



October 26 – 27, 2009
GRT Temple Bay Beach Resort
Chennai, India

Indo – US Workshop on Climate and Energy Futures

The forthcoming Copenhagen summit on climate in December 2009 is expected to be a major event in international negotiations on climate policy. India finds itself in a peculiar position. While it is targeting ambitious economic growth rate, it is under international pressure to restrict CO₂ emissions. India is becoming increasingly aware of the risks posed by climate change and is beginning to give serious consideration to how it can address the need to reduce emissions of greenhouse gas, and prepare to adapt to the demands of a changing climate. Given a large population base and an economy growing at 6% - 8%, it is vital that India develop on a low carbon trajectory.

At the other end of the spectrum, the United States, with emissions of about 20 tons per capita, is in the midst of working to pass legislation to begin the process of CO₂ reductions via a cap-and-trade policy. It is also working to promote a variety of low carbon technologies. In their respective ways, the U.S. and Indian positions are thus both crucial to addressing the problems of climate change – including making progress during the forthcoming UN Climate Change Conference in Copenhagen in December (COP15).

Which low-carbon technologies are best for India and the U.S.? What is the relative importance of policy instruments such as performance standards, emissions trading and carbon taxes? What is the role of technology transfer? To discuss these and related issues, The Center for Study of Science, Technology, & Policy (CSTEP; www.cstep.in) and Carnegie Mellon University (CMU; www.epp.cmu.edu) are organizing an Indo-US Workshop on “Climate and Energy Futures” on October 26-27 2009 at GRT Temple Bay Beach Resort, Mamallapuram (near Chennai). The Indo - US Science & Technology Forum is the primary sponsor of the workshop and other sponsors are SSN Trust, Wipro, GE, ONGC, Department of Atomic Energy, and NTPC. The objective of the workshop is to help set a comprehensive technology and policy research agenda for low-carbon energy options and identify strategies to promote closer cooperation between our two nations on these critical issues. CSTEP and CMU also plan to use the results to help raise awareness and influence civil society and policy makers with informed scientific debate.

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Sculpture in the Garden of Five Senses  flickr.com/dirkhartung/737383084

Day I: October 26 (Monday)

- 8:30 – 8:50 Inauguration
Welcome participants:
V S Arunachalam, CSTEP
Arabinda Mitra, Indo US Science and
Technology Forum
- 8:50 – 9:30 **Opening Remarks**
Anshu Bharadwaj, CSTEP
Granger Morgan, Carnegie Mellon University
- 9:30 – 10:30 **Keynote Address: “Power of the Sun”**
Walter Kohn, Nobel Laureate,
University of California, Santa Barbara
- 10:30 – 10:45 Discussion
10:45 – 11:00 Break

Special Event: October 25th (Sunday)

6:30 – 8:30

Carnatic Music Concert

By Ranjani and Gayatri
with accompanists

Day I: October 26 (Monday continued)

- 11:00– 11:40 **Session I: Overview of US and Indian Climate Mitigation, Adaptation and Policies**
Chair: Henry Willis, RAND Corporation, USA
J Srinivasan, Indian Institute of Science, Bangalore
Carl Dahlman, Georgetown University
- 11:40 – 12:00 Discussion
- 12:00– 13:00 **Session II: Engineering, Economics and Policy of Low CO₂ Coal Technologies**
Chair: J Gururaja
R S Sharma, National Thermal Power Corporation
Kurt Waltzer, Clean Air Task Force
Varun Rai, Stanford University
- 13:00 – 13:15 Discussion
- 13:15 – 14:00 Lunch
- 14:00 – 15:00 **Session III: Engineering, Economics, and Policy Dimensions of Nuclear Power**
Chair: S Rajgopal
LV Krishnan, CSTEP
Meena Mutyala, Westinghouse Corporation
P Chellapandi, IGCAR, Kalpakkam
- 15:00– 15:15 Discussion
- 15:15 – 15:30 Break
- 15:30 – 16:50 **Session IV: Engineering, Economics, and Policy Dimensions of Renewable Energy**
Chair: Pradip Dutta, Indian Institute of Science
David Ginley, National Renewable Energy Laboratories
Jay Apt, Carnegie Mellon University
Gopichand Katragadda, GE Bangalore
C N Saptasayee, Sameer Kulkarni, TCE Consulting Engineers
- 16:50 – 17:15 Discussion
- 20:00 **Banquet**

Day II: October 27 (Tuesday)

- 9:00 – 10:40 **Session V: Engineering, Economics, and Policy
Dimensions of Renewable Energy**
Chair: R R Sonde, Thermax
Rangan Banerjee, Indian Institute of Technology, Mumbai
A K Shukla, Indian Institute of Science
Balu Sarma, Praj Industries, Pune
Rakesh Agrawal, Purdue University
Peter Garretson, Institute for Defense Studies and Analyses
- 10:40 – 11:00 Discussion
11:00 – 11:15 Break
- 11:15 – 12:35 **Session VI: Engineering, Economics, and Policy
Dimensions of Energy Efficiency**
Chair: Elizabeth Fleischer, Materials Research Society, Pittsburgh
Ajay Mathur, Bureau of Energy Efficiency
Phil Douglas, British High Commission, Delhi
Sudarshan Ananth, P S Narayan, Wipro, Bangalore
Aalok Deshmukh, Rocky Mountain Institute
- 12:35 – 12:50 Discussion
12:50 – 14:00 Lunch
- 14:00 – 14:40 **Session VII: Science and Research Challenges in
Energy and Climate: Indo - US Collaborations**
Chair: Dilip Ahuja, NIAS Bangalore
T Ramasami
Secretary, Department of Science and Technology, Govt. of India
Granger Morgan, Carnegie Mellon University
- 14:40 – 15:00 Discussion
15:00 – 15:15 Break
- 15:15 – 16:15 **Panel Discussion: Round table on identifying strategies to
promote better India-US collaboration in science, engineering,
and economics of energy technology and policy.**
Moderator: Eswaran Subrahmanian
K Jairaj, V S Arunachalam, T Sankarlingam, Granger Morgan,
Anshu Bharadwaj, David Ginley
- 16:15 – 16:30 Thanks and final remarks by organizers.



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Indo-US Science and Technology Forum

INDO-U.S. SCIENCE AND TECHNOLOGY FORUM

Fulbright House, 12 Hailey Road, New Delhi 110 001, India

Website: www.indousstf.org

The Indo-U.S. Science and Technology Forum (IUSSTF) was established in 2000 under an agreement between the Governments of India and United States of America with a mandate to promote, catalyze and seed bilateral collaboration in science, technology, engineering and biomedical research through substantive interaction amongst government, academia and industry.

As its mandate, IUSSTF provides an enabling platform to the scientific enterprises of the two nations by supporting an S&T program portfolio that is expected to foster sustainable interactions with a potential to forge long term collaborations. IUSSTF program manifests are largely catalytic in nature that helps to create awareness through exchange and dissemination of information and opportunities in promoting bilateral scientific and technological cooperation.

IUSSTF has an evolving program portfolio that is largely conceived and driven by scientific communities of both the countries through extending support for symposia, workshops, conferences on topical and thematic areas of interest; visiting professorships and exchange programs; travel grants; fellowships; advanced training schools; public-private networked centres and knowledge R & D networked centres. IUSSTF also works towards nurturing contacts between young and mid career scientists by convening stimulating flagship events like the Frontiers of Science and Frontiers of Engineering symposium through the U.S. National Academies model. At the same time it reaches out to industries by partnering with business associations to generate high quality events on technology opportunities for business development to foster elements of innovation and enterprise through networking between academia and industry.

IUSSTF maintains a close working relationship with the federal agencies, laboratories, government institutions, and the academia in U.S. and India, cutting across all disciplines. As an autonomous, not-for-profit society, IUSSTF has the ability, agility and flexibility to engage and involve industry, private R&D labs; and non governmental entities in its evolving activity manifold. This operational uniqueness allows the IUSSTF to receive grants and contributions from independent sources both in India and USA, besides the assured core funding from the two governments.

IUSSTF solicits proposals for its activities thrice a year (January, May and September) and awards are made on the basis of peer reviews both in India and USA.

IUSSTF values your interactions and looks forward to work with the S&T community of both countries to implement new ideas that endeavor to promote cutting edge Indo-U.S. Science and Technology collaborations.

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