Day** etc. Not only that, a series of **workshops on Scientific/Research Paper Writing**, was also organised. **The Academy also started a unique programme of scientific awareness amongst the Army personnel.**
- b) **Annual Session/Symposia/Seminars & Scientific Discussions**  
About 5000 researchers/students/teachers/scientists attended the symposia/seminars organized by the Academy in different centres of excellence in last five years. Several other workshops/sessions were also organized as **Brainstorming Session on Safe Water & Sanitation**, several Sensitization programmes on **Nutrition & Health; Environment, Pollution & Conservation issues** etc.
- c) **Sensitization Programmes for Women Researchers/Scientists & Conducting DISHA**  
The Academy organized more than ten workshops on Technological Empowerment of Women at different centres of the country; also organized meetings of DISHA (DST Scheme) for selecting the women scientists/researchers, for SoRF Scheme. About 2000 women scientists/researchers were sensitized under this programme and a booklet was published with pragmatic solutions to the problems of women scientists/researchers.
- d) **Special Publications**  
The Academy published the historical documents in several volumes on the '**History of Indian Science**', which is a treasure. Several other important publications were also released during these years.

- e) The Academy has established **the Ganga-gallery and Brahmaputra gallery**; and the third on Cauvery is to be established soon. These galleries are the show cases of our socio-scientific heritage, with enormous potential of depicting ecological, economic and ethnic importance of the river basins.

4. Major and Unique National Facilities created (from calendar year 2010 to 2014):

The **Ganga-gallery** (IGNOU, New Delhi has included the gallery in its syllabus/project to make the students learn the aspects of conservation of a river; as well as UP Tourism and Consortium of IITs have also included the gallery on its official website); and the **Brahmaputra gallery** have been dedicated to the nation. The **library of the Academy** is also serving nation for last more than eighty four years.

5. Important collaborations (national and global) established (from calendar year 2010 to 2014):

- a) **The NASI together with other two Science Academies - Indian National Science Academy, New Delhi and Indian Academy of Sciences, Bangalore** is jointly sponsoring the Summer Research Fellowship under the joint Science Education Panel
- b) **Also continuing its established collaboration with the Reliance Industries & SCOPUS** for recognizing the talent in scientific research.
- c) **It has also established an association with the Springer** for publishing its journals.
- d) **Also organized many science communication activities in collaboration with the Indian Universities/Institutes/CSIR Laboratories/ NCSM and other prestigious institutions.**

**C. Important Output Indicators** - As per report of the NASI Chair Professors, NASI- Senior Scientists & NASI-Reliance Awardees, many papers were published/patents filed/technologies transferred; and manpower trained (please see the brief reports published in the Annual Reports of NASI 2010-14).

**D. Eminence Indicators**

**For Knowledge Service and Expert System organizations (total figures from calendar year 2010 to 2014)**

- 1. National data bases developed : A huge data base of research papers compiled and published in last five years.
- 2. Historical data complied : Ten volumes on the History of Science has been Published; along with several other documents of historical importance, as the review on Science Policy, Women's status in science, Darwin's journey etc.
- 3. National Missions led and coordinated :

To celebrate the Year of Science, as discussed by the Hon'ble Prime Minister of India, the Academy was fully involved in implementing the 'Year of Science Programmes'. Several meetings were held at NASI and ISCA; and these were attended by the President/Past Presidents (**Prof A K Sharma, Prof Manju Sharma, Prof Asis Datta and Prof V P Sharma**), to effectively disseminate the scientific knowledge and enthuse the young minds.



NASI has taken the following measures through its HQ and all its Chapters -

**For Disseminating Scientific knowledge -**

- Organised Science Extension Lectures throughout the length & breadth of country.
- Published booklets on our great heritage of Indian Science & breakthroughs.
- Making videos films on the challenges being faced in Agriculture; Health; Climate Change; Biodiversity; Water and Energy Sectors etc.
- Establishing a Science Museum/Gallery.

**Technological empowerment of women** - Capacity Building has always been a thrust area for the NASI. Special attention was paid to ensure inclusiveness of women scientists; generate training programme, scholarships to bring more women in science. Technological empowerment of women at the grass roots, in rural areas would also be a major project, involving the Fellows of NASI and Local Chapters. The Academy is utilizing the expertise of distinguished Fellows/Scientists to organise such programmes.

**Health & Sanitation** – In this area also the Academy has very specific plan based on the success stories. The Academy has planned a broad based strategy to sensitise people and create awareness about the duo problem of Health & sanitation; and pursuing the same.

**Safe Water Supply** –The programme includes –

- Launch Water Safety Plan,
- Map the surface and underground water bodies of the country with respect to quantitative and qualitative issues,
- Human resource development for safe water
- A mass awareness and popularization programme on water has been launched by NASI country-wide.

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|---|---|
| 4. Foresight Reports and analysis if any    | : The Academy has created several policy issue documents on the basis of scientific meetings/seminars/discussions held in the Academy on the topics of national relevance with societal impact. |
| 5. Any other original Expert System devised | : NASI has specific expertise in communicating science; now it is also dealing with several environmental issues, as conservation, waste management, wet-land development etc.                  |

**E. Visual Outputs (if any, from calendar year 2010 to 2014) – Annua Reports of last five years of NASI, Two Galleries and Restored Baolies**