INDO-U.S. SCIENCE AND TECHNOLOGY FORUM

CATALYZING INDO-U.S. SCIENCE & TECHNOLOGY COOPERATION

ANNUAL REPORT 2016-17

IUSSTF

An autonomous organization jointly established by the Department of Science & Technology, Govt of India and the U.S. Department of State.

INDO-U.S. SCIENCE AND TECHNOLOGY FORUM

Catalyzing Indo-U.S. Science, Technology and Innovation Collaborations for over 15 years!

IUSSTF

Annual Report

2016-2017

The Indo-U.S. Science and Technology Forum (IUSSTF) established under an agreement between the Governments of India and the United States of America in March 2000, is an autonomous, bilateral organization jointly funded by both the Governments that promotes science, technology, engineering and biomedical research and innovation through substantive interaction among government, academia and industry. The Department of Science & Technology, Government of India and the U.S. Department of State are the respective nodal departments.

IUSSTF
Indo-U.S. Science and Technology Forum

Contents

Winds of Change
(From the Executive Director's Desk)

It is yet another successful year in a now reasonably long existence of the Indo-U.S. Science & Technology Forum (IUSSTF). When I took over the reins of the organization late in the last fiscal year, I took those initial few months to understand the organization – the challenges it faces and the opportunities it can leverage upon. Nevertheless, I was very much clear about the fact that it is time to carry out a thorough reality check to re-establish that we continue to remain aligned to our core priorities and do things that are relevant and impactful, something I touched upon in my address in last year's annual report as well.

This has been the underlying and overarching philosophy to guide the agenda for the Forum all through the year, which I am sure, is going to have a long lasting impact in shaping up the future directions. Going forward, we will focus on activities that are aligned to our core mandate of playing a catalytic role in building collaborations between India and the United States in Science, Technology and Innovation space. We will focus on activities that are of high value and impact and act as a bridge between individual players on both the sides rather than getting into brick and mortar activities that are routine, voluminous and of low value in strategic sense.

Any real and lasting change requires lot of self-belief and inner reengineering. As they say in philosophy, and rightfully so, the outside world we create for ourselves is a reflection of what we hold within. We followed the same philosophy to bring about a paradigm shift in changing the mindset within, with a sense of purpose and empowerment. We streamlined our processes and systems, made innovative use of technology and automation tools to make them more efficient and enabling and set up tougher benchmarks of performance and delivery. These initiatives started manifesting results during the year itself in realizing improved operational efficiencies. Best-ever turnaround times achieved this year in our Regular Call for Proposals for "Bilateral Workshops" and "USISTEF Grants" are a clear testimony of this fact.

As one of the other key initiatives, we forged several new strategic partnerships and alliances with other eco system players, and made full use of their respective networks to leverage and expand our outreach and visibility in both the geographies, at no or very little cost. This was amply demonstrated with the unprecedented response to the 7th call for the USISTEF program, wherein we reached out to more than 25000 estimated nodes in India and the U.S. leveraging the networks of partner institutions. I truly believe that these partnerships are going to play a pivotal role in taking our agenda forward in future, both in terms of expanded outreach and visibility as

well as in envisioning and implementing several new joint initiatives that are of strategic nature, in realizing our core mandate and making the highest possible impact with optimal utilization of resources.

I am sure these strategic initiatives, in policies and mind set, set into motion during the year would continue to define the future course and yield rich dividends for several years down the line. From this perspective, the year just gone by could perhaps be remembered in the history of the Forum as one of the most defining moments in bringing about a directional change in its journey.

On the operational front, we launched two major programs, in addition to supporting the existing portfolio of several schemes and programs. Both the two new programs, namely, "River Water and Air Quality Monitoring" and "Smart Grids and Energy Storage" are in highly contemporary areas of water, air and energy having direct consequence to the environment and hence demonstrate a global appeal. I am sure that these programs will generate not only high quality scientific output but also provide distinct leads for real life demonstration and deployment.

While I present this Annual Report of bi-national Indo-U.S. Science and Technology Forum (IUSSTF) for the Indian fiscal year 2016-17, I would like to put on record my sincere gratitude and genuine appreciation to all our partners and stake holders for their strong support. Their continued support and encouragement would indeed be very much needed for us to strive for even higher levels of performance and delivery.

At last, and in fact most importantly, I would like to acknowledge all my colleagues in the Forum for their hard work and exemplary performance in making the year a highly successful one, ever in the history of IUSSTF. They have all been standing by my side like a rock in realizing internal pride, external credibility and overall institutional glory.

Rajiv Kumar Tayal
Executive Director, IUSSTF

GENERAL

IUSSTF: The Genesis

The Indo-US Science and Technology Forum (IUSSTF) is a bi-national organisation jointly created by the Government of India (GOI) and the Government of the United States of America (USA), through a formal agreement signed by the two Governments on March 21, 2000. IUSSTF acquired legal status few months later, when it was registered as a Society under the Societies Registration Act in India on June, 2000, with its office at New Delhi.

IUSSTF is also the secretariat for the U.S.- India Science and Technology Endowment Fund, which was jointly setup later by the two Governments, through a separate agreement in the year 2009.

Department of Science and Technology (DST) under the Ministry of Science and Technology and Department of State are the two nodal arms of the Governments of India and the U.S., which overviews the functioning of IUSSTF through a Governing Body, having equal representation from both the sides.

IUSSTF: Vision, Mission and Objectives

Vision

- Excellence in Science, Technology and Innovation space through collaborative initiatives between India and the United States of America.

Mission

- Act as a catalyst to promote long-term scientific collaborations between India and the U.S. through partnerships amongst individual scientists, scientific institutions and the scientific community at large.
- Establish platforms and mechanisms to connect the S&T eco-systems of both the countries to act as a fertile ground to foster individual and institutional partnerships in a natural and sustainable manner.

Objectives

- Create awareness through exchange and dissemination of Information and Opportunities in S&T cooperation.
- Capitalize and build on the scientific and technological synergy leading to long term partnerships on shared values.
- Support an exciting program portfolio that leads to sustainable interactions and strengthens strategic partnerships.
- Nurture contacts between young and mid-career scientists to develop mutual trust, foster excellence and explore new frontiers.
- Encourage public-private partnerships to foster elements of Innovation, Application and Enterprise.

IUSSTF Program Portfolio

(Classified by Verticals)

1. Scientific Networks

- Bilateral Workshops/Training Programs
- Indo-US Virtual Network Centres
- Indo US Frontiers of Science/Engineering

2. Innovation and Entrepreneurship

- US-India Science and Technology Endowment Fund (USISTEF)
- India Innovation Growth Program (IIGP)
- Women's Entrepreneur's Quest (WEQ)

3. Research and Development

- Indo US Joint Clean Energy Research and Development Centre (JCERDC)
- Affordable Blood Pressure Measurement Technologies for Low Resource Settings in the US and India
- Partnership for International Research and Education (PIRE)
- PACEsetter Fund
- Real Time River Water and Air Quality Monitoring (WAQM)

4. Visitations and Fellowships

- Water Advanced Research and Innovation (WARI) Fellowship
- Bhaskara Advanced Solar Energy (BASE) Fellowship
- SERB–Indo-U.S. Postdoctoral Fellowships for Indian Researchers
- Bioenergy-Awards for Cutting Edge Research (B-ACER)
- Building Energy Efficiency Higher & Advanced Network (BHAVAN) Fellowships
- IUSSTF–American Physical Society Fellowships
- ASM-IUSSTF Indo-US Professorship in Microbiology
- Research Internships in Science and Engineering (RISE)
- Graduate Research Opportunities Worldwide (GROW)
- Khorana Program for Scholars
- IUSSTF-Viterbi Program
- S.N. Bose Scholars Program
- Initiative for Research & Innovation in Science (IRIS)

IUSSTF Program Portfolio

(Classified by Nature of Support)

1. IUSSTF Core

- Bilateral Workshops/Training Programs
- Indo-US Virtual Network Centres
- Indo US Frontiers of Science/Engineering
- Research Internships in Science and Engineering (RISE)
- IUSSTF Viterbi Program
- S.N. Bose Scholars Program (US counterpart)
- IUSSTF- APS Fellowships
- IUSSTF- ASM Fellowships

2. US-India Science and Technology Endowment Fund (USISTEF)

- Grant-in-Aid Support for Innovation and Entrepreneurship

3. Extra Mural Programs- EMPs

(Supported by External Agencies/ Industry)

- Indo US Joint Clean Energy Research and Development Centre (JCERDC)
- Affordable Blood Pressure Measurement Technologies for Low Resource Settings in the US and India
- Partnership for International Research and Education (PIRE)
- PACEsetter Fund
- Real Time River Water and Air Quality Monitoring (WAQM)
- Water Advanced Research and Innovation (WARI) Fellowship
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- Khorana Program for Scholars
- S.N. Bose Scholars Program
- Initiative for Research & Innovation in Science (IRIS)

GOVERNANCE STRUCTURE

IUSSTF Governing Board

Ashutosh Sharma
Co-Chair
Department of Science & Technology, Govt. of India

Jonathan Margolis
Co-Chair
U.S. Department of State

Renu Swarup
Dept of Biotechnology, Govt. of India

J.B. Mohapatra
Dept. of Science & Technology, Govt. of India

Phyllis Yoshida
U.S. Dept of Energy

Mark Coles
National Science Foundation

Indranil Manna
Indian Institute of Technology - Kanpur

Ambuj D Sagar
Indian Institute of Technology - Delhi

F. Gray Handley
National Institutes of Health

Leo M. Chalupa
George Washington University

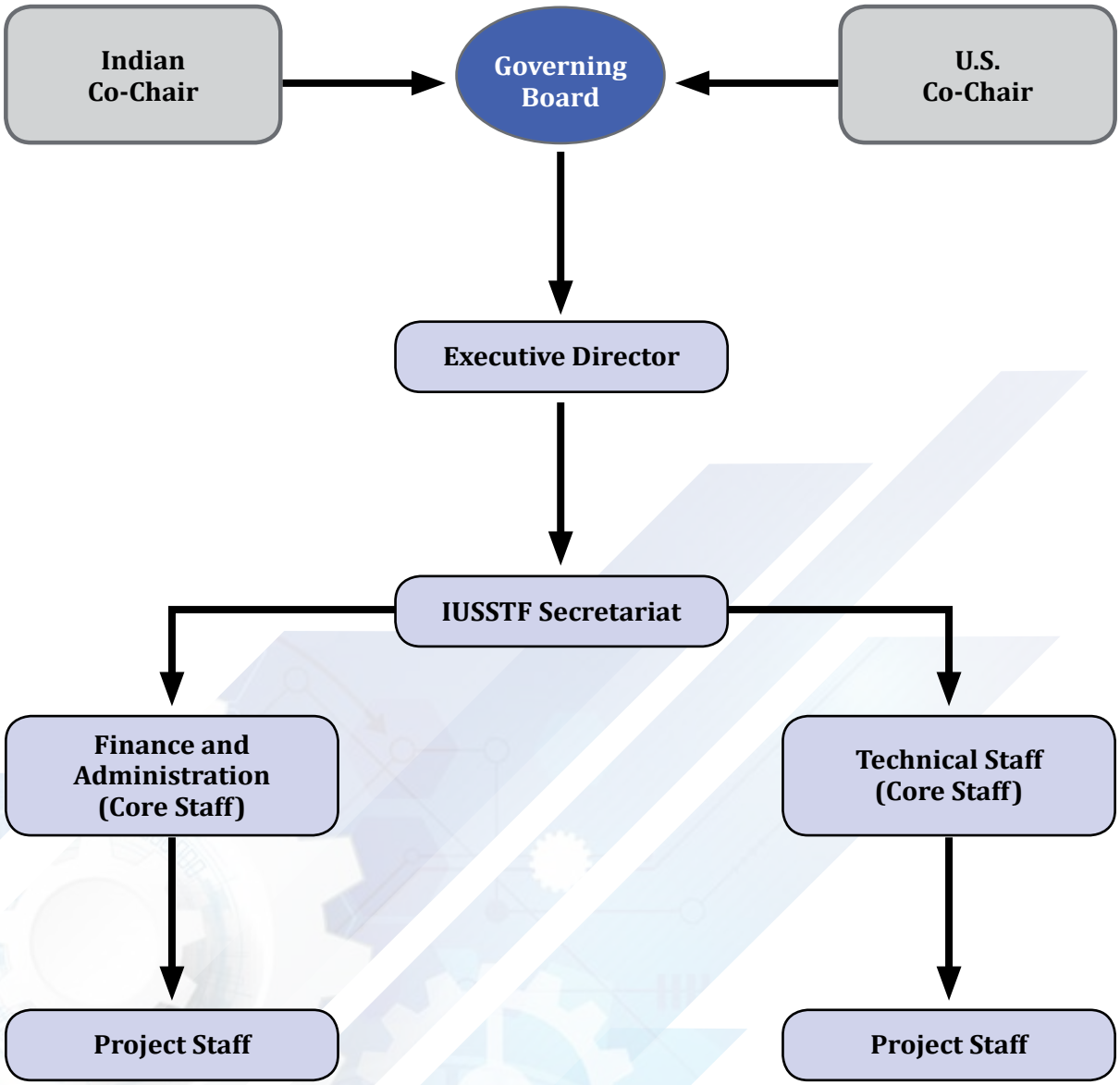
Hari S Bhartia
Jublilant Bhartia Group

Amitava Bandopadhyay
Council of Scientific & Industrial Research

Kumud Srinivasan
Intel Corporation

Anjali Sastry
MIT & Harvard Medical School

IUSSTF Organizational Chart



Administrative Mechanism

- Autonomous
- Bilateral
- Non-Governmental
- Not for Profit Society

Funding Source

- Annual Interest from U.S. Endowment Fund with matching contribution from DST, Govt. of India
- Freedom to Secure Private and Other Funding

USISTEF Board

Arabinda Mitra
Co-Chair
Dept of Science & Technology, Govt. of India

George Sibley
Co-Chair
U.S. Embassy, New Delhi

H.K. Mittal
Dept of Science & Technology, Govt. of India

Alka Sharma
Dept of Biotechnology, Govt. of India

Talat Hasan
Hitek Venture Partners

Gunjan Sinha
Metricstream

B V Phani
SIIC
Indian Institute of Technology Kanpur

Vipin Kumar
National Innovation Foundation

Steven Ferguson
National Institutes of Health

Philip Singerman
National Institute of Standards & Technology

Rajesh Ranjan
Ministry of External Affairs, Govt. of India

Ananta P Anantaram Sarma
Former-SIDBI Venture Capital

Mojdeh Bahar
US Dept of Agriculture

Lisa Brodey
US Dept of State

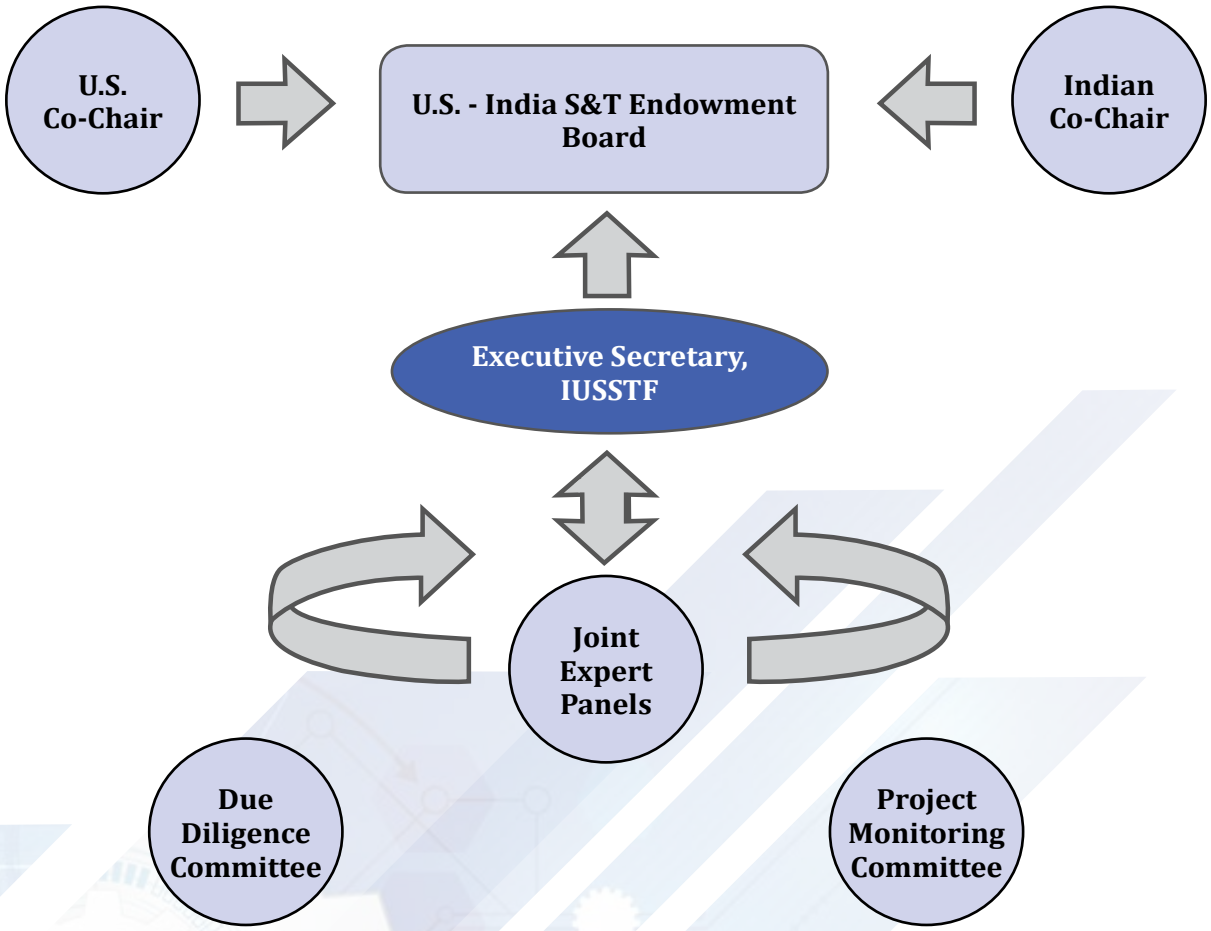
Shirshendu Mukherjee
Biotechnology Industry Research Assistance Council

Sanjay Vijay Kumar
Start-up village

Sashi Reddi
SRI Capital

Peter T. Dabrowski
Tano Capital/Tano Ventures

USISTEF Functional Structure



People Behind IUSSTF

Rajiv Kumar Tayal
Executive Director

Core Staff

R Varadarajan
Head (F&A)

Smriti Trikha
Senior Science Manager

Nishritha Bopana
Principal Science Officer

Nikhil Jain
Accountant

Monika Madan
Senior Personal Secretary

Manoj Prasad
Senior Admin Associate

Program Staff

Babulal Chaudhary
Program Officer

Pushpa Iyer
Associate Program Officer

Priya Thomas
Associate Program Officer

Radhika Tandon
Senior Program Associate

Subhashree Basu
Program Associate

Sravan Kumar Paleti
Program Associate

Anita Vishwakarma
Senior Accounts Associate

Rakesh Kumar Singh
Accounts Associate

Akanksha Kaushik
IT Associate

Rakesh Bhandari
Admin Associate

YEAR AT A GLANCE

Highlights of the Year
Snapshot I

(Operational Indicators)

Numbers

S. No	Item	Numbers
1	**Bilateral Workshops** ❖ Awarded ❖ Held	 17 15
2	**Virtual Networked Centers** ❖ Awarded ❖ Ongoing	 8 27
3	**USISTEF Grants** ❖ 7th Call Submissions ❖ 7th Call Approvals (including 2 pending final decisions) ❖ Actual Awards made (6th and 7th Calls)	 366 5 7
4	**PACEsetter Fund** ❖ Projects Awarded in First Call ❖ Submission Received in Second Call	 9 168
5	**Smart Grid and Energy Storage** ❖ Submissions ❖ Award	 6 1

Others

- Unprecedented response to the 7th USISTEF Call; 366 submissions, up by 169 % as compared to 6th Call.
- Reduced turnaround time in 7th USISTEF Call by 44% to less than 6 months.
- Use of innovative ways to extend the outreach of 7th USISTEF Call to more than 25000 nodes in India and US.
- Enabling virtual tool in "Find a partner" to address a serious bottle neck in facilitating USISTEF Applications, jointly with partner in counterpart country.
  - » Almost 10% partnerships developed through this portal in the 7th Call submissions, although recently launched.
- Reduced turnaround time in the last Call for Bilateral Workshops by 40% to 3 months.

Highlights of the Year
Snapshot II

(Strategic Initiatives)

- **New Programs**
  - Real Time River and Air Quality Monitoring (WAQM)
  - Smart Grids and Energy Storage (JCERDC- II)
  - India Innovation Growth Program (IIGP 2.0)
- **Strategic Partnerships**
  - American Association for Advancement of Sciences (AAAS)
  - Confederation of Indian Industry (CII)
  - Federation of Indian Chambers of Commerce and Industry (FICCI)
  - Indian Angel Network (IAN)
  - Life Sciences, Pennsylvania
  - TiE Global
  - Vigyan Prasar
- **Virtual Platforms and Networks**
  - Find a partner network
  - Mentor Network
  - Youth Engagement
  - Partner Network
- **USISTEF**
  - Promotional Film for USISTEF Program and Short Clippings on all USISTEF Awards
  - Program Handbook for all USISTEF Awards
  - New Logo for USISTEF
- Complete Automation across all regular Calls for Proposals (Bilateral Workshops and Joint Networked Centers) and Visitation Programs.
- Comprehensive HR Policy and New Compensation Structure for IUSSTF Staff
- General
  - Delegation of Financial Powers for Approvals and Disbursals
  - Formal implementation of Conflict of Interest and Non- Disclosure Agreement with all Stakeholders across all programs.

SECTION I

SCIENTIFIC NETWORKS

Scientific Networks

Professional Networking is an important and integral part of the scientific voyage. It facilitates cross fertilization of Ideas, leverage intellectual potential across individuals and groups and opens up opportunities for long term partnerships for collaborative research in highly interdisciplinary areas. Such events also provide a platform for young and early career scientists to interact and network with their senior and well established counterparts, who could potentially become lifelong mentors and collaborators.

IUSSTF promotes and supports such networks to foster long term collaborations between the scientific communities of India and the United Sates through two separate yet complimentary schemes. While “Bilateral Workshops" are expected to act as an instant connect and point of formal initiation, “ Virtual Networked Centers” provide a formal mechanism to support specific collaborations for an extended period.

There are ‘two’ Calls for proposals for Bilateral Workshops and ‘one’ for Virtual Networked Centers, each year. The table below shows the summary of Bilateral Workshops and Virtual Networked Centers supported during the last three years and till so far:

	Numbers			
	2014-15	**2015-16**	**2016-17**	**Cumulative (2001-2016)**
Bilateral Workshops/ Training Schools	12	15	17	344
Virtual Networked Centers	4	5	8	64

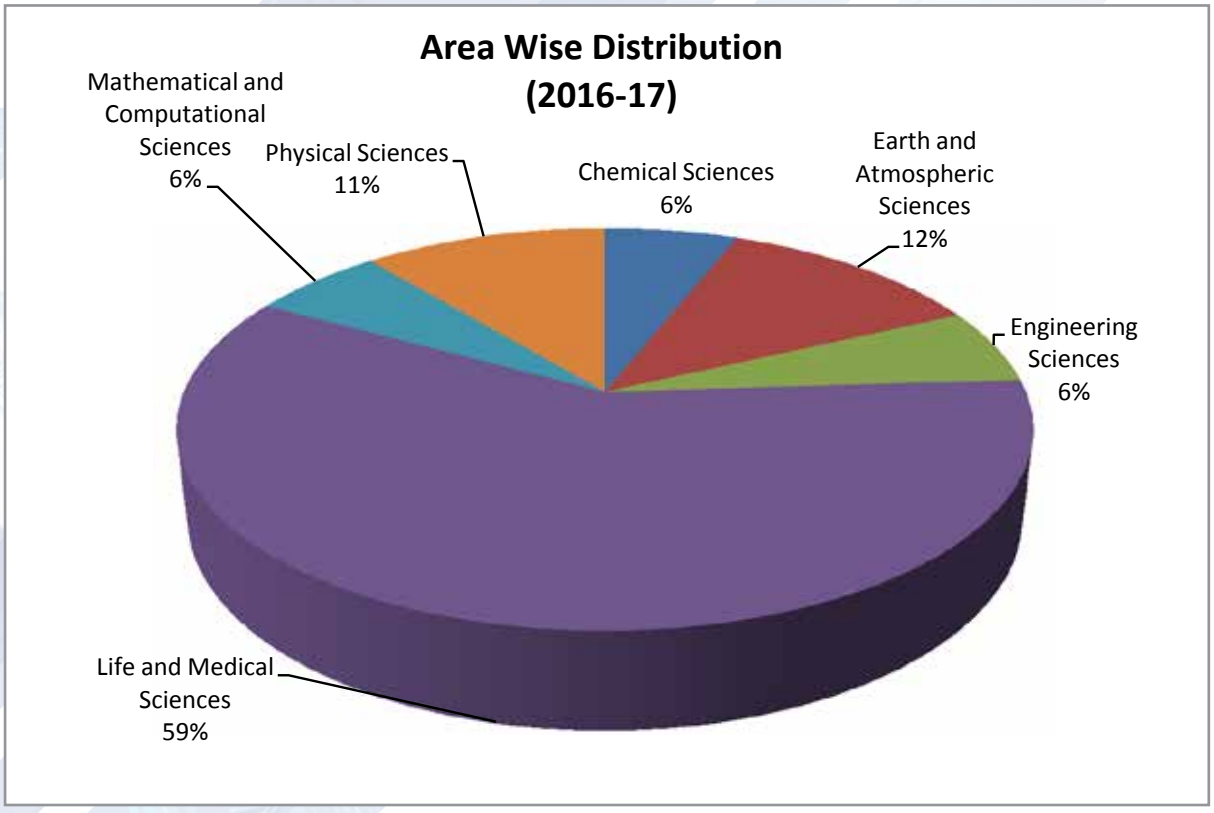
A. Bilateral Workshops/Training Programs

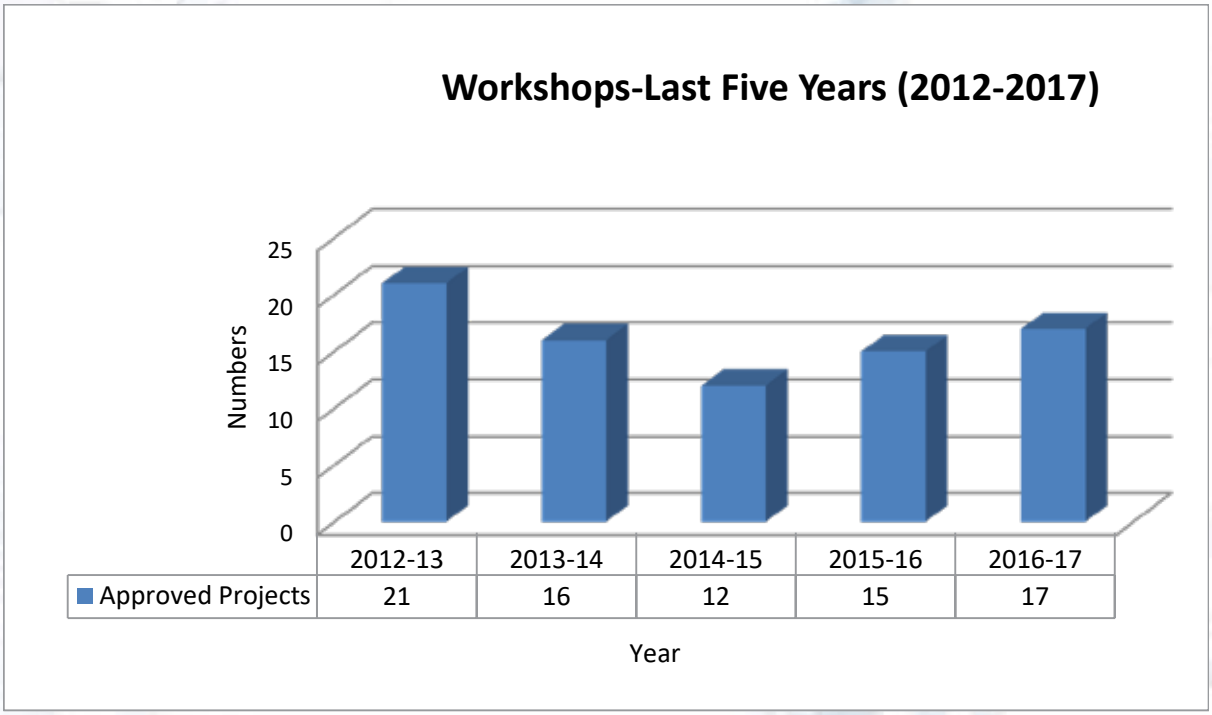
Bilateral workshops are targeted to promote interactions between Indian and American scientists and engineers from academia, laboratories and industry with the explicit aim to develop sustained linkages. Proposals are peer-reviewed both in India and the United States. The review parameters include novelty of topic, mutual benefits to India and the US, background of workshop coordinators and participants, potential for developing new & sustained bilateral linkages, student participation.

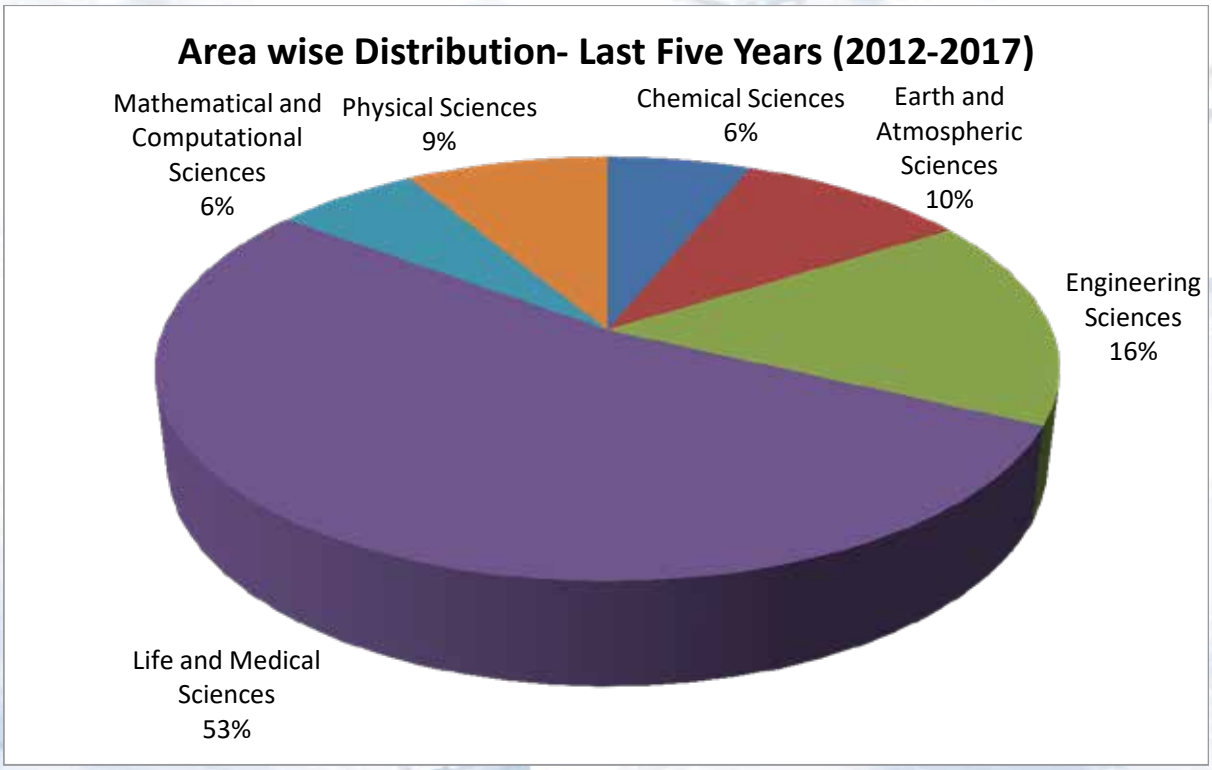
Seventeen bilateral workshops have been selected for support during the year. *Annexure I* provides the list of Workshops awarded during the year. The list of Workshops that were supported earlier but actually held during the current year may be seen at *Annexure II*. The data pertaining to the last three years is presented below.

		2014-15	2015-16	2016-17
No. of Applications Received		71	35	44
No. of Awards		12	15	17
Funding	(INR/ Million)	20.42	18.94	19.4
	(USD/ Million)*	0.31	0.29	0.30

**1USD= 64.838 INR ; The exchange rate is as per values on 31st March 2017*




Workshops-Last Five Years (2012-2017)
Numbers
25
20
15
10
5
0
2012-13
2013-14
2014-15
2015-16
2016-17
Approved Projects
21
16
12
15
17
Year


Area wise Distribution- Last Five Years (2012-2017)
Mathematical and Computational Sciences 6%
Physical Sciences 9%
Chemical Sciences 6%
Earth and Atmospheric Sciences 10%
Engineering Sciences 16%
Life and Medical Sciences 53%

B. Virtual Networked Centers

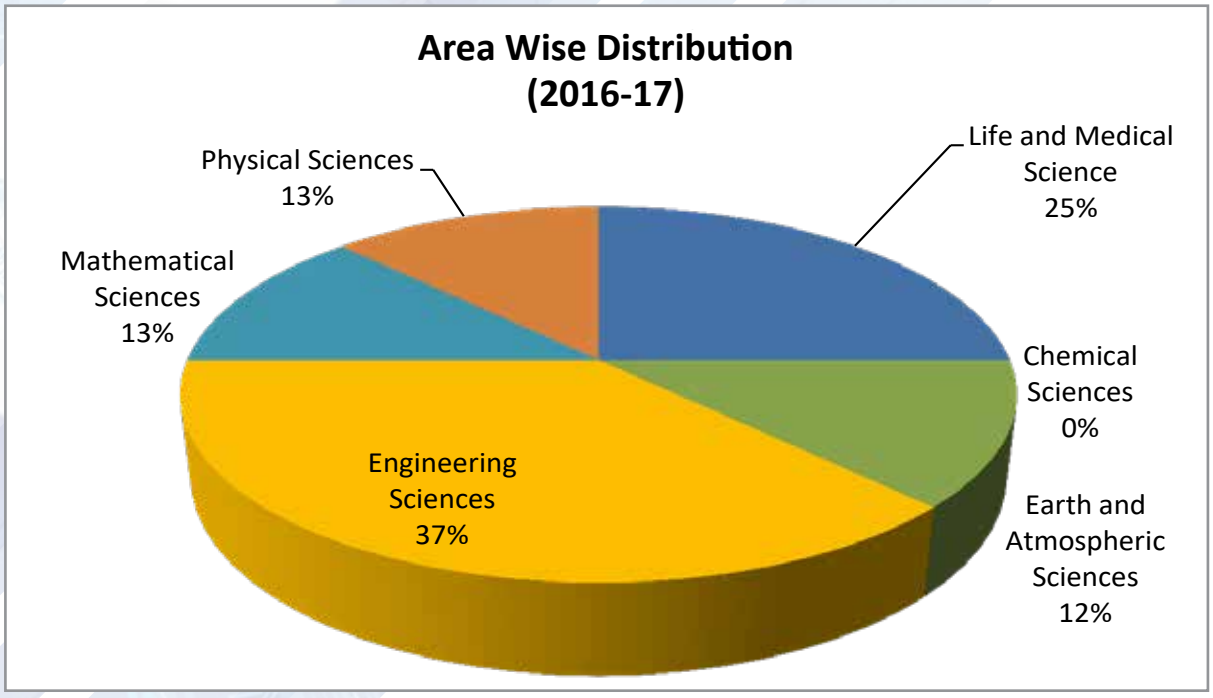
The aim of Virtual Networked Centers is to enable Indian and American scientists to carry out joint research activities by leveraging already existing infrastructure and funding available with the partners on both sides through a linkage established by a virtual mechanism that provides for seamless connectivity and exchange of faculty/ scientist and students from both sides. These centers are supported under two categories:

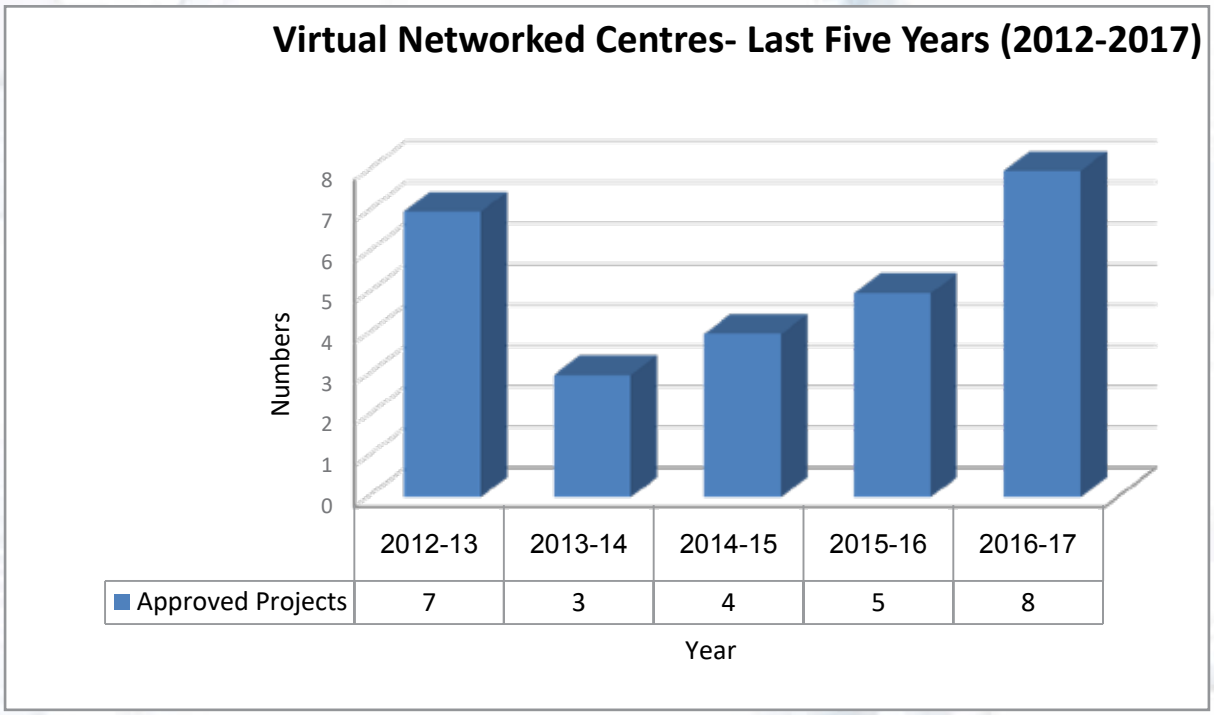
- **Knowledge R & D Networked Centres:**
  - Partners: R&D labs and academia partnership (2+2)
  - Provide opportunities for integrating research and education
- **Public-Private Networked Center:**
  - Partners: Academia R&D lab - Industry partnership (2+2)
  - Promote pre-commercial R & D with application potential

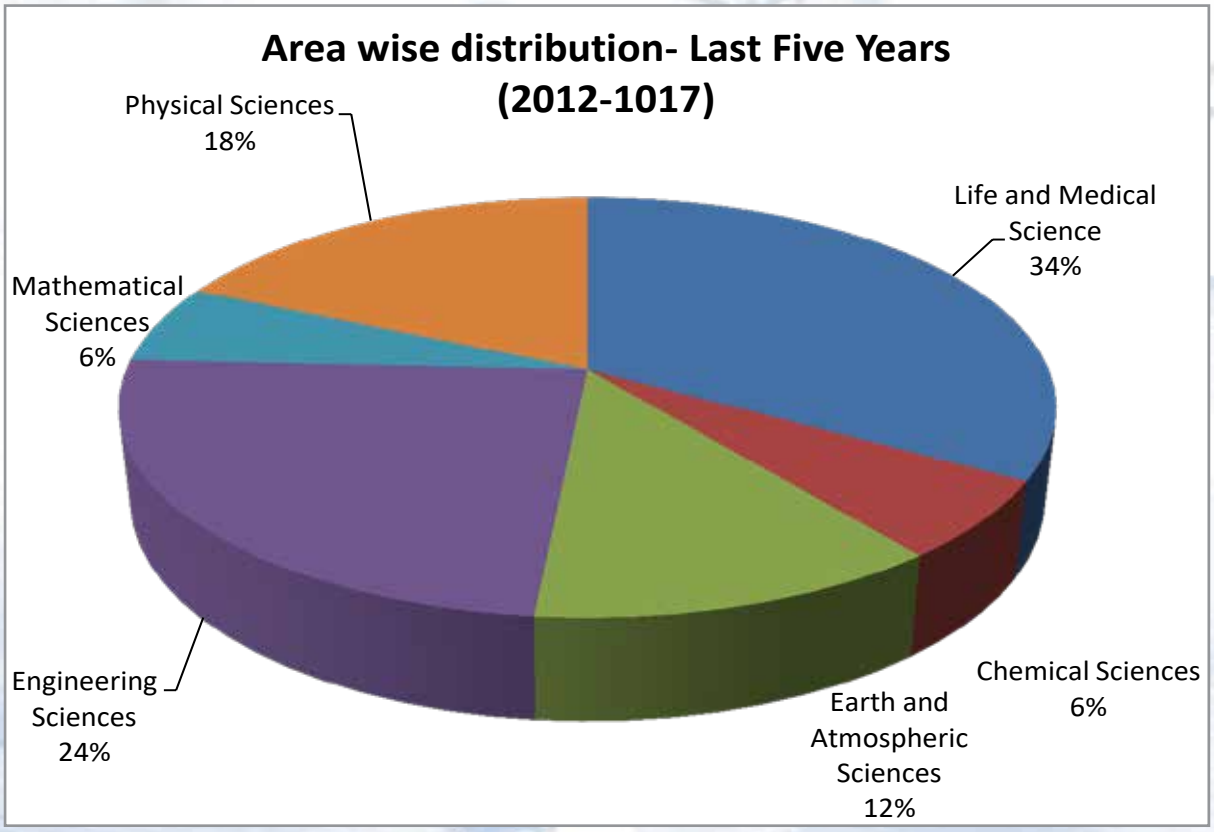
Eight Joint centers were awarded during the year, the list of all the Joint Centers supported may be seen vide *Annexure III*. The data for the last three years is presented below.

		2014-15	2015-16	2016-17
No. of Applications Received		39	28	33
No. of Awards		4	5	8
Funding	(INR/ Million)	16.05	16.56	29.84
	(USD/ Million)*	0.25	0.26	0.46

**1USD= 64.838 INR;The exchange rate is as per values on 31st March 2017*




Virtual Networked Centres- Last Five Years (2012-2017)
Numbers
8
7
6
5
4
3
2
1
0
2012-13
2013-14
2014-15
2015-16
2016-17
Approved Projects
7
3
4
5
8
Year


Area wise distribution- Last Five Years (2012-1017)
Physical Sciences 18%
Life and Medical Science 34%
Mathematical Sciences 6%
Engineering Sciences 24%
Earth and Atmospheric Sciences 12%
Chemical Sciences 6%

Virtual Centres- Institutional Engagement (2016-17)

India	USA
❖ All India Institute of Medical Sciences, New Delhi ❖ Chandigarh University, Chandigarh ❖ Chennai Mathematical Institute, Chennai ❖ Indian Institute of Astrophysics, Bangalore ❖ Indian Institute of Science Education & Research (IISER) Kolkata ❖ Indian Institute of Science, Bangalore ❖ Indian Institute of Technology (BHU), Varanasi ❖ Indian Institute of Technology Bombay ❖ Indian Institute of Technology Kanpur ❖ Indian Institute of Technology Kharagpur ❖ Indian Institute of Technology Roorkee ❖ Institute of Genomics and Integrative Biology, New Delhi ❖ Institute of Mathematical Sciences, Chennai ❖ International Centre for Theoretical Sciences, Mumbai ❖ Jawaharlal Nehru Center for Advanced Scientific Research, Bengaluru ❖ National Centre for Biological Sciences, Bengaluru ❖ Raman Research Institute, Bangalore ❖ Tata Institute of Fundamental Research, Mumbai ❖ Udaipur Solar Observatory, Physical Research Laboratory, Udaipur	❖ Beth Israel Deaconess Medical Center, Boston ❖ Boston Children's Hospital, Boston ❖ Brandeis University, Waltham ❖ California Institute of Technology, Pasadena ❖ Georgia State University, Atlanta ❖ Harvard Medical School, Boston ❖ Johns Hopkins University, Baltimore ❖ Massachusetts General Hospital, Boston ❖ Massachusetts Institute of Technology, Boston ❖ NASA Goddard Space Flight Center, Greenbelt ❖ National Center for Atmospheric Research, Boulder ❖ National Solar Observatory, Boulder ❖ Northeastern University, Boston ❖ Pennsylvania State University, State College ❖ Rensselaer Polytechnic Institute, Troy ❖ Stanford University, Stanford ❖ Texas A&M University, College Station ❖ University of California, Berkeley ❖ University of California, Los Angeles ❖ University of California, San Diego ❖ University of Chicago, Chicago ❖ University of Maryland ❖ University of North Carolina, Chapel Hill ❖ Wayne State University, Detroit

SECTION II

INNOVATION & ENTREPRENEURSHIP

Innovation and Entrepreneurship

Innovation is the corner stone that translates the outcome of scientific research into tangible deliverables of utilitarian value and enterprise is the vehicle to take them to the end user. In the absence of innovation and enterpise, the real fruits of scientific discoveries will hardly reach a majority of mass population. Hence , innovation and enterpise are the vital links that connect science to the general public and fully justify the investment in R&D, a large portion of which is funded by public money.

IUSSTF supports a rich portfolio of schemes to promote innovation and entrepreneurial initiatives that have potential to impart direct societal impact and better quality of life for people delivered at affordable cost, in addition to generating employment and creating overall economic value for the society.

IUSSTF provides grant-in-aid funding support to startup companies under **United Staes India Science and Technology Endowment Fund (USISTEF)**, which is our flagship program in the space of innovation and enterprise. This support is aimed to enable bilateral teams from India and United States to transalate S&T driven innovations into distinct market oppurtunities.

IUSSTF also implements **India Innovation Growth Program (IIGP**) and **Women Entreprenuership Quest (WEQ)** in partnership with other agencies and ecosystem Partners. Both IIGP and WEQ are empowering mechanisms to recognise and reward outstanding innovations and innovators, that have inbuilt features of advanced mentoring and experiential visits to Silicon Valley Innovation eco-system.

A. United States–India Science & Technology Endowment Fund (USISTEF)

The governments of the United States of America (through the Department of State) and India (through the Department of Science & Technology) established USISTEF for the promotion of joint activities that would lead to innovation and entrepreneurship through the application of science and technology.

The fund supports and fosters applied R&D to generate public good with the commercialisation of technology acheived through sustained partnership between US and Indian researchers and entrepreneur. Through a highly competitive process, the Fund selects and supports financially promising Joint US-India entrepreneurial initiatives on co-developing products or technologies that are beyond the ideation stage, high on societal impact and have significant potential to commercialise within 2-3 years. The projects are generally chanelised into two broad categories namely **"Empowering Citizens (EC)"** and **"Healthy Individuals (HI)"**. However this classification is more suggestive than restrictive in a strict sense.

During the last seven years, 'twenty five' projects have been awarded through Seven Calls List of awards made during the year is presented vide *Annexure IV*; while the complete list of all the awards made so far may be seen at *Annexure V*.

Highlights of the Year

- The Seventh Call for proposals was announced in the first week of May, 2016, which closed by the end of the June, 2016.
- A multi-pronged strategy was followed for the outreach of the Call through several innovative techniques, both virtual and physical. We used our networks as well as leveraged the networks of our partner institutions to reach out to close to 25,000 individual and institutional nodes in India and U.S. Several physical interactive meetings and road shows were organized to expand the outreach and establish a personal connect with potential applicants in India and the U.S.
- Finding a partner in the counterpart country for joint collaborative work was identified as a big challenge and hence a major impediment to the response to the program. This is hard to address through any physical intervention with deep level of penetration and makes it almost impossible for first timers to participate in the program in the absence of an already existing contact.
- This issue was effectively addressed through another innovative measure by creating a virtual platform "Find a Partner". Although the platform was created almost concurrent with the announcement of the Call, it still evoked an overwhelming response with 165 posts and eventually resulting in almost 10% of the total submissions based on partnerships developed through this platform.
- It is believed that going forward this technology enabled virtual tool will be a very potent mechanism to develop new partnerships between Indian and US collaborators not only for USISTEF grants but for several other IUSSTF schemes across the board.
- The Seventh Call evoked an unprecedented response in the entire history of USISTEF with a record number of **366 submissions** as compared to 136 submissions received against the preceding Sixth Call. This was attributed to several innovation driven creative ways

for proactive promotion and outreach that was not only just informative but educative, enlightening, inspirational and insightful to help potential applicants write grant applications.

- The process for the evaluation of the grant applications was designed in a thoughtful and innovative manner such that it was effective and efficient in spite of the challenge of bilateral nature involving different geographical locations and time zones. The actual execution of the process was carried out in the most professional manner with surgical precision that eventually resulted in **the best ever turnaround time of less than six months** for the entire cycle from submission to final award.
- A comparative analysis of various parameters associated with the execution of the Seventh Call is presented in the table below; with reference to the preceding Sixth Call to substantiate the transformational change.

Comparative Analysis of Execution

Parameters	Sixth Call	Seventh Call
Registrations	611	**1767**
Applications	194	**568**
Final Submissions	136	**366**
Final Awards	4	**5**
Turn Around Time (Days)		
Submission to Decision	229	**153**
Submission to Final Award	309	**173**

- A new logo was designed and implemented for USISTEF at a fraction of monetary cost and human effort as compared to several unsuccessful attempts made in the past.
- Short films were commissioned for all the 22 awards made so far to visually showcase the novelty, utility and impact of the corresponding innovations / products. A stand-alone film was also made to showcase the entire USISTEF program highlighting the impact it has made so far and the potential for the future.
- A handbook of all the 22 awards was also prepared to showcase the outcomes of individual projects and overall achievement of the programs in the print format as an alternate mode of presentation to serve a different set of audience.
- A total of seven awards were made during the year, four pertaining to the Sixth Call and three pertaining to the Seventh Call. Two more projects pertaining to the Seventh Call are still under consideration for the final decision of the Board, to whom award will be made during next year assuming they get a favorable disposition. The Projects awarded during the financial year 2016-17 are listed in *Annexure IV.*
- The following two products supported by USISTEF grants were commercially launched during the period:

- » Qora™ Stool Management Kit- New standard for management of faecal incontinence addressing clinical and economic issues and reduced skill level for usage.
- » Neobreathe™ - World's first foot operated resuscitation system with additional functionalities and features

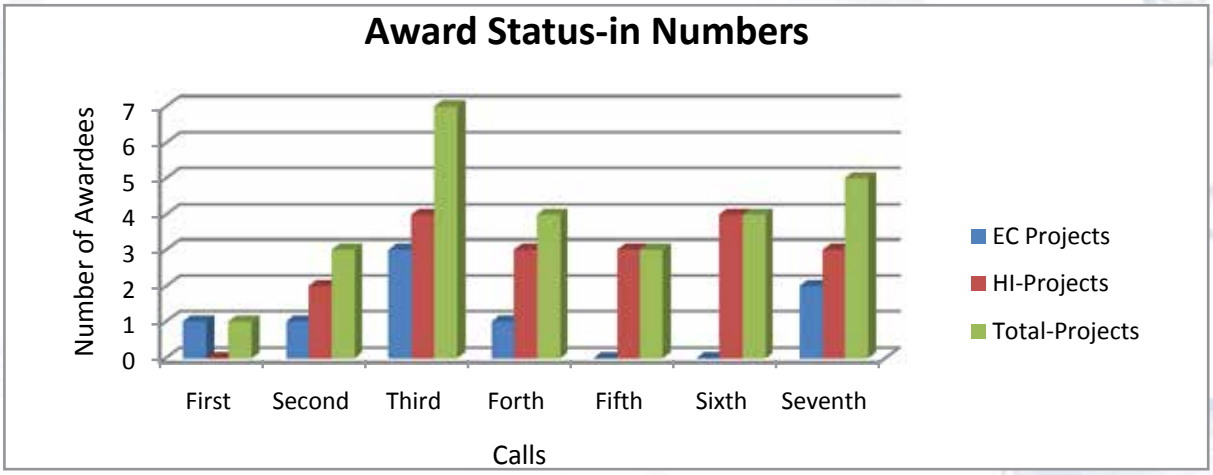
❖ Following technology enabled Virtual Platforms were implemented during the period:

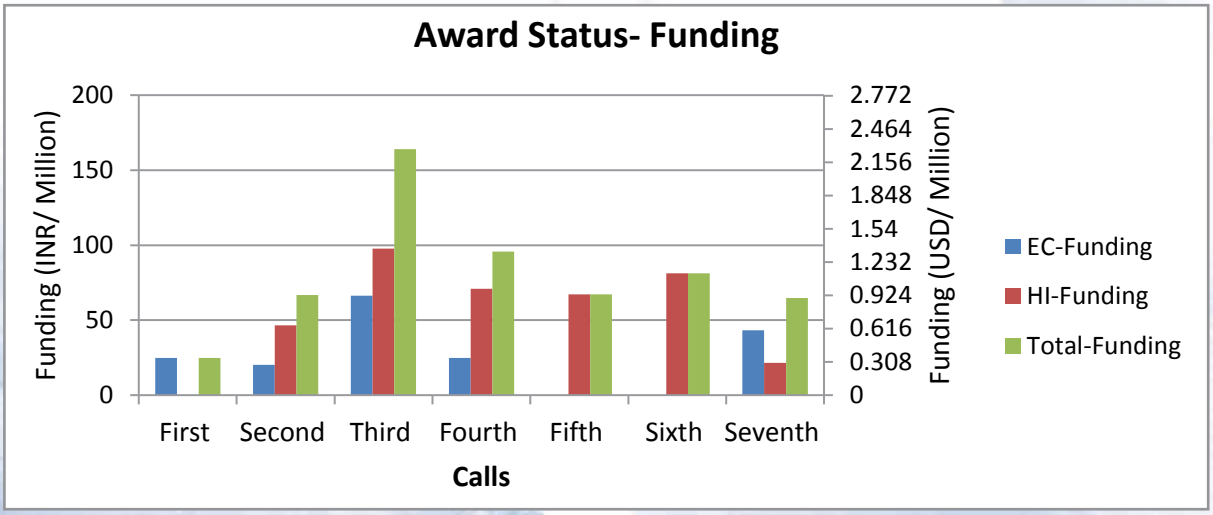
- » **Find a Partner** – To facilitate match making by identifying and connecting to appropriate counterpart(s) in India or the U.S. as a collaborative partner for the joint teams for USISTEF grants.
- » **Mentor Network** – To develop a resource pool of mentors in various domains and establish connectivity of start-up companies with those mentors for valuable advice and benefit from their experiences.
- » **Youth Engagement** – A very unique concept of generating internship opportunities in USISTEF supported start-up companies for young innovators who aspire to be a start-up themselves in future. The take-away for the host company will be availability of highly motivated human resource(s) at no or very little cost.

Overall Status across all Calls

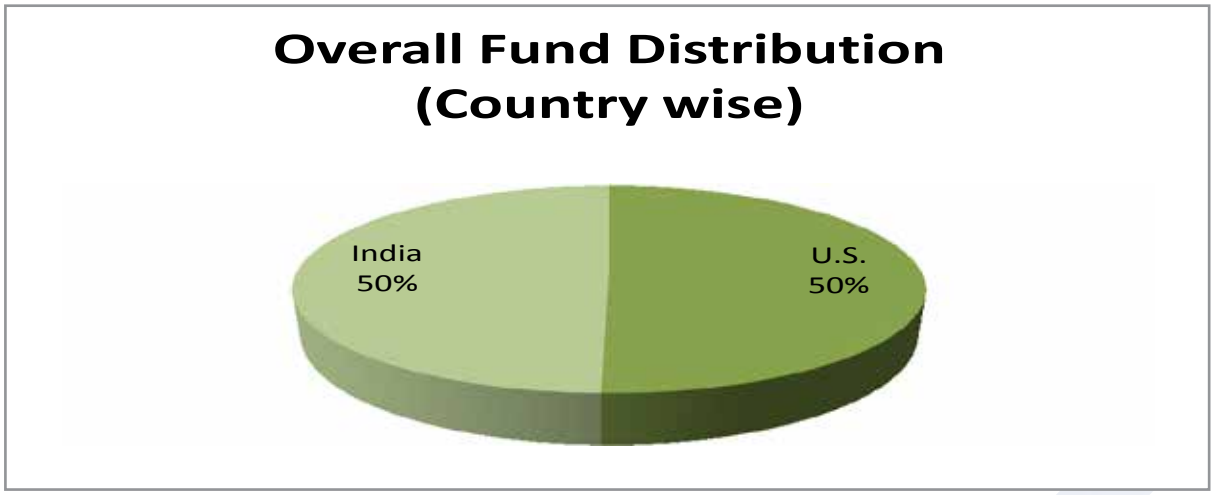
Calls	EC			HI			Total		
	Projects	Funding		Proj-ects	Funding		Projects	Funding	
		(INR/ Million)	(USD/ Million)*		(INR/ Million)	(USD/ Million)*		(INR/ Million)	(USD/ Million)*
First	1	24.92	0.38	0	0	0.00	1	24.92	0.38
Second	1	20.32	0.31	2	46.51	0.72	3	66.83	1.03
Third	3	66.34	1.02	4	97.72	1.51	7	164.06	2.53
Fourth	1	24.8	0.38	3	70.96	1.09	4	95.76	1.48
Fifth	0	0	0.00	3	67.31	1.04	3	67.31	1.04
Sixth	0	0	0.00	4	81.28	1.25	4	81.28	1.25
Seventh	2	43.3	0.66	3	66.23	1.02	5	109.53	1.69
Total	**8**	**179.68**	**2.75**	**19**	**430.01**	**6.63**	**27**	**609.69**	**9.40**

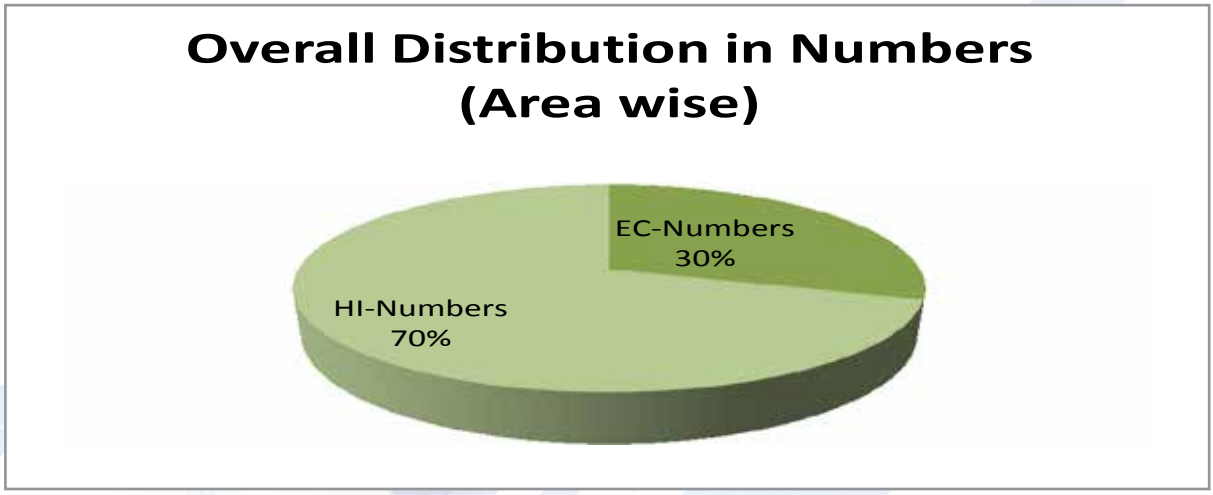
**1USD= 64.838 INR;The exchange rate is as per values on 31st March 2017*

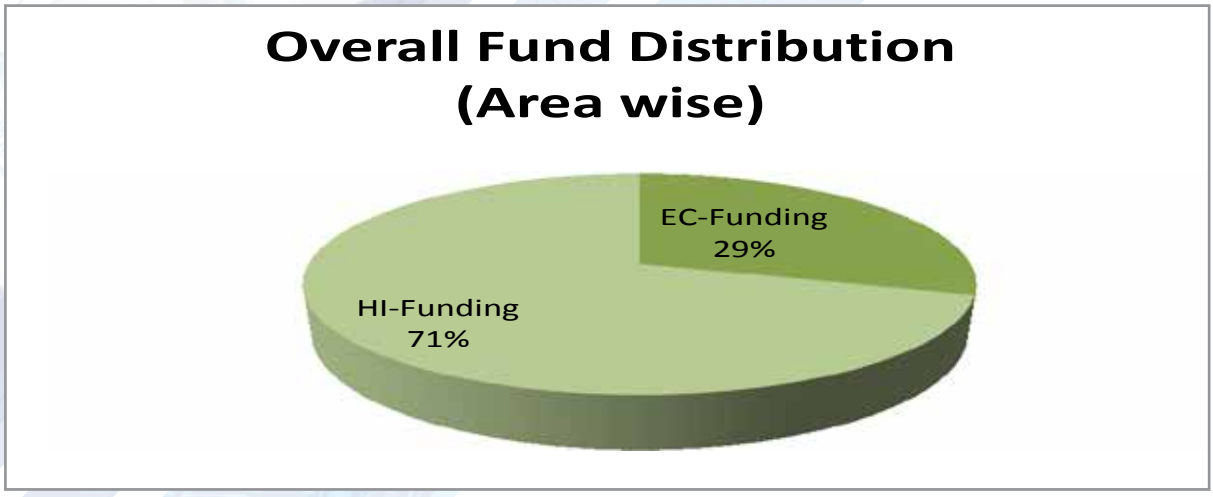




EC- Empowering Citizens | **HI-** Healthy Individuals







EC- Empowering Citizens | **HI-** Healthy Individuals

B. Women Entrepreneurship Quest (WEQ)

IUSSTF partnered with the National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology (DST), Government of India and the Anita Borg Institute (ABI), U.S.A to enhance the entrepreneurial ecosystem for women entrepreneurs in India. The joint partnership is established in synergy with the **Women Entrepreneurship Quest (WEQ)**. WEQ is a unique business plan competition for women entrepreneurs in technology. It is designed to reach out and identify talented women in the founding or leadership role of early stage startups, who have applied technology in innovative ways to solve meaningful business problems and/or address societal issues

Highlights of the Year:

A select group of six winners were picked up from the 2015 round of WEQ, through a nation wide competitive process. These select women entrepreneurs were provided an oppurtunity to visit Sillicon Valley on an experiential tour for one week in May 2016, during which they got a general exposure to the overall innovation eco-system at Sillicon Valley. They also visisted some leading innovation driven companies and had inspirational interaction with iconic entrepreneurs and buisness leaders. Specific sessions on mentoring, bootstrapping and pitching were also organised for the visiting delegation of women entrepreneurs.

The Companies/institutions with which the delegation had interaction were Dropbox, Storm Ventures, Hass Buisness School and Meera Kaul Foundation. The delegation also participated in the annual flagship event of TiE-Con, organised by TiE-Silicon Valley with the participation of over 4000 innovators and entrepreneurs from all over the world.

For the current year, the level of engagement has been enhanced considering the impact of the program. Accordingly, top ten women entreprenuers have been identified up during the current year from the 2016 round of WEQ, who would be taken to a similar experiential visit to Silicon Valley in May 2016. All the Winners from the 2015 and 2016 round of WEQ are listed in *Annexure VI*.

C. DST-Lockheed Martin India Innovation Growth Program (IIGP)

DST-Lockheed Martin India Innovation Growth Program (IIGP) is a Public-Private partnership program supported by the Department of Science and Technology, (DST) Govt. of India and Lockheed Martin Corporation, USA with an aim of accelerating Indian innovations in the global marketplace. The IIGP program is being administered by IUSSTF and Federation of Indian Chambers of Commerce and Industry (FICCI). The U.S. partnering institutions are Stanford Graduate School of Business; the IC^2 Institute at the University of Texas at Austin and TiE Silicon Valley.

Over the years IIGP has created enormous value to the overall ecosystem of innovation and eneterprise. This is estimated to be of approximately INR 50 Billion, in terms of economic value turnover and 3500 in number in terms of employment generation, by an independent third party study.

Highlights of the Year:

- A large number of over 1200 entries were recieved against the Open Innovation Call made during the year. Fifty most promising innovators were seected from this pool for a week long bootcamping by the faculty of Stanford Buisness School, before they came prepared to make a final pitch to a panel of experts. Thirty winners were identified during this final round for felicitation in a formal cermony coinciding with the 10th year celebration of the program.
- Twenty winners were given a cash award of INR100,000, while the remaining ten will be taken for a fully paid experimential visit to Silicon Valley eco-system, next year (2017-18). A select number of entreprenuers wll also have oppurtunity to be mentored by IC^2, UT Austin, specifically from the perspective of global outreach.
- Winners of last year's 2015 round of IIGP were taken to Silicon valley in September 2016; the list may be seen at *Annexure VII.*
- The List of last year's Winners receiving IC^2 Institute'sBusiness Development Support is given as *Annexure VIII.*
- Going forward, it was decided that the two sides would contribute $1 Million each towards the implementation of the program. The Indian contribution would be from NSTEDB and the U.S. contribution would be shared equally by Lockheed Martin Corporation, USA and Tata Trust.
- Structure of the new version of IIGP 2.0 has been worked out going forward with enhanced level of engagement, both in terms of monetary commitment as well as content. A new partner in Tata Trusts has come on board, while institutions like MIT, IIT- Bombay and IIM-Ahemdabad will participate as implementation partners to impart more value to the program.

SECTION III

RESEARCH AND DEVELOPMENT

Research and Development

IUSSTF supports a fairly broad portfolio of R&D programs in key strategic areas that are of interest to both the countries at any given point of time. The current portfolio includes flagship program like Joint Clean Energy Research and Development Centre (JCERDC), in addition to various other programs on Affordable Blood Pressure Measurement Technologies, Partnership for International Research and Education (PIRE) and PACEsetter Fund. The second phase of the Partnership to Advance Clean Energy (PACE)- Research on Smart Grid and Grid Storage was launched during the period. In addition to generating new scientific insights, equal emphasis will be assigned to functionally demonstrate fully integrated technologies for real time deployment. A new program was launched during the year on Real Time River Water and Air Quality Monitoring (WAQM).

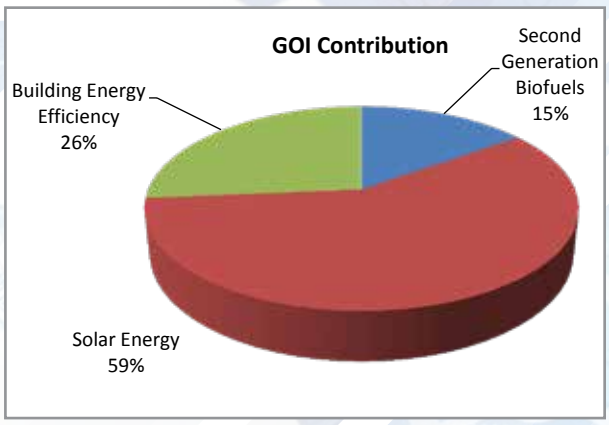
A. Joint Clean Energy Research and Development Center (JCERDC)

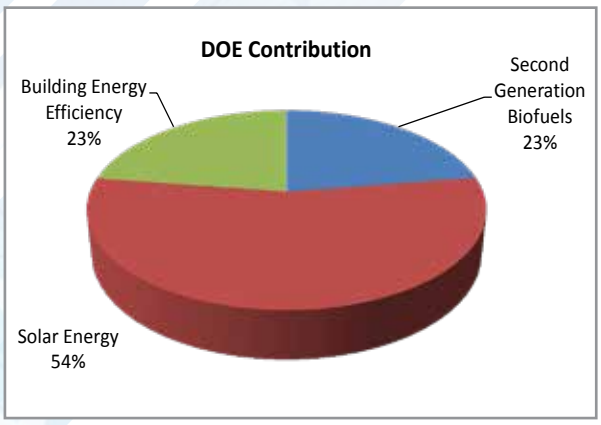
The **Indo-U.S. Joint Clean Energy R&D Centre (JCERDC)** is a joint initiative of the Ministry of Science and Technology and the U.S. Department of Energy. The program was started in the year 2012 with IUSSTF as the implmenting agency. The aim of the program is to facilitate joint research and development on clean energy technologies that may be deployed rapidly with the greatest impact. The JCERDC is based on a public-private partnership model of funding and is a first-of-its-kind initiative that has brought together more than 100 Indian and U.S. academic and industrial partners to work jointly in the space of clean energy research for rapid deployment of technologies.

JCERDC Phase I

Deliverables at a Glance

Parameters	Solar (SERIIUS)	Building (CBERD)	Biofuel (SALBS)
Number of Partnering Institutions	32	41	18
Research Papers in Peer-Reviewed Journals	234	35	20
Conference Proceedings	350	45	63
Patents Filed	7	2	2





Potential Leads and Deployables:

***Solar Energy Research Institute for India and the United States (SERIIUS)*:**

» Heliostat development
» Reliability Studies for Photovoltaics in India
» Soiling Mitigation for PV Modules
» Super-critical CO_2 laboratory scale test loop facility
» Small-scale solar receivers for s-CO_2
» New absorber coating material with high thermal stability and high corrosion resistant property
» Use of Flexible Glass for Substrates and Encapsulation
» Novel Processing for Silicon Solar Cells

Center for Building Energy Research and Development (CBERD):

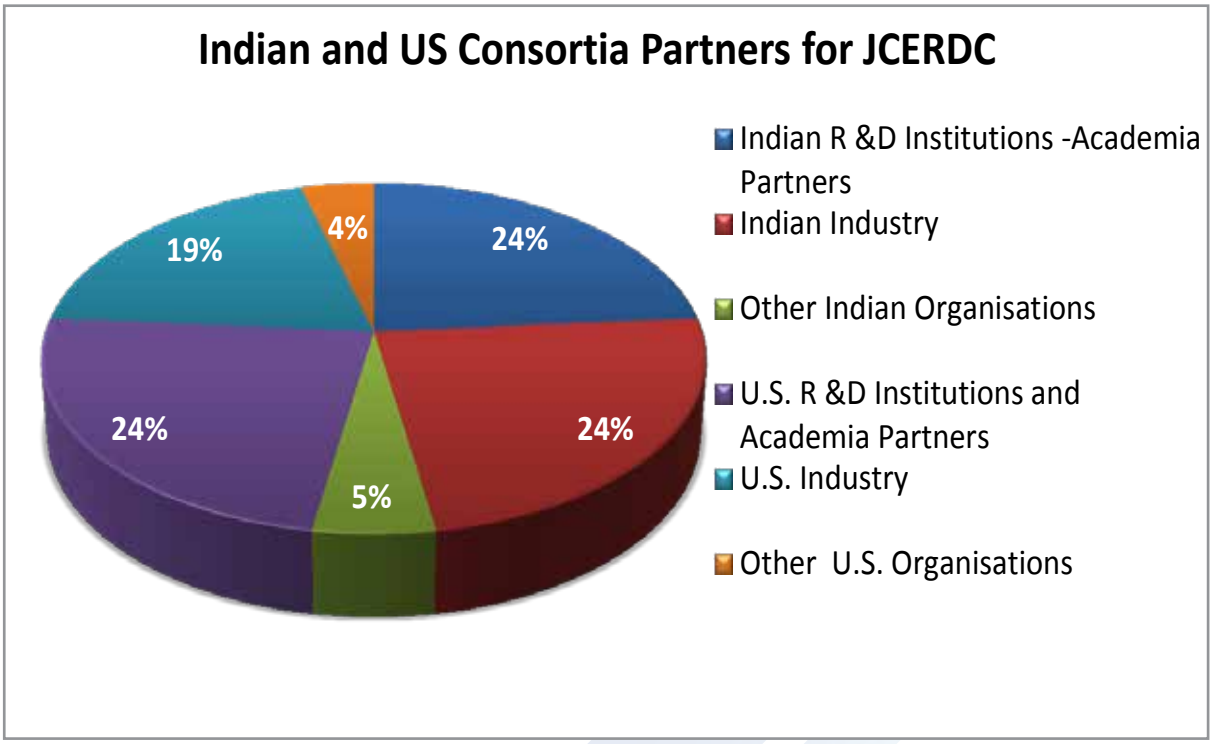
» COMFEN India & eDOT
» Phase change material ceiling tiles
» Laser Cut Panels
» Dedicated Outdoor Air System
» Indirect evaporative space cooling
» Affordable smart power strip
» Low energy wireless motion sensor

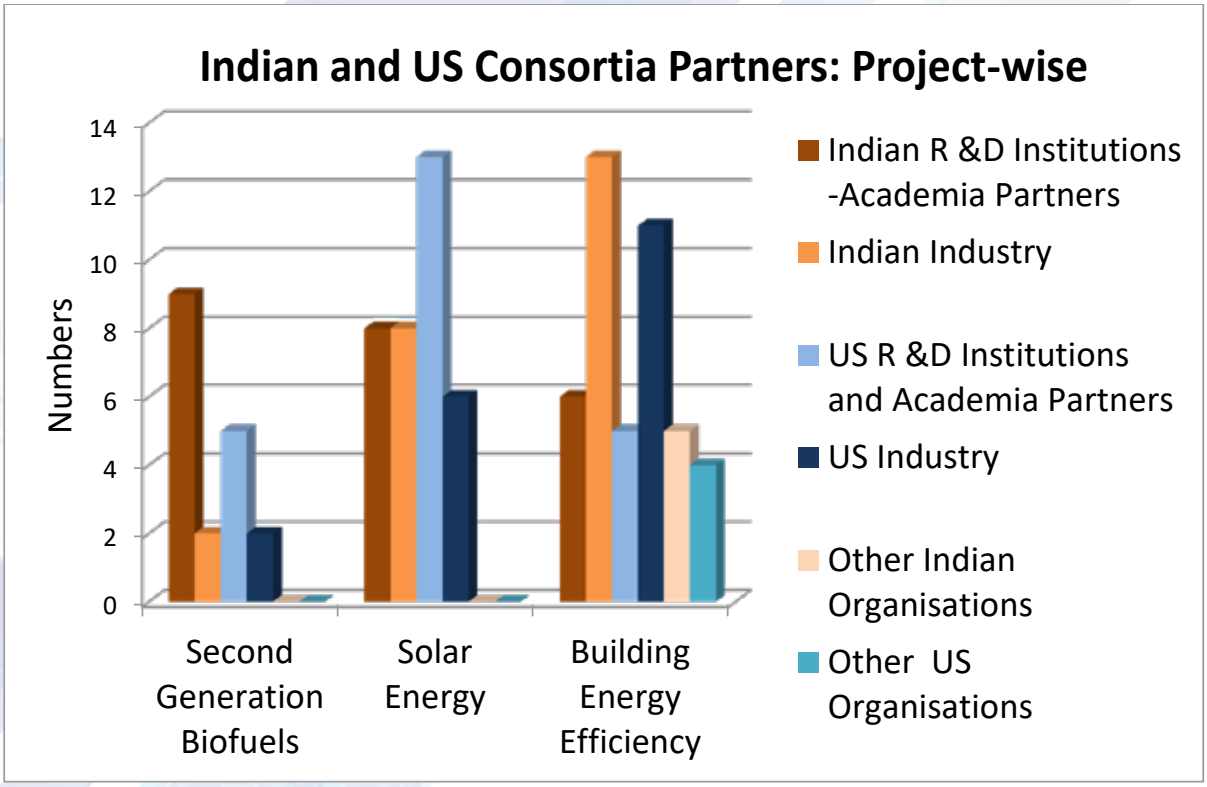
Sustainable Advanced Lignocellulosic Biofuel Systems (SALBS):

» High biomass abiotic stress tolerant sorghum, pearl millet and bamboo
» Low-input advanced feedstock production system
» Efficient pre-treatment & fermentation process
» Standardization &certification protocols

Other Highlights:

» *Joint U.S.-India Mid-Term Reviews* were conducted over DVC for the following three projects in April 2016.
» Project Monitoring Committee (PMC) review meetings (on the India side) were held for all three consortia in September 2016 to monitor their progress in conformity with the outputs, milestones, targets and objectives of the Project.


Indian and US Consortia Partners for JCERDC
24%
24%
5%
24%
19%
4%
Indian R &D Institutions -Academia Partners
Indian Industry
Other Indian Organisations
U.S. R &D Institutions and Academia Partners
U.S. Industry
Other U.S. Organisations


Indian and US Consortia Partners: Project-wise
Numbers
0
2
4
6
8
10
12
14
Second Generation Biofuels
Solar Energy
Building Energy Efficiency
Indian R &D Institutions -Academia Partners
Indian Industry
US R &D Institutions and Academia Partners
US Industry
Other Indian Organisations
Other US Organisations

JCERDC Phase II

The United States and India have decided to expand the Partnership in Advance Clean Energy Research (PACE-R) to two new research areas critical to improving the reliability, flexibility, and efficiency of the electricity delivery system: **Smart Grid and Energy Storage**. This will help bring together top talent from both countries and is expected to generate key technological advancement through genuine collaboration between the U.S. and Indian researchers. The U.S. Department of Energy and the Government of India (through Ministry of Science and Technology) each expect to award approximately $1.5 million in the first year of operation, and an additional $1.5 million per year through fiscal year 2020, with a 50 percent cost share requirement, for a total $30 million public-private research effort over five years.

JCERDC Phase II was formally launched during the current year with Funding Opportunity Announcement in July 2016 with a submission deadline of 12 October 2016. A total of six consortia proposals were recieved that met all the eligibility criteria.

B. Affordable Blood Pressure Measurement Technologies for Low-Resource Settings in India and the U.S.

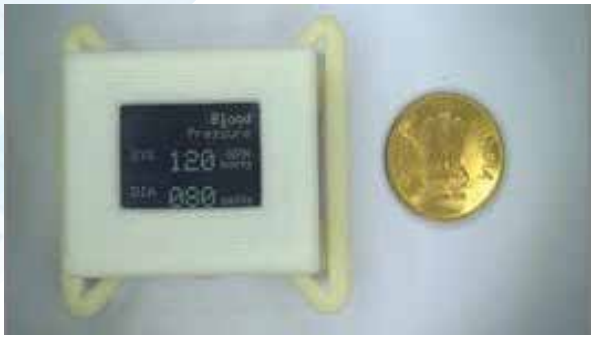
The purpose of this Indo-U.S. Grand Challenge Initiative between **Science & Engineering Research Board (SERB)**, Department of Science & Technology, Government of India and the **National Institute of Biomedical Imaging and Bioengineering (NIBIB)**, NIH, USA is to encourage collaborative research within and between both the countries to propose new approaches to the measurement of Blood Pressure that are unobtrusive or passive, low cost and which can automatically provide frequent data recording and reporting to healthcare workers as well as feedback to the patients.

Progress thus far:

- Two Calls for Proposals
- 6 teams funded on the Indian side.
- 5 teams funded on the U.S. side.
- Indian Teams:
  - **Patents:** 3 (+2 provisional Patents)
  - **Publications:** 20 (+3 publications under preparation)

Highlights of the Year:

- The first joint discussion meeting with the five U.S. funded teams and six Indian funded teams was organized in Orlando, Florida on 16th August 2016 to provide a platform for individual teams to come together, present their work and share their experiences to benefit each other and culminate in the collective wisdom that could decide the future course of the program. Additional experts from the Indian as well as American side were pooled in to help in assesing the progress thus far and to draw the road map for the future.
- The three India projects supported under the first call have completed their project tenure and have been successfully concluded.



C. Partnerships for International Research and Education (PIRE)

PIRE is NSF's (National Science Foundation, USA) flagship international program to support high quality research and education projects across all disciplines. The program aims to leverage the resources of individual funding agencies towards advancement of knowledge and the individual efforts of research groups cutting across national boundaries. The merit of the proposal is ascertained in terms of distinct advancement of knowledge encompassing creativity, originality and transformational character and the competence of investigating team. Special emphasis is put on the collaborative element.

Science and Engineering Research Board (SERB), a Statutory Body under the administrative control of Department of Science & Technology (DST), Govt. of India, entered into a formal understanding with NSF to partner for the PIRE program, starting the last 2014 Call. IUSSTF is the implementation partner to administer PIRE program on behalf of SERB.

Progress thus far:

The Project selected for award against the 2014 Call titled, *GROWTH: Global Relay of Observatories Watching Transients Happen*. "GROWTH" is an international collaborative network of astronomers and telescopes dedicated to the study of short lived cosmic transients. The timely characterization provided by GROWTH will be vital to realizing the scientific value provided by these discoveries. The partners involved in this project are:

- India: Inter-University Centre for Astronomy and Astrophysics, Pune
- U.S.A: San Diego State University, University of Maryland, Pomona College, University of Wisconsin, Los Alamos National Laboratory
- Japan: Tokyo Institute of Technology
- Sweden: Oscar Klein Center at Stockholm University
- Israel: Weizmann Institute of Science
- Taiwan: National Central University
- Germany: Humboldt University of Berlin

Highlights of the Year:

- The current PIRE solicitation was made in June 2016 – the deadline for Preliminary Proposals was September, 2016 and for the Full Proposals is April, 2017.
- As part of the second call, 240 preliminary proposals were received, which include 34 proposals involving Indian research groups. The preliminary proposal screening process identified 5 projects, involving Indian research groups, for submission of full proposals.
- Awards will be made in the Fall of 2017.

D. PACEsetter Fund

The Ministry of New and Renewable Energy (MNRE), Govt. of India and the U.S. Embassy support the **PACEsetter Fund** (PSF) that is an INR 50 crore (USD 7.9 million) fund jointly capitalized by the Governments of the Republic of India and the United States of America. The Fund's main purpose is to improve the viability of off-grid renewable energy businesses that sell small scale (under 1 megawatt) clean energy systems to individuals and communities without access to grid connected power or with limited/intermittent access (less than 8 hours per day).

Highlights of the Year:

- Under the first call of the PSF program, nine projects were identified for award and were felicitated by Ambassador Verma and Secretary Tripathi at an Award Ceremony held in New Delhi on 27 May 2016. The projects are listed as *Annexure IX.*
- The *Second Funding Round* for submission of Expressions of Interest (EOI) was announced in May 2016 and IUSSTF received 168 EOIs. The review process for these EOIs is currently underway.

E. Research Initiative for Real-time River Water and Air Quality Monitoring

Recognizing the importance of developing online River Water and Air Quality Monitoring (WAQM) systems, the Department of Science and Technology (DST), Government of India and Intel® have collaborated to jointly initiate the ***Research Initiative for Real-time River Water and Air Quality Monitoring*** soliciting proposals from Academic/Research Institutions and providing grant-in-aid support to the selected project(s). The intent is to develop tools and constituent blocks than will enable end-to-end water and air quality monitoring systems on smart, networked, low cost, low power sensor nodes with large-scale cloud based data analysis. The program will be administered by IUSSTF.

Highlights of the Year:

- The program was formally launched by the Minister of State for Science & Technology and Earth Sciences, Govt. of India, Shri. Y.S. Chowdary, who remarked that this program is very critical for the restoration, conservation and preservation of the environment. Elaborating on the DST-Intel collaboration, Shri Chowdary added that "*Global experience will come in handy to tackle local challenges*."
- The call for proposals was announced in December 2016; with a submission deadline of March 2017. A total of 60 proposals have been received and the review process is currently underway.
- The intent is to support two fully integrated projects with interdisciplinary teams - one for river water and another for air quality monitoring - each at a cost of INR 15 Crore for a period of 5 years.

SECTION VI

VISITATIONS AND FELLOWSHIPS

Visitations and Fellowships

To address the need for human resource development and capacity building in science and technology, the Indo-U.S. Science and Technology Forum (IUSSTF) is committed to nurture contacts between scientists and students from India and the United States. It has been unambiguously demonstrated that providing students and young scientists with an exposure to cutting-edge scientific research experiences at a formative stage not only broadens their intellectual horizons but also leads to increased engagements in scientific and technological research careers. A key area of focus is also to bring talented American students to research laboratories in India to build a deeper appreciation of the culture of innovation and long-standing tradition of scientific enquiry in India.

These early career exchanges are also expected to go a long way in developing long lasting relationships amongst students and their mentors to build future collaborations around more serious scientific initiatives during the course of their life long professional journey.

IUSSTF collaborates with several Federal agencies, Industry, Professional Bodies and Not-for-profit Organizations to administer a large number of Visitation programs, across various disciplines and levels.

Overall Matrix of Visitation Programs

S. No.	Name of Program	Partners*	Area	No. of Internships/ Fellowships
1.	Water Advanced Research and Innovation (WARI) Fellowship	DST	Water Science and Engineering	5 Student Internships; 5 Fellowships
2.	Bhaskara Advanced Solar Energy (BASE) Fellowship	DST	Solar Energy	7 Student Internships; 7 Fellowships
3.	SERB–Indo-U.S. Postdoctoral Fellowships for Indian Researchers	SERB	Focus areas of S&T	50 Fellowships
4.	Bioenergy-Awards for Cutting Edge Research (B-ACER)	DBT	Biofuel and Bioenergy	5 Student Internships; 5 Fellowships
5.	Building Energy Efficiency Higher & Advanced Network (BHAVAN) Fellowships	DST	Building Energy Efficiency	7 Student Internships; 7 Fellowships
6.	IUSSTF–American Physical Society Fellowships	APS	Physics	4 Professorships; 4 Fellowships
7.	ASM-IUSSTF Indo-US Professorship in Microbiology	ASM	Microbiology	Up to 5 Professorships
8.	Research Internships in Science and Engineering		All areas of Science and Technology	Up to 30 Internships
9.	Graduate Research Opportunities Worldwide (GROW)	SERB and NSF	All areas of Science and Technology	Upto 10 Fellowships
10.	Khorana Program for Scholars	DBT and WINStep Forward	Life Sciences	30 Internships
11.	IUSSTF-Viterbi Program	USC	Electrical Engineering, Computer Sciences and Computational Sciences.	20 Internships
12.	S. N. Bose Scholars Program	SERB and WINStep Forward	All areas of Science and Technology (except Life Sciences)	50 Internships
13.	Initiative for Research & Innovation in Science (IRIS)	NCSTC, DST and Intel® through Intel® India	All areas of Science and Technology	For High School Students

*PARTNERS

- DST-Department of Science and Technology, Govt. of India
- SERB-Science and Engineering Research Board, Govt. of India
- DBT- Department of Biotechnology, Govt. of India
- APS- American Physical Society
- ASM- American Society for Microbiology
- NSF- National Science Foundation (NSF)
- USC- University of Southern California, Los Angeles
- NCSTC- National Council for Science & Technology Communication

Highlights of the Year:

Actual Number of Exchanges

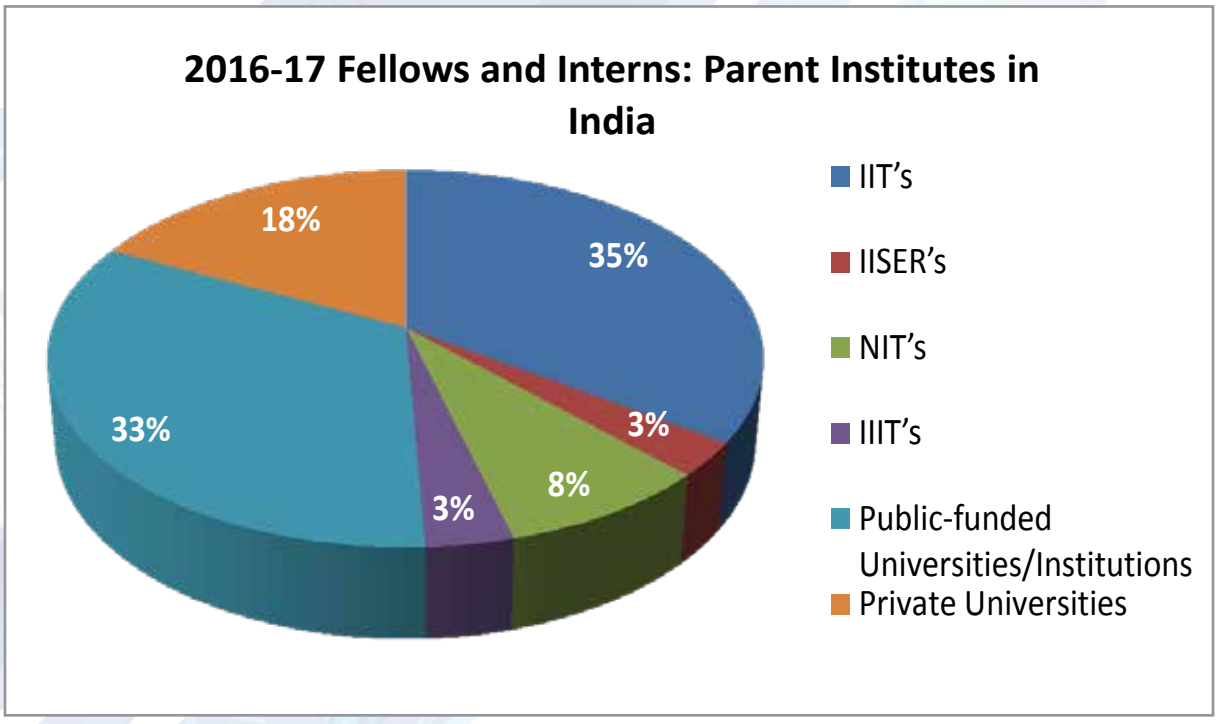
Movement of Exchange	Numbers
India to US	
❖ Undergraduate/Post-graduate	96
❖ Doctoral	31
❖ Post-doctoral	78
Sub-Total	**205**
US to India	
❖ Undergraduate/ Postgraduate	15
Grand Total	**220**

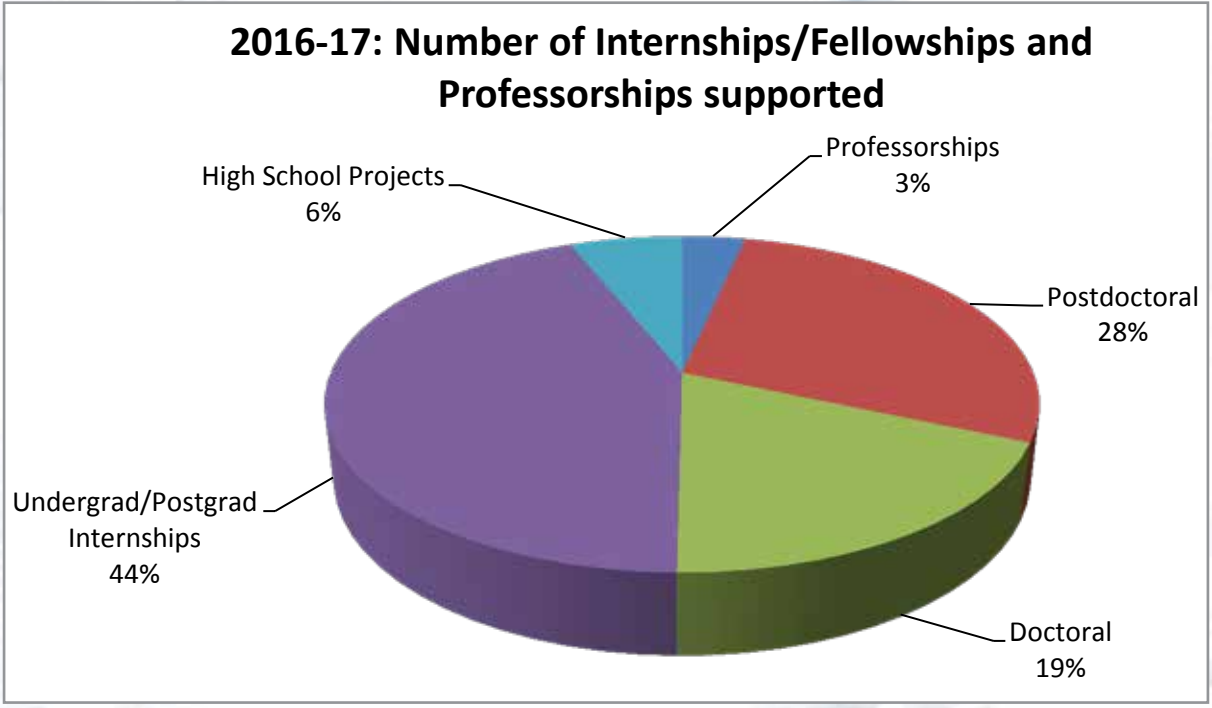
Distribution across Institutions

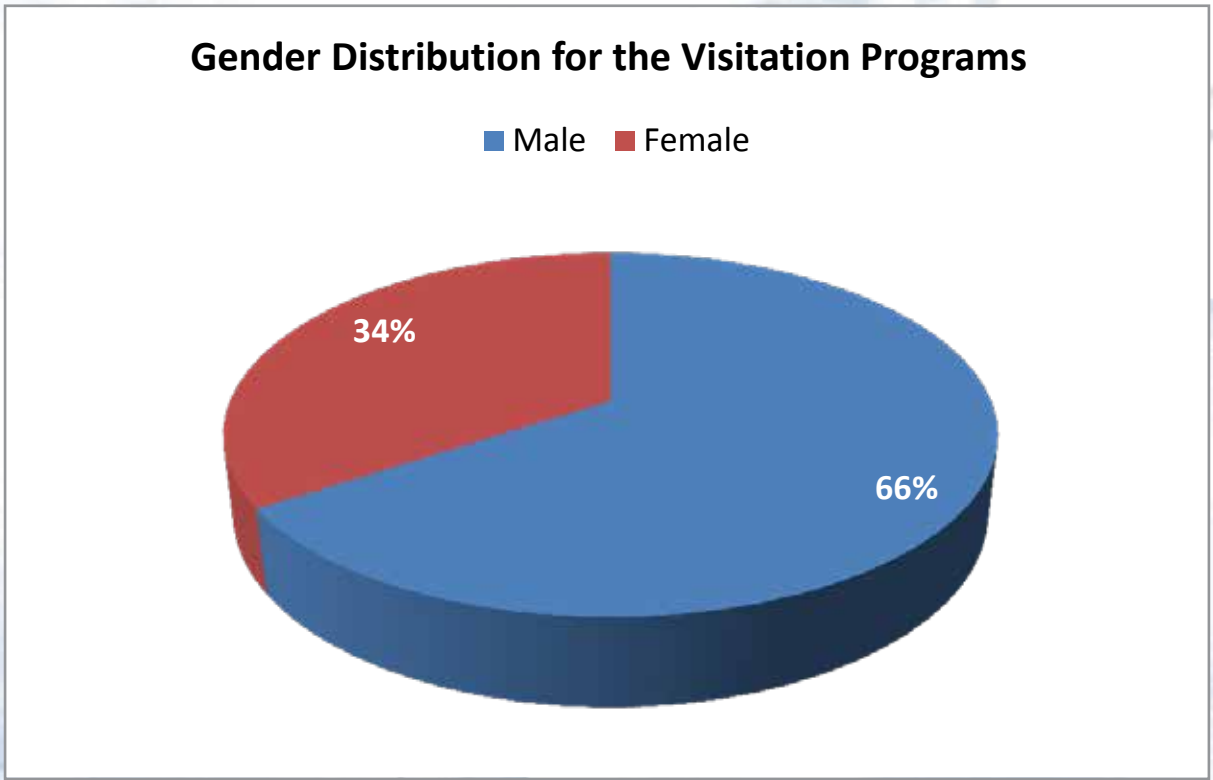
Host Institutions	Numbers
❖ American	91
❖ Indian	11
Total	**102**

Top Host Institutions

India	U.S.
❖ Center for Cellular and Molecular Biology, Hyderabad ❖ Indian Council of Medical Research, New Delhi ❖ Public Health Foundation of India, Gurgaon ❖ Medanta Medicity Hospital, Gurgaon ❖ National Centre for Cell Science, Pune ❖ Indian Institute of Science, Bangalore ❖ Indian Institute of Technology Delhi ❖ NCBS Bangalore ❖ Tibetan Delek Hospital, Dharwata ❖ Jawaharlal Lal Nehru Centre for Advanced Scientific Research, Bangalore ❖ Tata Institute of Fundamental Research, Mumbai	❖ University of Southern California ❖ University of Wisconsin - Madison ❖ University of Nebraska-Lincoln ❖ Purdue University ❖ Carnegie Mellon University ❖ Pennsylvania State University ❖ University of Alabama ❖ Massachusetts Institute of Technology ❖ South Dakota School of Mines and Technology ❖ Iowa State University ❖ Lawrence Berkeley National Laboratory ❖ National Renewable Energy Laboratory ❖ Stanford University ❖ University of California Berkeley




2016-17: Number of Internships/Fellowships and Professorships supported
High School Projects 6%
Professorships 3%
Postdoctoral 28%
Undergrad/Postgrad Internships 44%
Doctoral 19%


Gender Distribution for the Visitation Programs
Male
Female
34%
66%

SECTION V

STRATEGIC INITIATIVES

Strategic Initiatives

A. Branding

- At the time of its inception, IUSSTF started with support to a very limited set of activities and therefore the use of the term "Forum" in IUSSTF's name was appropriate to reflect a loose, informal and limited platform where ideas and views on scientific issues would be exchanged. IUSSTF has since evolved and grown manifold in stature, both in terms of stakeholder base and extensiveness and diversity of portfolio. IUSSTF now provides different levels and modes of engagement to the scientific enterprises of the two nations and has a broad-based S&T program portfolio that is expected to foster sustainable interactions with a potential to forge long term collaborations. IUSSTF presently has formal/ long term engagements with several federal agencies, industry, professional bodies and other eco-system partners.

  It is therefore, thought appropriate to change the name of the organization from "Indo-U.S. Science and Technology Forum" (IUSSTF) to "Indo-U.S. Science and Technology Foundation" (IUSSTF), which will be a more adept reflection of its character in the present context and in terms of its future aspirations. It is believed that the new name would impart significant value addition, to the "Brand" of the institution and enhance its presence and visibility in the eyes of direct and indirect stakeholders.

  Necessary due diligence has been carried out related to legal and statutory compliances and administrative and procedural matters to clear the decks for taking this idea forward for implementation. It is expected the idea will be put to implementation after completing all procedural formalities during the coming Indian fiscal year.

- United States India Science and Technology Endowment Fund (USISTEF) was instituted in 2009 as a separate non-legal entity and has been operational for the last several years. It has a very focused mandate of Innovation and Enterprise, which is somewhat different from the core mandate of IUSSTF that is more akin to Scientific Research and Development. Hence, USISTEF is seen and needs to be promoted as a stand-alone brand, although the program is administered by IUSSTF. It is, therefore, natural for USISTEF to have its own logo which it did not have so far inspite of several attempts made in that direction.

  A new logo for USISTEF was therefore designed during the year and implemented at a fraction of the cost and time that had gone into previous unsuccessful attempts.

B. Promotion and Showcasing

- IUSSTF as a brand and the portfolio of its programs was promoted very aggressively during the year through all possible means one could think of, that includes physical as well as virtual means. Several physical meetings and outreach events were held with leaderships of top institutions and large number of potential stakeholders at the ground level, both in India and U.S.. Virtual means of connect were used to reach out to a large number of individual nodes through websites, e-mailers and networks of several eco-system partners.

  In addition to the above, the following films and print portfolios were created to showcase and promote IUSSTF/USISTEF brands and programs in order to further expand the outreach and visibility.

- » A short film on USISTEF Program presenting the overall view, touching upon individual awards and the overall outcome and impact.
- » Short clippings on all individual USISTEF awards showcasing and highlighting the innovation behind them and impact they have/will make.
- » A print portfolio of all the USISTEF awards.

While the films are expected to have an audio-visual appeal for a universal audience, the print document will address the need for a more serious audience interested in details and longer term reference.

- ❖ Work on films and documents has been conceptualized to showcase all the remaining individual programs implemented by IUSSTF and the impact they have made so far. These initiatives will be realized during the next Indian fiscal year.
- ❖ The Annual Report of IUSSTF for the current year has been designed along an altogether new format, in a major departure from the past. The innovative thinking that has gone into the selection of the content as well as the means and structure of presentation will make it more user friendly, not only for general information but for analytics and inference needed to measure the impact and decision making. The Annual report of an institution is an evidence-based tool to showcase its contributions and impact and it is believed that the all new format of the Annual Report for the current year will justifiably meet this requirement.

C. Automation Tools and Technology Enabled Platforms

IUSSTF implements a fairly large number of programs, including those of other federal agencies and industry. Many of these programs are of ongoing nature, involving Regular Calls for Proposals (RFPs), while others stand-alone nature. Irrespective of the nature of a specific program, the numbers of submission involved are invariably large in volume. That requires enormous amount of time and physical effort to capture, compile and collate data and information in a manner that is in a presentable form for initiating and navigating through the downstream evaluation process and further techno-financial due diligence.

It takes good amount of time and physical effort to accomplish this task before the actual technical due diligence can commence and hence adds on to the overall timeline. There is also an element of human error resulting in erroneous data and information non-conducive to the evaluation of proposals. In order to overcome this constraint we have implemented technological tools to automate the entire process that has been implemented across all RFPs and Visitation Programs during the year. On account of this automation, the lead time between submission deadline and commencement of evaluation process has been brought down anywhere from several weeks to few days, thus imparting operational efficiencies and lowest possible overall turnaround times from submission to decision and award.

Creating a dedicated portal for one-off calls will be difficult to justify on standalone basis due to the cost involved. However, we are contemplating to extend the same model for one-off stand-alone Calls as well, innovatively tweaking the current model used for RFPs.

D. Process and System Reengineering

IUSSTF generally enjoys an extremely positive user perception in the eyes of our stakeholders as an efficient and professional organization across all our programs and schemes. In order to further improve upon operational efficiencies, we revisited our existing processes and systems across all major programs and redefined the critical steps that were supposed to be the bottlenecks and discover ways to unlock efficiencies. These initiatives together with generous use of technology driven automation tools yielded rich and immediate dividends in terms of clear road maps, uncluttered functioning and significantly reduced process turnaround times in case of RFPs, Visitation Programs and most significantly the 7th Call for USISTEF grants. Full benefit of these initiatives will continue to accrue several years down the line in future, while we will continue to explore innovative ways to improve upon established benchmarks.

E. Outreach

IUSSTF currently has a fairly active stakeholder base of at least 5000 individuals and 600 institutions in India and U.S. Additionally, IUSSTF has touched upon the lives of more than 20,000 people during the course of its journey over last seventeen years which can be seen as a dormant network that could have potential for sensitization and looping into the mainstream active network. We also try to continuously extend our outreach through several physical and virtual means.

There had been a debate repeatedly as to whether we further should have multiple/extension offices, particularly in U.S., to address the requirement of outreach. However, physical office(s) involve a permanent establishment cost and are expected to have a finite outreach which is difficult to fulfill by a single office in a vast geography like the U.S. In order to address this issue, we have envisioned two new innovative techniques in addition to our existing means of using websites, e-mailers, quarterly bulletins, events and other virtual and physical platforms.

- Use of Partner Networks.
- Use of Virtual Networks specifically designed for the purpose.

It is believed that both the means are capable to facilitate rapid and multifold scaling up of outreach at no or very little cost and can function in seamless and boundary less manner. This model has already been tried as a test bed during the year for 7th USISTEF Call and was demonstrated to be highly effective and successful, resulting in record number of submissions ever.

IUSSTF has signed formal MoUs with several strategic partners during the year in India and U.S. The proposed model will be replicated in a more formal manner with the help of partner institutions in future. It is contemplated to work with partner institutions with the understanding of working as primary Point of Contact for each other in future. This arrangement will eventually correspond to having a large number of offices in all parts without having any cost or fixed liability for establishment.

F. Partnerships and Alliances

IUSSTF has signed several formal MoUs with the following key eco-system partners during the year-

- American Association for the Advancement of Science (AAAS)
- Confederation of Indian Industry (CII)
- Federation of Indian Chambers of Commerce and Industry (FICCI)
- Indian Angel Network (IAN)
- Life Sciences, Pennsylvania
- TiE Global
- Vigyan Prasar, Govt. of India

Negotiations are on with several other eco-system partners which are likely to materialize during the initial part of the next fiscal year. These MoUs set a broad framework of understanding and an expression of intent to work together in areas of convergence and of mutual interest in a complimentary and supplementary manner to leverage upon individual resources and skillsets.

All these MoUs have been developed keeping in mind a general as well as specific agenda to work together. In addition to the brand and portfolio promotion and outreach, specific joint initiatives in strategic areas will be articulated and launched during the next fiscal year and in future it is believed that such partnerships, co-branding and co-leveraging of networks and resources is the way forward to expand and scale up, both horizontally and vertically. With the extension of these relationships to the concept of local "Point of Contact", these partner institutions will serve as a brand ambassador and extension offices for each other.

G. Virtual Networks and Platforms

Physical infrastructure has intrinsic limitations in terms of its spread and outreach, and comes at a cost which is often prohibitive particularly when it comes to scaling up to expand its impact to extended locations and geographies. On the other hand technology provides virtual options almost at no cost which have unlimited outreach and seamless connectivity. This is even more applicable to an entity like IUSSTF which is small and sub-critical but still mandated to cover enormously vast spreads in the two largest demographics in India and U.S.

It is, therefore, believed that such technology enabled virtual platforms are the most viable option not only to address the issue of outreach and to fulfill self-serving agenda of networking and connectivity but also as a vehicle for delivering several standalone value added services to the stakeholders.

The following technology enabled Virtual Platforms were conceptualized and implemented during the year.

- **Find a Partner** – To facilitate match making by identifying and connecting to appropriate counterpart(s) in India or U.S. as a collaborative partner for the joint teams for USISTEF grants.

- **Mentor Network** – To develop a resource pool of mentors in various domains and establish connectivity of start-up companies with those mentors for valuable advice and benefit from their experiences.
- **Youth Engagement** – A very unique concept of generating internship opportunities in USISTEF supported start-up companies for young innovators who aspire to be a start-up themselves in future. The take-away for the host company will be availability of highly motivated human resource(s) at no or very little cost.
- **Partner Networks**- To showcase the profile of our partners and the type and nature of engagement IUSSTF has with them. The platform will also be a tool to do the limited outreach for our partners.

The efficacy of above mentioned networks has already been demonstrated in real life deployment to realize value added services for the 7th USISTEF Call, which was not possible otherwise through any other physical means. More importantly, demonstration of their efficacy even in a limited sense during this short period of time shows the directional shift to the way forward. More such technology enabled platforms will be conceptualized and implemented in the next fiscal year to address other unfulfilled requirements of the Forum. It is believed that this highly innovative model will serve the cause for a long time to come and possibly be replicated by others as its utility and effectiveness acquires visibility.

SECTION VI

MONEY MATTERS

Money Matters

IUSSTF gets its funding from three broad channels.

- Direct support from the US government
- Direct support from the Indian Government
- Extra Mural Programs (EMPs)

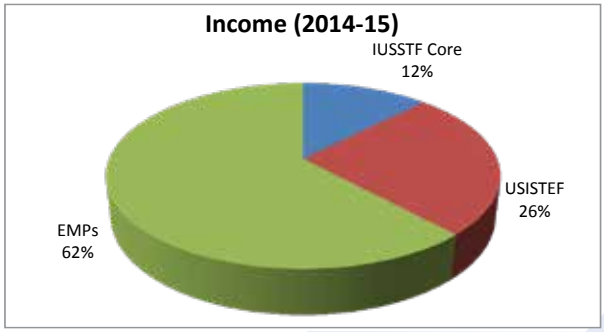
The support from the U.S. Government comes by way of annual interest on two separate Endowments (IUSSTF and USISTEF), to which the Indian Government provides matching grants annually.

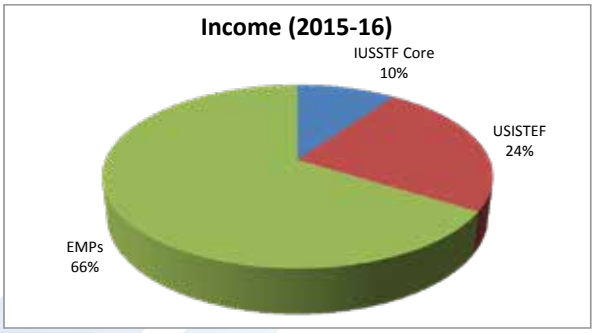
Support for the EMPs is received from various federal agencies like DST, DBT, MNRE and industry like Intel and Lockheed Martin. Such support is provided in the project mode for the implementation of specific program(s), against a nominal management fee.

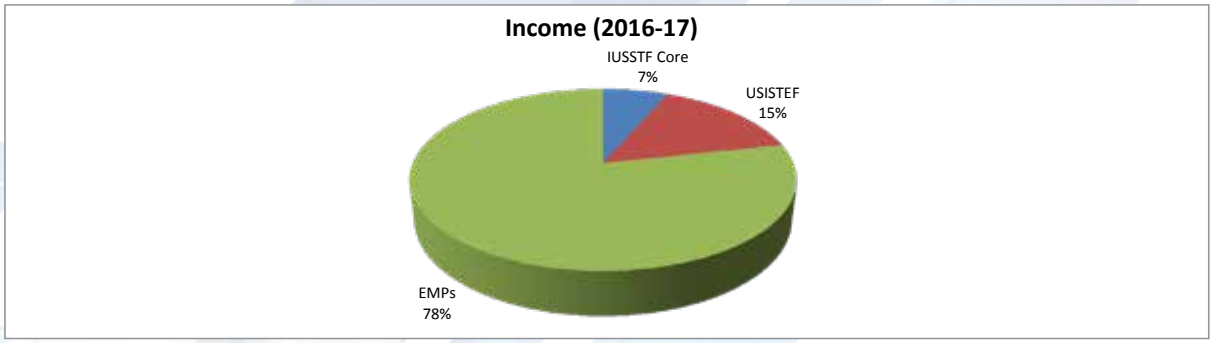
Overall Income (2014-2017)

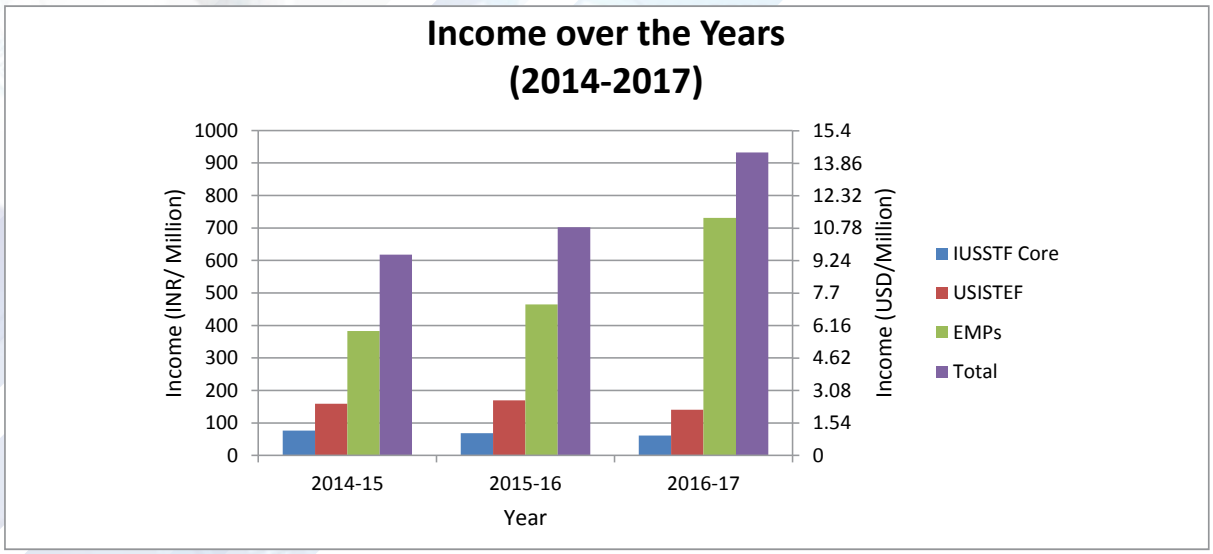
S. No.	Budget Head	2014-15		2015-16		2016-17	
		(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*
1	IUSSTF Core	76.48	1.18	68.54	1.06	**60.72**	**0.94**
2	USISTEF	158.76	2.45	169.42	2.61	**140.47**	**2.17**
3	EMPs	382.46	5.90	464.45	7.16	**731.29**	**11.28**
Total		**617.7**	**9.53**	**702.41**	**10.83**	**932.48**	**14.38**

**1USD= 64.838 INR ; The exchange rate is as per values on 31st March 2017*





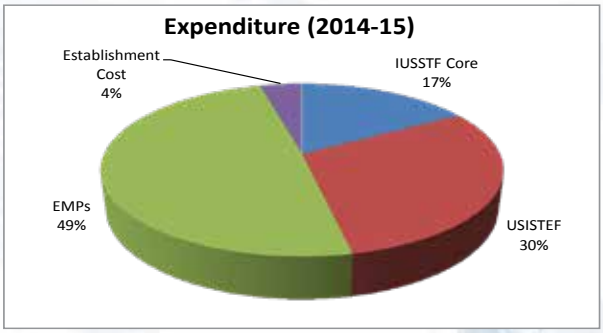


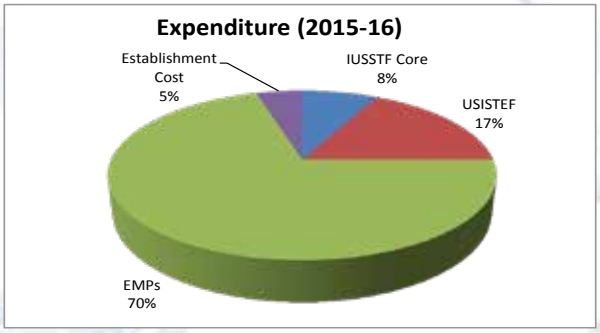


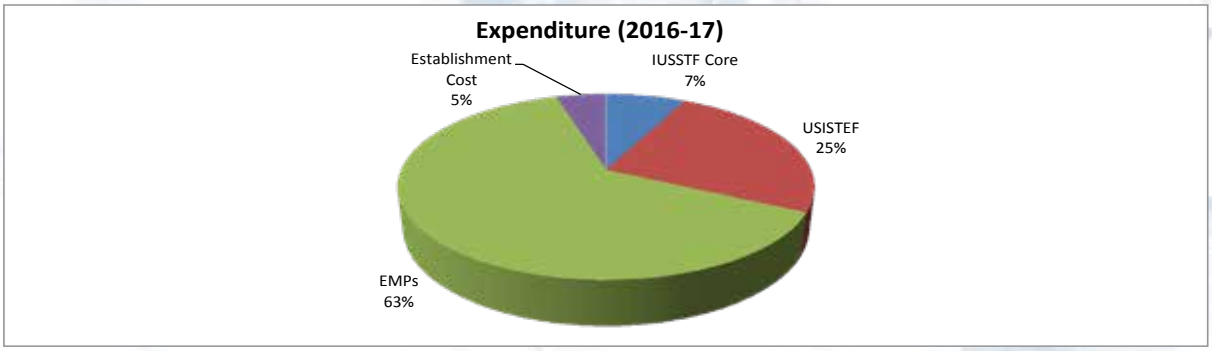
Overall Expenditure (2014-2017)

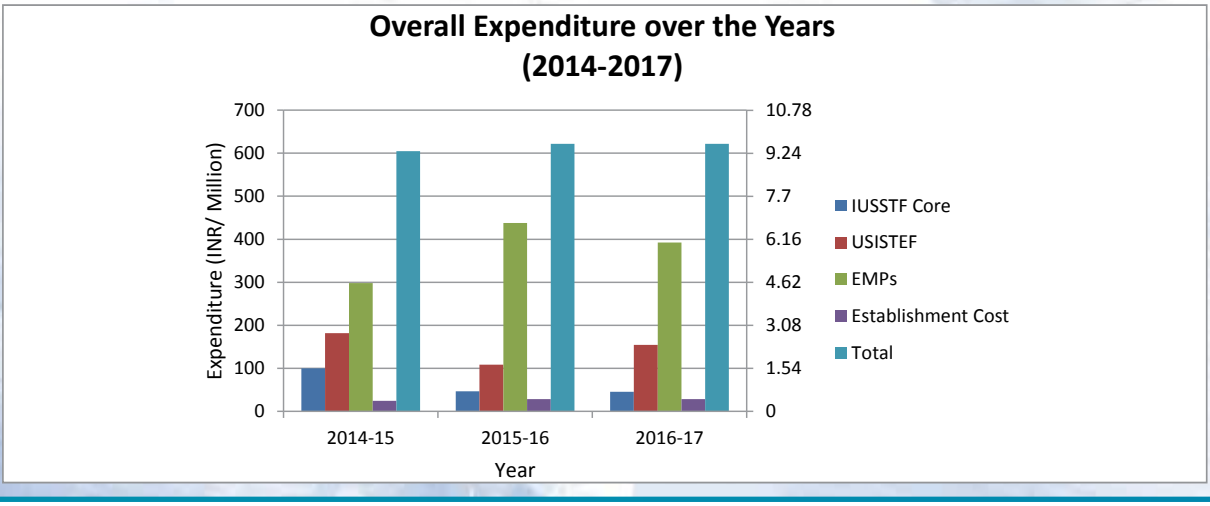
S. No.	Budget Head	2014-15		2015-16		2016-17	
		(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*
1	IUSSTF Core	100.11	1.54	46.74	0.72	**45.85**	**0.71**
2	USISTEF	181.94	2.81	108.69	1.68	**154.55**	**2.38**
3	EMPs	298.21	4.60	437.67	6.75	**392.37**	**6.05**
4	Establishment Cost	24.40	0.38	28.49	0.44	**28.71**	**0.44**
	Total	**604.66**	**9.33**	**621.57**	**9.59**	**621.48**	**9.59**

**1USD= 64.838 INR; The exchange rate is as per values on 31st March 2017*









Establishment Costs (2014-2017)

S. No	Items	2014-15		2015-16		2016-17	
		(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*
1	Staff Costs	12.24	0.19	13.60	0.21	**14.00**	**0.22**
2	Premises	7.58	0.12	8.49	0.13	**9.13**	**0.14**
3	Others	4.58	0.07	6.40	0.10	**5.58**	**0.09**
Total		**24.40**	**0.38**	**28.49**	**0.44**	**28.71**	**0.44**

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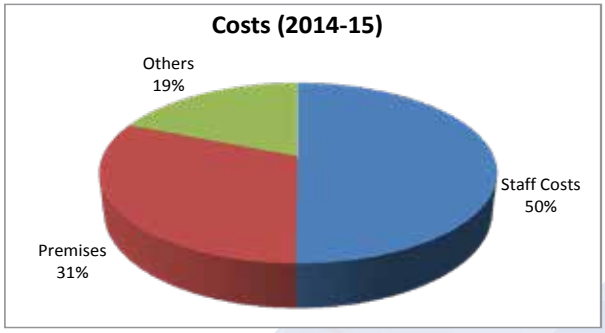

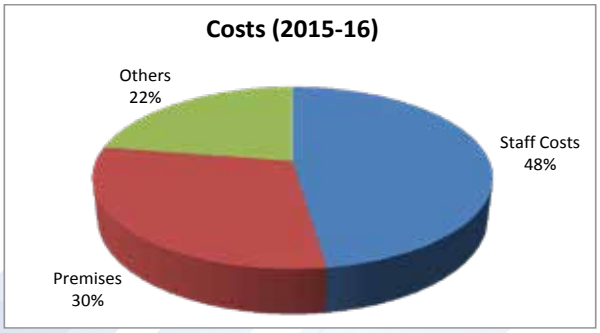

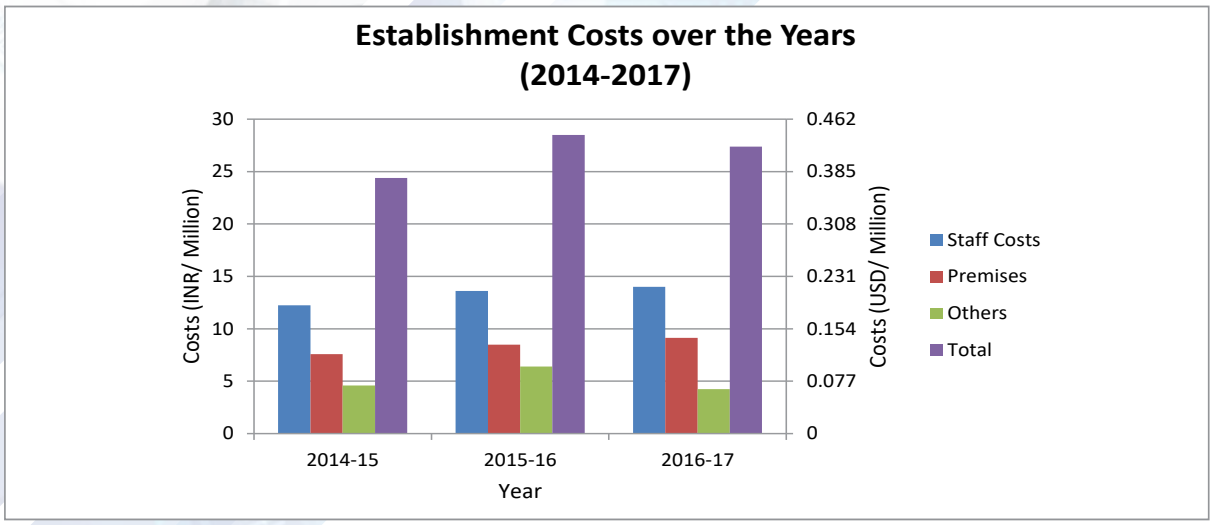

Expenditure- IUSSTF Core Programs (2014-2017)

S. No.	Items	2014-15		2015-16		2016-17	
		(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*
1	Bilateral Workshops	21.81	0.34	7.14	0.11	**21.42**	**0.33**
2	Virtual Networked Centres	34.13	0.53	13.94	0.21	**10.80**	**0.17**
3	Visitations	19.49	0.30	9.45	0.15	**9.21**	**0.14**
4	Frontiers of Science and Engineering	11.50	0.18	14.08	0.22	-	-
5	Direct Admin. Cost	13.18	0.20	2.15	0.03	**4.42**	**0.07**
Total		**100.11**	**1.54**	**46.74**	**0.72**	**45.85**	**0.71**

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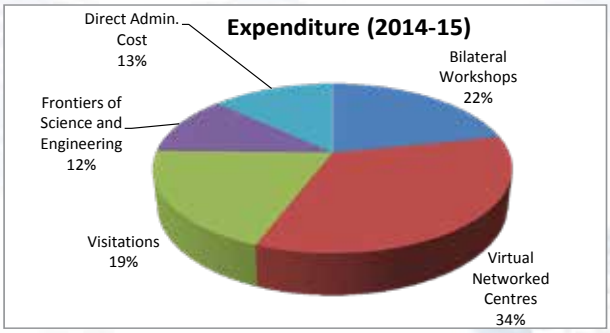
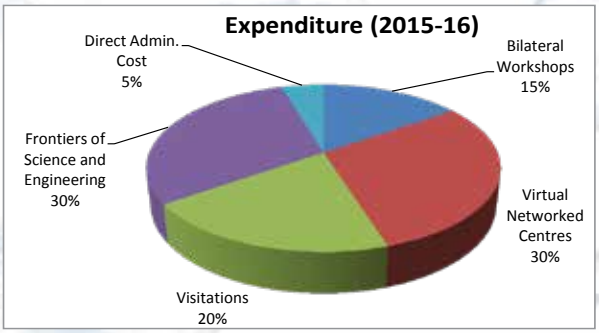
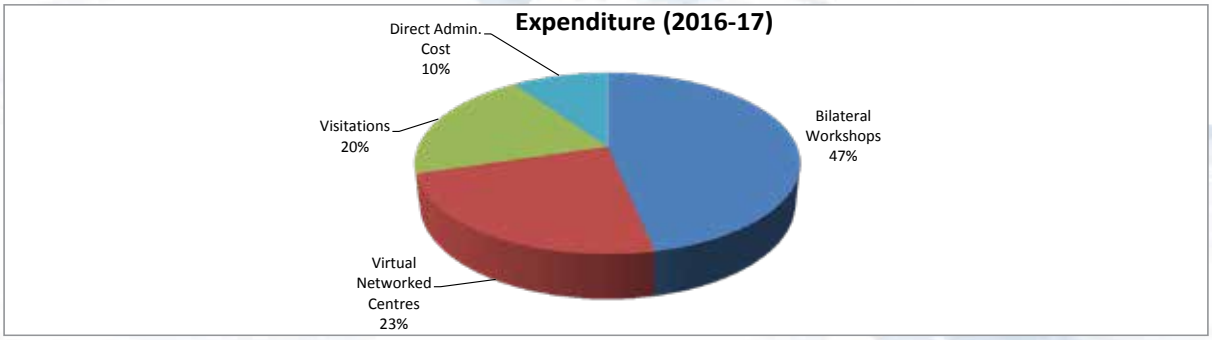
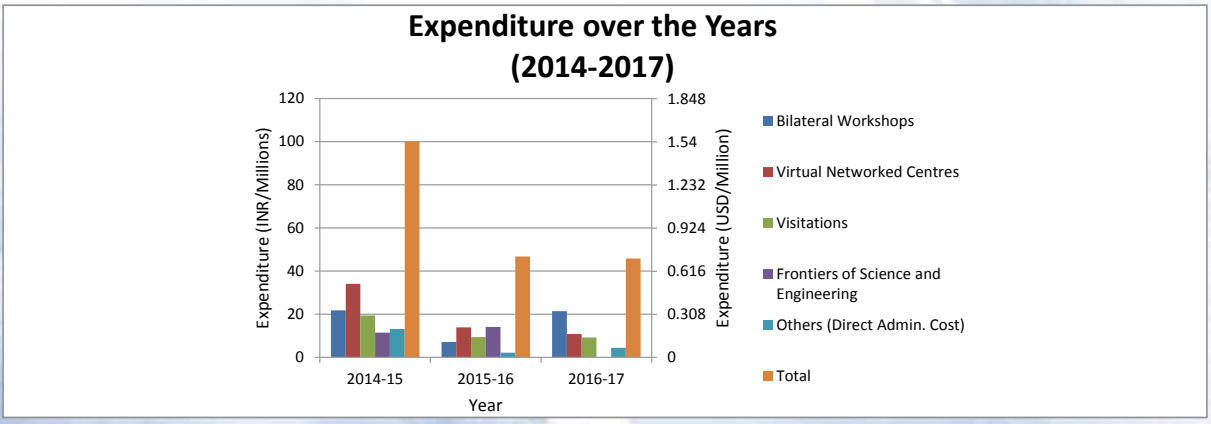




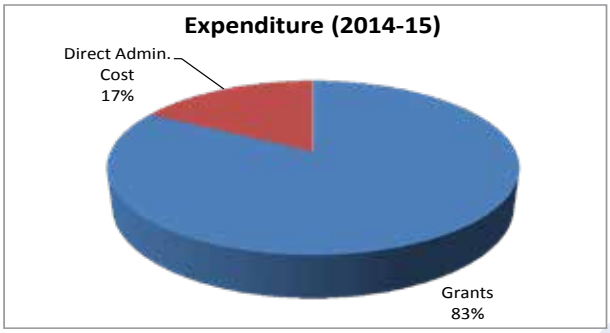


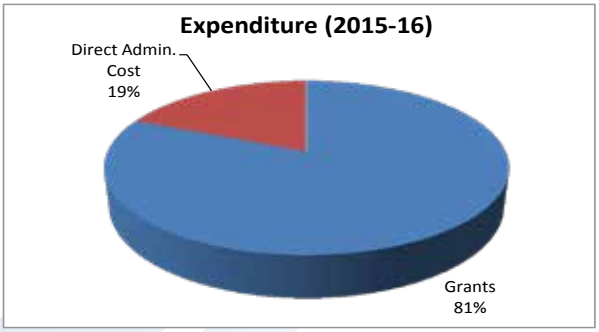


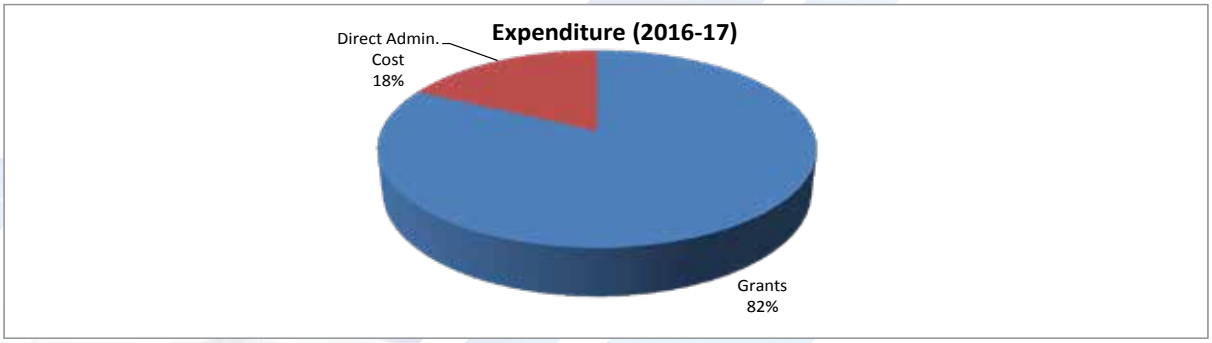
Expenditure - USISTEF (2014-2017)

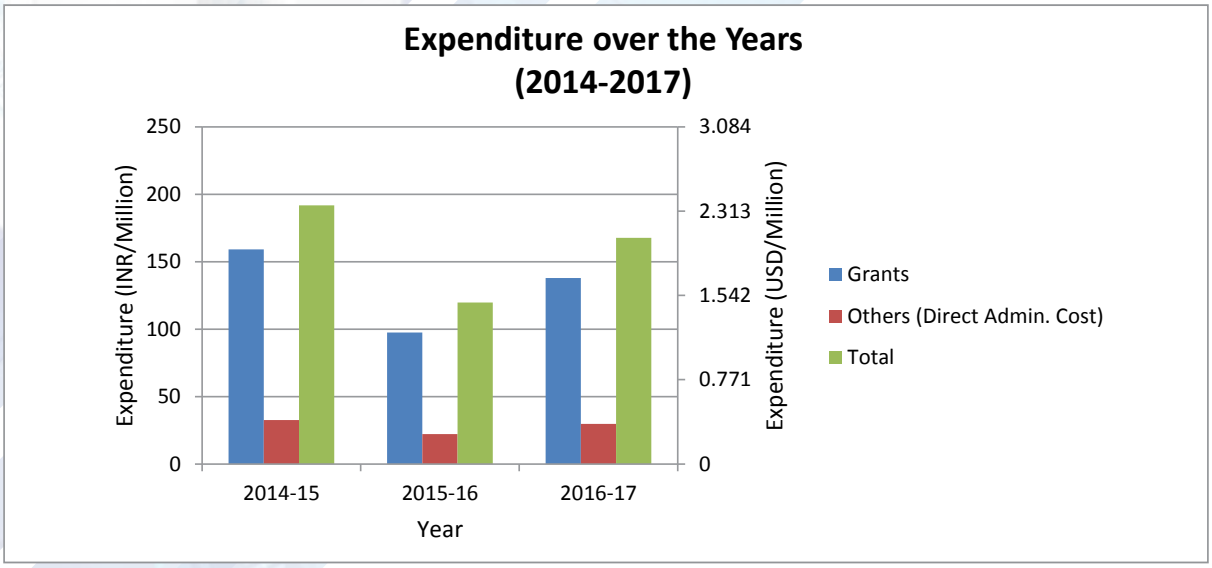
S. No	Item	2014-15		2015-16		2016-17	
		(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*
1	Grants	159.18	2.46	97.58	1.50	**138**	**2.13**
2	Direct Admin. Cost	28.03	0.43	17.40	0.27	**19.71**	**0.30**
Total		**187.21**	**2.89**	**114.98**	**1.77**	**157.71**	**2.43**

**1USD= 64.838 INR ; The exchange rate is as per values on 31st March 2017*









Expenditure- Extra Mural Programs (2014-2017)

S. No	Items	2014-15		2015-16		2016-17	
		(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*
1	JCERDC	138.8	2.14	173.12	2.67	**103.5**	**1.60**
2	IIGP	35.60	0.55	31.40	0.48	**32.80**	**0.51**
3	Visitations and Fellowships	58.43	0.90	67.17	1.04	**152.65**	**2.35**
4	Other Programs	65.39	1.01	165.98	2.56	**103.42**	**1.60**
5	Direct Admin. Costs	7.28	0.11	8.14	0.12	**3.49**	**0.05**
Total		**305.50**	**4.71**	**445.81**	**6.87**	**395.86**	**6.11**

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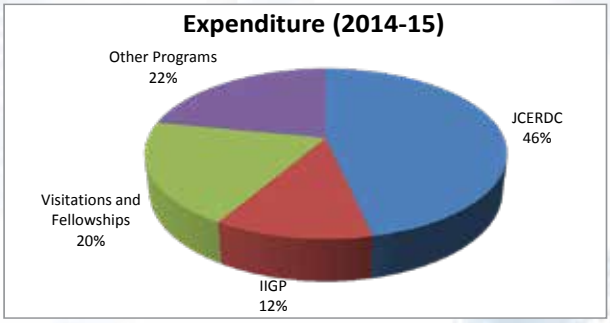
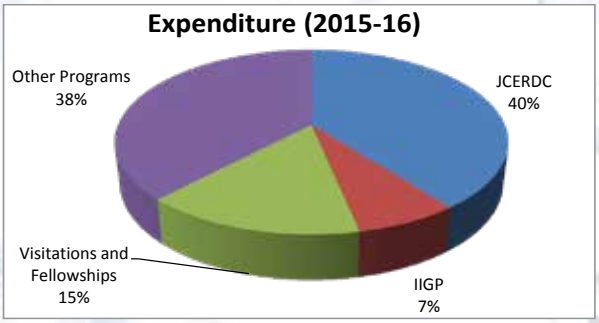
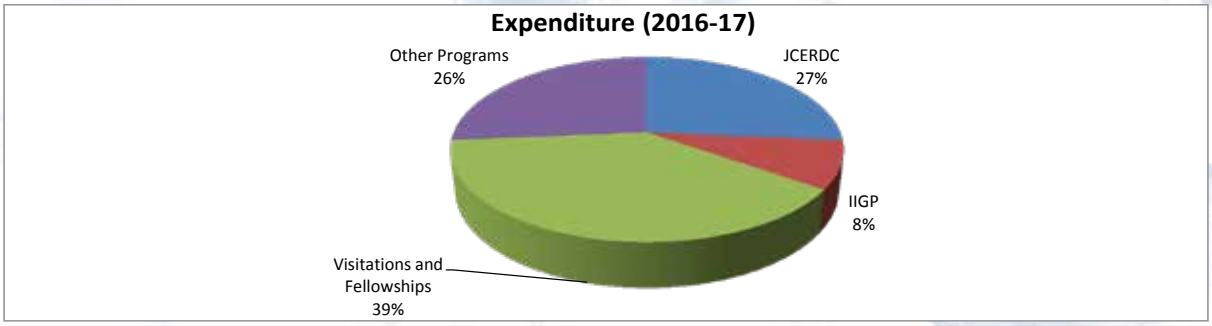
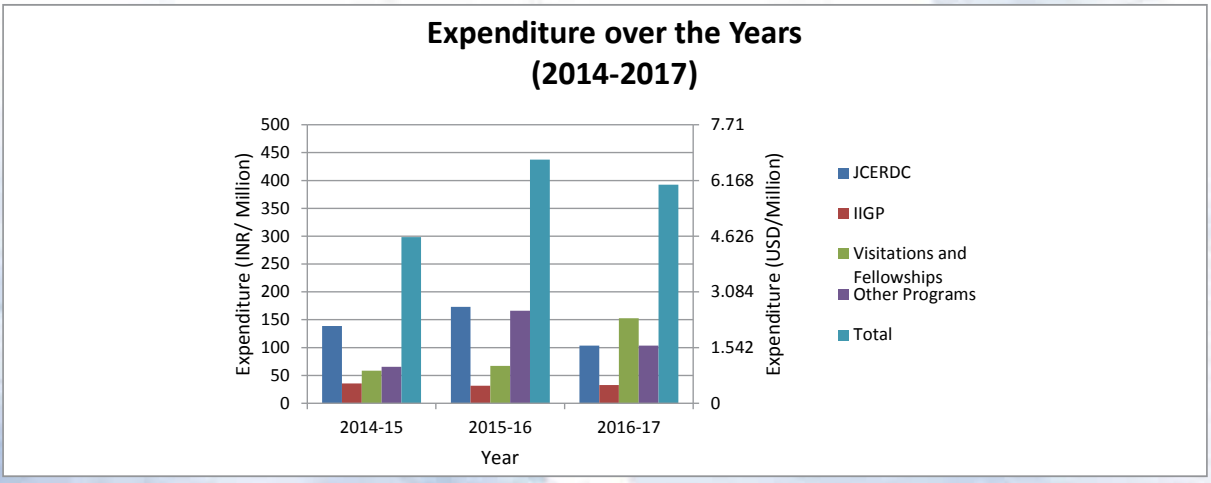








Growth in Overall Income (2015-2017)

S. No	Items	2015-16		2016-17		Growth (%)
		(INR/ Million)	(USD/ Million)*	(INR/ Million)	(USD/ Million)*	
1	IUSSTF	68.54	1.06	60.72	0.94	-11.41
2	USISTEF	169.42	2.61	140.47	2.17	-17.09
3	EMPs	464.45	7.16	731.29	11.28	57.45
Total		**702.41**	**10.83**	**932.48**	**14.38**	**28.95**
4	*Overheads*	*6.43*	*0.09*	*20.79*	*0.32*	*223.33*

1USD= 64.838 INR ; The exchange rate is as per values on 31st March 2017

SECTION VII

OUTREACH AND EVENTS

Outreach and Events

Board Meetings

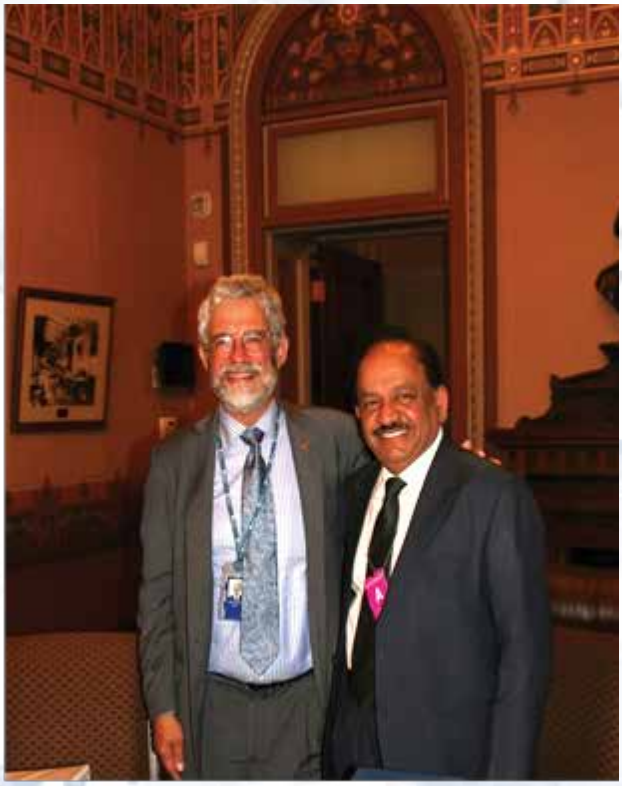
» The ***Seventeeth Meeting of the IUSSTF Governing Board*** was held in Washington D.C. on 13th April 2016 at the Bureau of Oceans and International Environmental and Scientific Affairs, US Department of State.

» The ***Fifteenth Meeting of the US-India Science and Technology Endowment Board (USISTEB)*** was held in Washington D.C. on 15th April 2016 at the Bureau of Oceans and International Environmental and Scientific Affairs, US Department of State.

» The ***Sixteenth Meeting of the U.S.-India Science and Technology Endowment Board*** (USISTEB) was held via DVC on 28th November 2016.

U.S. - India S&T Joint Commission Meeting (30 September 2016, Washington D.C.)

Dr. Harsh Vardhan, Minister of Science and Technology and Earth Sciences, Govt. of India and **Dr. John Holdren**, White House Office of Science and Technology Policy Director, co-led the **U.S. - India S&T Joint Commission Meeting** in Washington on September 30. In the week leading up to the JCM, five joint working groups convened to discuss progress in bilateral S&T cooperation in the following areas: Basic and Applied Science; Atmospheric, Environment and Earth Sciences; Health and Medical Science; Emerging Materials and Manufacturing Science; and, Agriculture. The fourth JCM featured thematic discussions on areas of science and technology (S&T) policy priorities that included promotion of women in science and technology; innovation and technology commercialization; achievements of the Indo-U.S. S&T Forum, and the upcoming renegotiation of the bilateral S&T Agreement. Both sides committed to develop a JCM action plan to help guide implementation of joint activities over the next two years.



Institutional Outreach in the United States:

» A Breakfast Discussion titled "**India and the U.S.: Partners in Innovation**" was organized by the World Affairs Council, Atlanta in association with America India Foundation (AIF) on 18th August 2016 featuring Dr. Rajiv Tayal (Executive Director, IUSSTF) in conversation with Ambassador Charles Shapiro (President, World Affairs Council, Atlanta). Set against the backdrop of the ever-increasing science and technology co-operation between India and the United States, Dr. Tayal delved into a range of issues including the start-up climate in India, the innovation landscape and how IUSSTF is striving to be an enabler of new ideas. In a Q&A format with Ambassador Charles Shapiro, Dr. Tayal discussed how targeted investments can have a societal impact in India, the United States and beyond. India's Consul-General at Atlanta, Nagesh Singh, was present on the occasion, along with several other members of the India Diaspora.

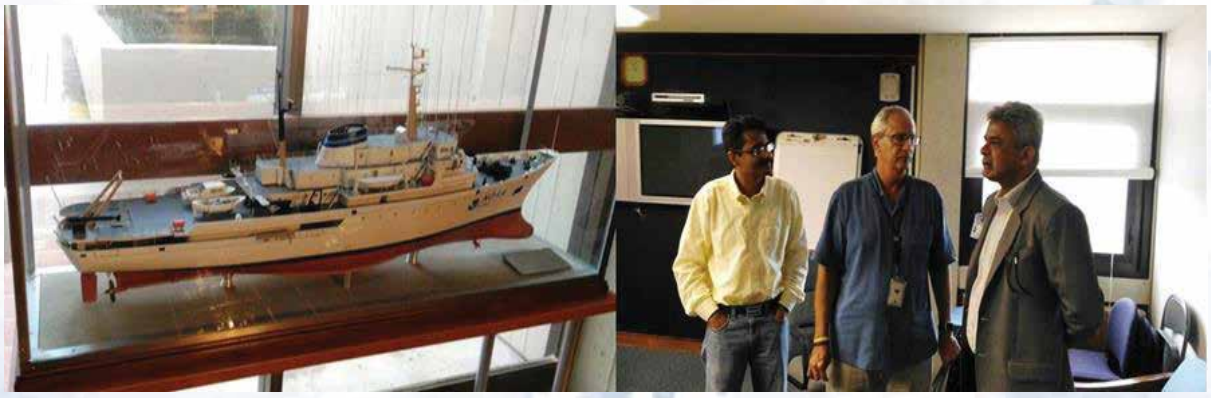
» Dr. Rajiv Tayal was invited by Michigan State University, East Lansing, to deliver a talk on IUSSTF on 26th September 2016. While at MSU, Dr. Tayal met with the Dean of International Studies and Programs Dr. Steven Hanson; Dean of the College of Engineering Dr. Leo Kempel among other MSU Faculty and Administrators. The engagements at MSU were organized by Prof. Karim Maredia, Program Director, World Technology Access Program (WorldTAP).

» ED, IUSSTF visited SUNY Polytechnic Institute on 28th September where he gave a presentation to Faculty on IUSSTF and USISTEF activities and Programs. While at Albany, he also visited the Incubator at SUNY Poly.

» Dr. Rajiv Tayal's visit to the University of Nebraska Lincoln was organized by Thomas Farrell (Senior Advisor to the Chancellor for International Affairs, University of Nebraska-Lincoln). While at UNL, he met with Ronnie D. Green (Chancellor, UNL), Paul N. Black (Charles Bessey Prof. and Chair, Dept. of Biochemistry, UNL), Josh Davis (Assistant Vice Chancellor, Global Engagement, UNL) and Chittaranjan Ray (Director, Nebraska Water Center, UNL) among others. He also met with the Fellows and Interns of the WARI Program who made presentations on their ongoing research.

» Dr. Tayal visited the University of Southern California where he delivered a talk on IUSSTF. The visit was facilitated by Dr. Raghavendra (Professor of Electrical Engineering and Computer Science and is Vice Dean for Global Academic Initiatives for the Viterbi School of Engineering, USC). He also addressed the group of Indian students visiting USC under the IUSSTF-Viterbi Program.

» ED, IUSSTF visited the Hurricane Research Division, National Oceanic and Atmospheric Administration (NOAA) at Miami. He held discussions with with Dr. Frank D. Marks (Director of Hurricane Research Division, NOAA) and Dr. Sundararaman G. Gopalakrishnan to explore the possible pathways to carry forawrd Indo-US collaboration in the space of Ocean Sciences, seeded through a Joint Centre, supported by IUSSTF earlier.



Outreach for Endowment

» As a part of outreach for the seventh call, the Secretariat reached out to more than 25000 individual and institutional nodes through print media as well as extensive use of virtual media across several platforms and networks, including our standard mailing list of more than 6000 individuals and 500 institutions in India and U.S.

» We also made use of the networks of our partner institutions in India and U.S. to scale-up the level of outreach by several orders of magnitudes. Some of the partner networks that were used to publicise the call are: TiEGlobal, Department of Science and Technology (DST)-Govt. of India, Science and Engineering Research Board (SERB), U.S. Embassy, Federation of Indian Chambers of Commerce and Industry (FICCI), Confederation of Indian Industry (CII), United States Agency for International Development (USAID), American Association for the Advancement of Science (AAAS) etc. All these partners prominently displayed the USISTEF Call for Proposals Announcement on their websites

» Several physical outreach events and road shows were orgainsed in technology incubators at IIT-Bombay, IIT-Madras, IIT-Kanpur, T-Hub Telangana, NCL Pune, IISc Bangalore and University of Southern California-Los Angeles to provide insightful information to potential applicants about USISTEF program and the grant application process.

Product launches

» **Neobreathe™,** was commercially launched during the Xth Indian Medtech Summit, which is the annual flagship event of the School of International Biodesign (SIB), in December 2016. Neobreathe™, world's first foot operated resuscitation system, was developed with funding support from the *U.S.-India Science and Technology Endowment Fund (USISTEF)* and is an advanced, integrated yet easy-to-use solution that enables caregivers at all levels to resuscitate effectively with convenience, control and confidence. NeoBreathe™ is easy to use for nurses and other para-medical staff, while it offers exceptional convenience and premium features like built-in suction, pressure monitoring, PEEP, oxygen regulation for the sophisticated caregiver.

» **Qora™ Stool Management Kit** was launched by Shri Y.S. Chowdary, Minister of State for Science & Technology and Earth Sciences, Govt. of India in May 2016. This device is a new standard for managing faecal incontinence and addresses the clinical and economic implications by expanding indications for use, reducing skill level required to use a device, and introducing a new level of care for patients outside the ICU. This technology was licensed to M/s Consure Medical, a Start-up Company formed by the Innovators. The product has been clinically validated at the All India Institute of Medical Sciences (AIIMS), New Delhi. The device has also received U.S.-FDA 510K approval.

ISEF 2016

» The Indian team comprising of 16 school children participated and competed at the Intel® International Science and Engineering Fair (ISEF), held in Phoenix, Arizona, USA from 8-13 May 2016, the world's largest pre-collegiate high school science research competition wherein more than 1700 from over 78 countries participate. Team India won 3 Grand Awards, 3 special Awards and 1 Honourable mention. IUSSTF in partnership with DST also organized a special visit for 9 students from the IRIS Partner Fairs to travel to USA to join Team India on an exposure visit to places of scientific interest during the ISEF week.

» Earlier TEAM India was flagged off on 29 April 2016 in New Delhi by Prof. Ashutosh Sharma, Secretary, Department of Science and Technology, Government of India and Mr. Michael Pelletier, U.S. Deputy Chief of Mission to India, along with Ms. Debjani Ghosh, Vice President, Intel Corporation and Dr. Murali Krishnan, Director, Niti Ayog, Govt. of India.

IRIS 2016

» Initiative for Research & Innovation in Science (IRIS) National Fair 2016 was held in IISER, Pune, India from December 21-23, 2016; where 148 students from 40 cities across 16 states showcased over 100 original projects. The chief guest at the event was Dr. K. N. Ganesh, Director of IISER, Pune. The event was attended by Dr. Rajiv Tayal, ED, IUSSTF and Dr. Sujit Banerjee from the Department of Science and Technology (DST), Govt. of India. The top 20 projects won Grand Awards and the winners secured their place in Team India for Intel International Science and Engineering Fair (ISEF) 2017, scheduled for May 2017 at Los Angeles, California.

» IUSSTF in partnership with Intel instituted and announced a Grand Award "Intel Indo-U.S. Science and Technology Forum Scientific and Cultural Award to India" at the Intel Science & Engineering Fair (ISEF) 2016, which entails a Scientific and Cultural exchange visit to India for a week, for five ISEF Best of Subject Category student winners from USA. These US Student winners also showcased their projects at the IRIS National Fair 2016 from December 21-23, 2016.

Others

» IUSSTF in partnership with Vigyan Prasar, Govt. of India and in collaboration with Georgia Southern University, USA and Next Thought, Oklahama, organised an Indo-U.S. Science Technology Engineering Math (STEM) symposium titled **"STEM: The Global Dream"** on 16th September 2016. It provided a platform to policy makers, teachers and administrators of K-5 to K-12 level to share best practices as to how to promote STEM, strengthen STEM programs and foster collaborations between the two countries. The program was well attended by more than 150 teachers, administartors and policy makers.

» **TiECon** is one of the largest global gathering of entrepreneurship and it brings together Silicon Valley's diverse, dynamic, and expert ecosystem to ignite and display disruptive technology innovation. TieCon 2016 was held at the Santa Clara Convention Centre, Silicon Valley, CA on May 6-7, 2016. USISTEF activities and funding opportunities were displayed at a booth at the TiECon-Tech Exposition. Four USISTEF`s project teams got an opportunity to showcase their innovative products and technologies. ED, IUSSTF also was invited as a panellist in the session on "Funding Opportunities for the Start-ups".

» USISTEF was also represented at the **2016 Global Entrepreneurship Summit (GES)** held from 23-25 June 2016 that aimed to showcase inspiring entrepreneurs and investors from around the world creating new opportunities for investment, partnership, and collaboration; connect American entrepreneurs and investors with international counterparts to form lasting relationships; and highlight entrepreneurship as means to address some of the most intractable global challenges. The summit included a wide

range of workshops, panels, ignite talks, pitch competitions, mentoring, and networking sessions aimed to give participants tailored opportunities to gain skill and relationships that will help their ventures grow.

» ICMR in collaboration with DBT-BIRAC and NIF-India organized a one-day Exhibition on the theme "**Innovations in Medical Science and Biotechnology**" during the *Festival of Innovations* (4-10 March 2017) at Rashtrapati Bhavan, New Delhi. Seven USISTEF awardees were invited to participate in the exhibition, the names of the awardees is listed in *Annexure X.*

» **DST-Lockheed Martin India Innovation Growth Program** completed ten years of its highly sucessful existence this year. A special cermony was organised to celebrate the occasion where in the winners of current year were also facilitated. **30 innovation-led start-ups** were recognized and felicitated during the ceremony on 3rd June 2016

» More than 20 winners of the India Innovation Growth Programme showcased their technologies at the ***Bengaluru Technology Expo*** held on 13th October 2016. The Expo was inaugurated by Shri Priyank Kharge, Minister of IT, BT and Science and Technology, Government of Karnataka. The innovators also participated in an Investors' Meet to explore funding opportunities for raising capital for scaling up.

» **The *Tirupati Technology Expo*** was organized at Tirupati on 12th December 2016 where eighteen awardees were presented with a cash proze of INR One lakh. It was also announced that a record 100 domestic and international business agreements have been signed under the IIGP thus far.

SECTION VIII

ANNEXURES

Annexure I

Workshops Awarded (2016-17)

S. No.	Title of the Workshop	Indian Lead	U.S. Lead
1	Recent advances in operator theory and operator algebras	Indian Statistical Institute, Bangalore	University of Memphis
2	Advances in soft and hard tissue regeneration around natural tooth and dental implant	All India Institute of Medical Sciences, New Delhi	Temple University
3	Improving Clinical Outcome after Stroke: Establishing Acute Stroke Care Pathways In India	All India Institute of Medical Sciences, New Delhi	University of Cincinnati
4	Simulating Long Time Reaction Dynamics: New Developments and Challenges	Indian Institute of Technology, Kanpur	University of Maryland
5	Intrinsically Disordered Proteins: Forms, Functions and Diseases	Indian Institute of Science Education and Research, Mohali	University of California San Diego
6	Organometallic Chemistry: From Fundamentals to Applications	Indian Institute of Science, Bangalore	University of Utah
7	Biological Timing and Health Issues in the 21st Century	University of Delhi	Salk Institute for Biological Studies, La Jolla
8	Frontiers in Functional Proteomics and Translational Research in Food and Health	National Institute of Plant Genome Research, New Delhi	University of Florida, Gainesville
9	Assessments of regional hydrology using space-borne gravity observations	ESSO-National Centre for Earth Science Studies, Ministry of Earth Sciences, Thiruvananthapuram	NASA Goddard Space Flight Center, Maryland
10	Advances in Enzymology: Implications in health, disease and therapeutics	Tata Memorial Center, Mumbai	University of Texas, Arlington

Contd.

Contd. Workshops Awarded (2016-17)

S. No.	Title of the Workshop	Indian Lead	U.S. Lead
11	Biomolecular Big Data and Simulations	National Institute of Immunology, New Delhi	University of Southern California
12	Genomic approaches for yield enhancement and Biological Nitrogen Fixation in chickpea	ICAR - IARI, New Delhi	University of California, Davis
13	Physics and Chemistry of Oxides: Theory meets Experiment	S.N. Bose National Centre of Basic Sciences, Kolkata	Northwestern University
14	Addressing the Nexus of Food, Energy, and Water (FEW) in the Context of Societal Challenges	Indian Institute of Science, Bangalore	University of Nebraska, Lincoln
15	Explore Bilateral Research Opportunities for Air Pollution and Health Issues	Chest Research Foundation, Pune	New York University
16	Construction and analysis experiments in of human Neurophysiology	All India Institute of Speech & Hearing, Mysore	Univ. of California, San Diego
17	International School on Space Science	National Centre for Radio Astrophysics, Pune	NASA/GSFC Greenbelt

Annexure II

Workshops Held (2016-17)

S. No.	Title of the Workshop	Date and Venue	Indian Lead	U.S. Lead
1.	India's biodiversity: the importance of reserves	May 2016, New Delhi	Wildlife Institute of India, Dehradun	University of Chicago
2.	Essential algorithms for integrated vehicle health management for aerospace applications	May 2016, Bangalore	Indian Institute of Science, Bangalore	Villanova University
3.	Recent advances in multiscale, multiphysics analysis of energy conversion in Li-ion batteries	June 2016, Mumbai	Indian Institute of Technology-Bombay	University of Texas, Arlington
4.	4th Bangalore cognition workshop	June – July 2016, Bangalore	Indian Institute of Science, Bangalore	The Salk Institute for Biological Studies, La Jolla
5.	Sensors and Small Satellite Technology for Disaster Management (SSTDM)	August 2016, Kollam	Amrita Vishwa Vidyapeetham, Kollam	Lockheed Martin Space Systems, Denver
6.	Establishing linkages between Geo-environmental practices and sustainability	August 2016, Chicago	Indian Institute of Science, Bangalore	University of Illinois at Chicago
7.	Thalassemia and Sickle Cell Disease: Time for a New Optimism	November 2016, Chandigarh	Postgraduate Institute of Medical Education and Research, Chandigarh	University of California San Francisco Benioff Children's Hospital, Oakland
8.	School on Space Science	November 2016, Sangli	Tata Institute of Fundamental Research, Pune; Indian Institute of Astrophysics, Bangalore; and Smt. Kasturbai Walchand College, Sangli	NASA/GSFC, Greenbelt
9.	Protein Folding and Dynamics	November 2016, Bangalore	National Centre for Biological Sciences, Bangalore	University of Massachusetts, Worcester

Contd.

Contd. Workshops Held (2016-17)

S. No.	Title of the Workshop	Date and Venue	Indian Lead	U.S. Lead
10.	Bilateral Research Opportunities for Air Pollution and Health Issues	November 2016, New Delhi	Chest Research Foundation, Pune	New York University, Tuxedo
11.	Assessments of Regional Hydrology using Space-borne Gravity Observations	November 2016, Hyderabad	Ministry of Earth Sciences, Government of India, Thiruvananthapuram	NASA Goddard Space Flight Center, Greenbelt, and Centre for Space Research, University of Texas at Austin
12.	Central Nervous System Viral Infection and its Therapy	November 2016, Kolkata	Indian Institute of Science Education and Research, Kolkata, and, Banaras Hindu University, Varanasi	University of Iowa, and, University of Pennsylvania, Philadelphia
13.	Understanding the Origin of the Invisible Sector: From Neutrinos to Dark Matter and Dark Energy	November 2016, Hyderabad	University of Hyderabad	Purdue University, Indiana
14.	Big Data Analysis for Transportation Engineering Systems	December 2016, Chennai	Indian Institute of Technology Madras	Iowa State University, Ames
15.	Frontiers in Functional Proteomics and Translational Research in Food and Health	December 2016, New Delhi	National Institute of Plant Genome Research, New Delhi	University of Florida, Gainesville, and, Institute for Systems Biology, Seattle

Annexure III

Joint Centers Awarded (2016-17)

S. No.	Proposal Title	Indian Lead	U.S. Lead
1.	Probing Fundamental Nature of Dark Matter through upcoming 21cm Signals from Reionization Epoch	Raman Research Institute, Bangalore	John Hopkins University, Baltimore
2.	Inference of Solar Variability across Scales: Connecting the Disparate Scales of Magnetism throughout the Solar Atmosphere	Indian Institute of Technology (BHU), Varanasi	National Center for Atmospheric Research, Boulder
3.	Indo-U.S. Joint Network Center for Excellence in Celiac Disease	All India Institute of Medical Sciences, New Delhi	Harvard Medical School, Boston
4.	Joint Center for Generating Tissue-Engineered Organs and Controlling Cell behaviour	Indian Institute of Technology, Kanpur	Massachusetts Institute of Technology, Cambridge
5.	Emergence and Re-modeling of force chains in soft and Biological Matter	Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru	Brandeis University, Waltham
6.	Indo-U.S. Joint Center for Research on Pseudorandomness in Computer Science	Indian Institute of Science, Bangalore	University of California, San Diego
7.	Indo–U.S. Center for the Exploration of Extreme Gravity	Tata Institute of Fundamental Research, Bengaluru	Pennsylvania State University, PA
8.	Indo-U.S. Joint Center for Nanoscale Research	Indian Institute of Technology, Roorkee	Rensselaer Polytechnic Institute, NY

Annexure IV

Fresh USISTEF Awards Made During the Year (2016-17)

S. No.	Project Title	Lead Indian PI	Lead U.S. PI
1	Wireless sensor based wearable device for heart disease management	**Ravi Bhogu** Monitra Healthcare Pvt. Ltd., Hyderabad	**Joseph S. Menezes** DuPont, Sunnyvale, CA
2	Hand Cranked Rugged and Affordable Defibrillators for low resource settings	**Ashish Gawade** Jeevtronics Pvt. Ltd., Pune, Maharashtra **Aniruddha Atre** Jeevtronics Pvt. Ltd., Pune, Maharashtra	**Sreeram Dhurjaty** Dhurjaty Electronics LLC, Rochester, NY
3	Non-stress fetal heart rate monitoring tool for ante-natal check-up	**Balaji Teegala** Brun Health Private Limited, New Delhi	**Ivan Tzvetanov** Berkeley, CA
4	Modular diagnosis of cervical cancer utilizing smartphone diagnostics and artificial intelligence	**Adarsh Natarajan** Aindra Systems (P) Ltd., Bangalore	**Louis Auguste** Alexpath, NY
5	Digital braille accessibility for the blind made affordable by magnetic actuator technology	**Surabhi Srivastava** Inceptor Technologies Pvt. Ltd. (Innovision), SINE, Indian Institute of Technology Bombay, Mumbai	**Shraddha Sangelkar** The Pennsylvania State University, Erie, PA
6	Low-cost, efficient and portable blood cell counter for point-of-care diagnostics.	**Usama Ahmed Abbasi** Pratimesh Labs Pvt. Ltd (MicroX Labs), Indian Institute of Science, Bangalore	**Leanna Levine** Aline, Inc, Rancho Dominguez, CA
7	Millimeter wave transceiver development for high bandwidth secure wireless communication	**Neha Satak** Astrome Technologies Pvt. Ltd., Indian Institute of Science, Bangalore	**Raghunath Das** Aniara SpaceCom LLC, Princeton, NJ

Annexure V

USISTEF Projects Awarded Through all the Seven Calls

S. No.	Project Title	Lead Indian PI	Lead U.S. PI
First Call			
1	A fair price for healthy fruits & vegetables: Helping farmers access cold-storage technology	**Rustom Irani** Chirag Iceling Pvt. Ltd. Mumbai	**Sorin Grama** Promethean Power Systems Boston, MA
Second Call			
2	Mobile phone based HbA1c analyser	**Sidhant Jena** Janacare Solutions Private Limited New Delhi	**Stephen Chen** Teco Diagnostics Anaheim, CA
3	A novel way to manage fecal incontinence in non-ambulatory patients	**Nishith Chasmawala** Consure Medical Pvt. Ltd. Surat	**Matt Durack** Lunar Design San Francisco, CA
Third Call			
4	Commercialization of cultivated sea plants based organic bio-stimulants for applications in the USA	**Abhiram Seth** Aquagri Processing Pvt. Ltd. New Delhi	**Ganesh Vishwanath** SeaNutri LLC, Hayward, CA
5	Solar Electric Tractor-Agriculture and Power	**Parimal Shah** Lovson Enterprises Pvt. Ltd Ahmedabad	**Keith Rutledge** Solectrac LLC Willits, CA
6	Affordable, clean cookstove and electric power sources for rural India	**Neha Juneja** Greenway Grameen Infra Pvt. Ltd., Navi Mumbai	**Aleksandr Kushch** Hi-Z Technology Inc. San Diego, CA
7	Affordable and User-Centric Knee Joints to Remobilize Above-Knee Amputees in India and Globally	**Pooja Mukul** Bhagwan Mahaveer, Viklang Sahayata Samiti (BMVSS), Jaipur	**Krista Donaldson** D-Rev, (Design Revolution) San Francisco, CA
8	Easy to use, Integrated Neonatal Resuscitation Solution	**Avijit Bansal** Windmill Health Technologies New Delhi	**Dan Harden** Whipsaw San Jose, CA

Contd.

Contd. USISTEF Projects Awarded Through all the Seven Calls

S. No.	Project Title	Lead Indian PI	Lead U.S. PI
9	OneBreath: Affordable mechanical ventilation for India	**Ashwin Naik** Vaatsalya, Bangalore	**Matthew Callaghan** OneBreath, Inc., Palo Alto, CA
10	Commercializing a scalable low-cost arsenic remediation technology for societal impact	**Joyashree Roy,** Jadavpur University, Kolkata **Raja Mohanty** Luminous Water Technologies Pvt. Ltd., New Delhi	**Shashi Buluswar** ITT Inc., Oakland, CA **Ashok Gadgil** Lawrence Berkeley National Laboratory, Berkeley, CA
11	Blindness Prevention through Integrated Smartphone Technology	**Nahush Katti** Doctor On LLC Columbia, MO	**Vikram Arun** Doctor On LLC Columbia, MO
Fourth Call			
12	Transforming arsenic and fluoride crisis in drinking water into an economic enterprise	**Abhijeet Gan** Rite Water Solutions (I) Pvt. Ltd., Nagpur	**Mike German** WIST, Inc, Brighton, MA
13	Development of a low-cost, portable auto-refractor	**Sriram Ravilla** Aurolab, Madurai	**Shivang R. Dave** PlenOptika, Somerville, MA
14	Developing novel biological seed treatments to confer abiotic stress tolerance in crops	**Anup Karwa** SFPL Crop Life Sciences Private Limited, Krishidhan Seeds, Jalna, Maharashtra	**Rusty Rodriguez** Adaptive Symbiotic Technologies, Seattle, WA rjrodriguez@adsymtech.com
15	Commercializing a transformational modular roofing solution for low-income urban homes	**Hasit Ganatra** Re-Materials, Ahmedabad	**Shashi Buluswar** ITT Inc., Oakland, CA
Fifth Call			
16	Handheld forced oscillation device for improved detection and monitoring of airway disease	**Anurag Agrawal** CSIR-Institute of Genomics and Integrative Biology, New Delhi	**Ashutosh Sabharwal** Cognita Labs and Rice University, Houston, TX ashutosh.sabharwal@gmail.com
17	Jaipur Belt (Belt system for body support)	**Ganesh Ram Jangir** Newndra Innovations Pvt Ltd, Jaipur	**Paul Scott** MedSpark, LLC, Obispo, CA

Contd.

Contd. USISTEF Projects Awarded Through all the Seven Calls

S. No.	Project Title	Lead Indian PI	Lead U.S. PI
18	Moving beyond the pavement: Affordable mobility for users around the world	**Sudhir Mehta** Pinnacle Industries Ltd., Pithampur	**Tish Scolnik** GRIT , Cambridge, MA
Sixth Call			
19	Hand Cranked Rugged and Affordable Defibrillators for low resource settings.	**Anirudha Atre** Jeevtronics (P) Ltd., Pune **Ashish Gawade** Jeevtronics (P) Ltd., Pune	**Sreeram Dhurjaty** Dhurjaty Electronics LLC,NY
20	Modular diagnosis of cervical cancer utilizing smartphone diagnostics and artificial intelligence	**Adarsh Natrajan** Aindra Systems (P) Ltd., Bangalore	**Louis Auguste** Alexpath, NY
21	Wireless sensor based wearable device for heart disease management.	**Ravi Bhogu** Monitra Healthcare (P) Ltd, Hyderabad	**Joseph S. Menezes** DuPont, Sunnyvale, CA
22	Fetal monitoring tool for grassroots level healthcare workers.	**Anirudh Chaturvedi** Brun Health (P) Ltd, New Delhi **Balaji Teegala** Brun Health (P) Ltd, New Delhi	**Ivan Tzvetanov**
Seventh Call			
23	Digital braille accessibility for the blind made affordable by magnetic actuator technology	**Surabhi Srivastava** Inceptor Technologies Pvt. Ltd. (Innovision), SINE, Indian Institute of Technology Bombay, Mumbai	**Shraddha Sangelkar** The Pennsylvania State University, Erie, PA
24	Low-cost, efficient and portable blood cell counter for point-of-care diagnostics.	**Usama Ahmed Abbasi** Pratimesh Labs Pvt. Ltd (MicroX Labs), Indian Institute of Science, Bangalore	**Leanna Levine** Aline, Inc, Rancho Dominguez, CA
25	Millimeter wave transceiver development for high bandwidth secure wireless communication	**Neha Satak** Astrome Technologies Pvt. Ltd., Indian Institute of Science, Bangalore	**Raghunath Das** Aniara SpaceCom LLC, Princeton, NJ

Annexure VI

Winners from the 2015 and 2016 rounds of WEQ

S. No.	Name and Affliation
Winners from the 2015 round of WEQ	
1	Arpita Gopal, JUNO Software Systems Private Limited
2	Preeti Jain, InLogg Internet Private Limited
3	Sonali Tripathy, Women's Health, Embryyo
4	Suman Kapur, Xcellence in Bio Innovations and Technologies Pvt Ltd.
5	Vibha Tripathi, Swajal Water Pvt Ltd
6	Vineeta Singh, Fab Bag
Winners from the 2016 round of WEQ	
1	Mayukhini Pande, Greenopia
2	Roli Gupta, Oorjan
3	Tanvi Bhardwaj, Mishipay
4	Suhani Mohan, Saral Designs
5	Ishita Anand, BitGiving
6	Richa Singh, YourDost
7	Arti Agrawal, Anaxee
8	Shrishti Sahu, Aqaya
9	Pooja Kothari, Storemore
10	Binal Doshi, PlexusMD

Annexure VII

IIGP Awardees who Visited Silicon valley in September 2016

S. No.	Name	Organisation
1	Vikram Goel	Med Invent Devices Pvt. Ltd.
2	Sriram Kumar	S&I Engineering Solutions Pvt. Ltd.
3	Manish Kumar Sharma	Indian Institute of Technology, Kharagpur
4	Avik Kumar Pal	Indian Institute of Technology, Kharagpur
5	Swati Tiwari	Med Invent Devices Pvt. Ltd.
6	Arun Kumar Gandlur	S&I Engineering Solutions Pvt. Ltd.
7	Dr. Suven Bhattacharjee	Indian Institute of Technology, Kharagpur
8	Nikhil Vijay Shende	Indian Institute of Technology, Kharagpur
9	Kausik Kapat	Med Invent Devices Pvt. Ltd.
10	Richa Mishra	S&I Engineering Solutions Pvt. Ltd.
11	Kaarthick Balakrishnan	I2D- Incubating IoT Dreams
12	Subhasish Sircar	Health Vectors Pvt. Ltd.
13	Pankaj Kumar Kumanbhai Chhatrala	JC Orthoheal Private Limited

Annexure VIII

IIGP-2016 Winners for Business Development Support

S. No.	Project	Innovator
1.	Monitoring transmission lines using UAV, imagery sensors, and data analytics	**Swati Tiwari** Arcturus Business Solutions LLP
2.	Chakr	**Arpit Dhupar** Chakr Innovations
3.	Catheter reprocessing system	**Vikram Goel** Incredible Devices
4.	FlexiOH™ - A breathable, washable and light-weight cast immobilization technology for fractured bones	**Pankaj Kumar Chhatrala** JC OrthoHeal Pvt. Ltd.
5.	Microwave sintering of ceramics [advance manufacturing technology]	**Gaurang Doongursee** Double Dee Technology Pvt. Ltd.
6.	LED tube light with lamp-integrated detachable driver	**Krishna Ravi** Reckon Green Innovations Pvt. Ltd.
7.	CliniOps: Tablet based eSource/EDC for clinical trials	**Avik Kumar Pal** CliniOps, Inc.
8.	Pupil expansion device - Bhattacharjee pupil expansion ring	**Suven Bhattacharjee** Med Invent Devices Pvt. Ltd.

Annexure IX

Projects Awarded Under the PACEsetter Fund (2016-17)

S. No.	Title of the Project	Lead Organization	Other Partnering Organization(s)
1	High rate biomethanation of organic waste for generation of power for off-grid applications	Ahuja Engineering Services Pvt Ltd (AES), Secunderabad	-
2	Waste to Energy Innovation at Small-scale	Grassroots Energy Inc., Massachusetts	SEWA Bharat, New Delhi
3	Creation of an Energy Development Finance Company (EDFC) - Innovative Market Maker Debt provider to catalyze growth of market players in Decentralized Renewable Energy (DRE) based Energy Access Projects	Energy Development Finance Company (EDFC), Ahmedabad Legal entity: cKers Finance Private Limited (cKers), New Delhi	-
4	Development of user friendly gasifier and engine system for irrigation	OptimaHeat Technologies, Paramakudi	-
5	Microgrid Remote Monitoring & Control	Customized Energy Solutions India Pvt. Ltd., Pune	-
6	Solar PV Micro Grids for Remote Hamlet Electrification	Mera Gao Micro Grid Power Pvt Ltd, Lucknow	-
7	Powering Agriculture: Community Based Solar Pumps	Environment Conservation Society (Switch ON), Kolkata	-
8	Unlocking Clean Home Energy for the Base of the Pyramid: Developing and Piloting the World's First Pay-As-You-Go (PAYG) Integrated Home Energy System in India	BioLite, Brooklyn, New York	-
9	Remote Performance Monitoring & Outsourced Service Management of Solar Pumps and Off-grid Solar PV Plants through an online portal with pilot demonstration projects in Rajasthan, Chhattisgarh and Andhra Pradesh States	Shri Shakti Alternative Energy Limited, Hyderabad	Satya Electrocom Pvt. Ltd., Faridabad

Annexure X

USISTEF Awardees Invited for Festival of Innovations - Rashtrapati Bhavan (4-10 March 2017)

S. No.	Project Title	Lead Indian PI	Lead U.S. PI
1	Hand Cranked Rugged and Affordable Defibrillators for low resource settings	Aniruddha Atre (Jeevtronics Pvt. Ltd, Pune)	Sreeram Dhurjaty (Dhurjaty Electronics LLC, Rochester)
2	A novel way to manage faecal incontinence in non-ambulatory patients	Nishith Chasmawala (Consure Medical Health (P) Ltd, New Delhi)	Matt Durack (Lunar Design, San Francisco)
3	Easy to use, integrated neonatal resuscitation solution	Avijit Bansal (Windmill Health Technologies, New Delhi)	Dan Harden (Whipsaw, San Jose)
4	Mobile phone based HbA1c analyzer	Sidhant Jena (Janacare Solutions (P) Ltd, Bangalore)	Stephen Chen (Teco Diagnostics, Anaheim)
5	Development of a low-cost, portable auto-refractor	Sriram Ravilla (Aurolab, Madurai)	Shivang R. Dave (PlenOptika, Somerville)
6	Affordable and user-centric knee joints to remobilize above-knee amputees in India and globally	Pooja Mukul (Bhagwan Mahaveer Viklang Sahayata Samiti, Jaipur)	Krista Donaldson (D-Rev Design Revolution, San Francisco)
7	Modular diagnosis of cervical cancer utilizing smartphone diagnostics and artificial intelligence	Adarsh Natarajan (Aindra Systems (P) Ltd, Bangalore)	Louis Auguste (Alexapath LLC, Brooklyn)

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The IUSSTF Family

IUSSTF

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