

Report on the National Conference on Energy Data: Management, Modelling and GIS Mapping held on 10th August, 2016 at India Habitat Centre

List of attendees at annexure

Background:

Energy plays a key role in multiple ways - to meet the rising fuel demand, to spur growth through investment, raise the standard of living of our citizens, among others. Over the years, the Energy Division of NITI Aayog has strived to harness the competencies of the best in class energy think-tanks in India and overseas, towards devising a sustainable and secure energy pathway for the country. Government of India has conceived a transformational vision in the energy domain. The target for renewable energy capacity of 175 GW by 2022, provision of 24X7 power across the country by 2022, reducing crude oil import dependence substantially, and providing 5 crore rural poor with LPG connections are some of the programmes that call for coordination, long term planning and integration. The State Governments also have a key role to play in the energy agenda. The launch of State calculators (on the lines of IESS, 2047) and a high powered mechanism to address issues of integration of renewable energy into grid seeks the cooperation of states. There is a vast potential in our institutions, both in the government and private space including international agencies, to support the transformational agenda of the country. The contribution of US National Labs and Department of Business, Energy and Industrial Strategy (DBEIS), UK stand out for special mention. In this context, a National Conference on Energy Data: Management, Modelling and GIS Mapping was held on 10th August, 2016, at India Habitat Centre.

I. Inaugural session:

Initiating the Conference Shri Alok Kumar, Additional Secretary, NITI Aayog stated that robust data is essential to formulate and analyse policy whether in energy sector or in any other sector. He also mentioned that signing of three Statement of Principles (SOPs) in the area of energy data management, extension of SOP on SGWG with USAID and extension of SOP on energy modelling with Department of Business, Energy and Industrial Strategy (DBEIS), UK are expected to create robust data systems which would feed into building future energy scenarios, energy mix and forecasting.

UK High Commissioner, Sir Dominic Asquith KCMG mentioned that during the visit of PM to UK last year, both countries committed to strengthen energy partnerships by holding regular Energy Summits between the two countries. Following this, the First Energy Summit is scheduled for later this year. He appreciated India's IESS 2047 - Calculator, which he stated as the best amongst other country's models.

US Ambassador to India, Mr Richard R. Verma stated that joint efforts of Indian and US agencies could deliver to the very high expectations and challenge that Prime Minister of India and US President have set for a healthier and greener future, with enhanced renewable energy applications. He appreciated the on-going co-operation between the two countries.

Dr. Arvind Panagariya, Vice Chairman, NITI Aayog stated that energy is critical as it directly contributes to the growth of GDP. He mentioned that there is good progress on the National Energy Policy and discussions are underway among concerned Ministries. He insisted upon the need for clean energy for cooking as people suffer from smoke owing to traditional human cooking. Vice Chairman lauded the programme launched by the PM to provide 5 crore LPG connections to poor families. Vice Chairman stressed the need for energy access, security and affordability. He also referred to the Smart Cities programme launched by the Government of India and mentioned the ambitious target for renewable energy capacity of 175 GW by 2022 and provision of 24X 7 power across the country by 2022.

The robust data provides an evidence base in decision making. Insisting the need for robust data systems, Hon'ble Minister Shri Anil Madhav Dave asked the scientists to develop a Data Grid having clean data on energy and climate change. He insisted need for the disciplined power consumption to control global climatic change.

Shri Anil Kumar Jain, Adviser (Energy) stated that Energy Vertical in NITI Aayog endeavours to bring academia close to policy makers. Adviser (Energy) lauded the support of US and UK Governments for joint collaboration across energy topics.

II. Session on Geospatial Analysis For Renewable Energy

The first session on Geospatial Analysis for Renewable Energy was chaired by Ms. Varsha Joshi, Joint Secretary, MNRE, with Panel Members from NIWE, ISRO, CSTEP and NREL.

The Presentations:

Shri K. Bhoopati, Additional Director, NIWE described the importance of Geo spatial tools (GeST) in wind energy and explained how it can help to identify appropriate areas to establish wind power plants. He informed that nearly all the wind power facility layouts can be done with GIS. ArcGIS improves the quality and accessibility of data to maximize efficiency and decision making process. Locating the right site can be done quickly and accurately with publicly available data and GIS technology. It would be the role of developers to decide whether or not placing a wind turbine particular area is suitable for their needs and their budgets.

Mr. Anthony Lopez of NREL, USA made a presentation on Geospatial Analysis work under SGWG. He mentioned that it can help policy makers as the tool offers powerful capabilities to help a range of stakeholders for planning and deployment of solar and wind energy. Mr. Lopez suggested that such tool needs engagement of all stakeholders for its management and updation.

Dr. P.G. Diwaker, Scientific Secretary, ISRO in his presentation titled Space Technology for Solar Energy informed about CARTOSTAT – 1 and BHUVAN Geoportal stated that the tool is helpful in identification of potential sites for solar power generation. He stated that information

is available even at the building level. It is free of cost to the research community and other stakeholders. He also mentioned providing city specific solutions for 6-8 cities for rooftop PV installation as well as for AMRUT cities.

Shri Gaurav Kapoor, CSTEP informed that the CSTEP is working on rooftop PV, LiDAR and GIS Web-Based Application for Karnataka. He informed that other tools do not consider height of buildings or shading aspects, while some apps are standalone tools requiring manual site visits and are inaccurate & expensive. He also mentioned that the tool they are developing for Karnataka incorporates Technical resource potential as well Economic Resource potential for Karnataka state in respect of Renewable Energy. This tool can be replicated for entire country.

Conclusion:

It was concluded that geospatial analysis tools are useful to policy makers. ***In this regard it was suggested that an integrated geospatial analysis tool can be developed which NITI Aayog could coordinate with relevant stakeholders.***

III. Session on Energy Data Management

The second session on Energy Data Management was chaired by Dr. Arunabha Ghosh, CEEW, with Panel Members from NITI Aayog, Prayas Energy Group, MOSPI and PPAC.

The Presentations:

Shri Rajnath Ram, Joint Adviser, NITI Aayog made a presentation on Energy Data Management–Indian Perspective. Shri Rajnath emphasised upon co-ordination between various data management agencies to manage energy related data and bridge the data gap. There is a need to improve the existing system of data collection, processing and data dissemination and other related improvements in the existing data management agencies. The improvement in format of data collection, disseminations needs to be standardized. He also mentioned about the institutional structure for managing Energy Data Management in the country.

Shri Ashok Sreenivas, Prayas Energy Group explained the role of Energy data. Shri Sreenivas suggested that India's energy data system should be comprehensive and easily available. It should address the issues of consistency, data validation, user interaction & feedback, accessibility, relevance and make use of technology. He also mentioned about short term and long term goals for Energy Data Management improvements.

Ms. Geeta Singh Rathore, MOSPI suggested the need for long term strategy for energy statistics compilation. In order to comply with long term strategy, a well-defined autonomous institution may be established that is capable of identifying, enhancing and implementing the world standards to formulate a comprehensive energy database. The institution may comprise of experts from various energy Ministries and organisations, statistical personnel and subject experts. The mandate of such a body may include formulation of policies, legal framework for energy data collection, compilation and dissemination. The mandate should also include identifying the loopholes in the complete supply chain to rectify the inefficiencies by evaluating

and thus implementing energy efficient system in the country with use of expertise and technology.

Shri Rohit Dawar, PPAC made a presentation on Oil and Gas Data Management. He mentioned that PPAC collects and compiles data on Oil and Gas and shares data by uploading on its website. Target group of its users include policy makers, industry and research. It facilitates policy and decision making, promote investment and research in the oil and gas sector. Open data which includes current and historical data is shared in easy to use MS Excel format. Majority of the data is updated on monthly basis

Conclusion:

In this session, the need for an appropriate institutional mechanism for energy data management was discussed. Institutionalisation of Data Management agency could strengthen coordination between energy ministries and related agencies. Data Management agency should develop competency in collection, quality checks/ accuracy, processing analysis, report production and disseminations. ***In a vote on various options for data management sought by the Session Chair, there was an overwhelming support for NITI Aayog to lead the initiative to set up an entirely new data organization as suggested by the MoSPI speaker.***

IV. Session on Integrated Energy Modelling

The third session on Integrated Energy Modelling was chaired by Dr. Kirit Parikh, IRADe, with Panel Members from NITI Aayog, TERI, CEEW, PNNL and DFID.

The Presentations:

Shri Avik Sarkar explained about the Indian energy market dynamics. He informed that Energy Modelling Unit in NITI Aayog would be set up which will be based on multi model analysis. It would enhance collaboration between energy ministries, think tanks and stakeholders. The unit will develop a vibrant energy modelling community in India, standardise approach towards energy modelling and provide platform for sharing results across think tanks and research bodies. This will also disseminate modelling results for use by ministries for policy making with higher confidence.

Mr. Leon Clarke, Pacific North West National Laboratory, USA made presentation on Multi-Model Analysis and Policy Making. Mr. Clarke mentioned that models do not eliminate uncertainty of future but improve it through evaluating the preferences. It clarifies uncertainty and reasons for differences in results from models. It also improves models by evaluating their performance and vets models and establishes a track record of performance. Vetted models are more easily used in specific policy analysis.

Dr. Ritu Mathur, TERI made her presentation on Air Quality & Transportation Modelling. She mentioned that modelling results vary due to differences in data and modelling methodologies. There are large data gaps, particularly in transport fuel use, leading to differences in model assumptions. Filling these data gaps is an important priority to enable effective air pollution modelling. Ms Mathur suggested that data remains a critical challenge in modeling transport

demand, energy and emissions. Activity based data is currently not collected in a systematic fashion. Consistent fuel/energy use data is also a limitation for validation of results. SGWG is a platform to learn and share best practices in terms of modeling technique and analysis. There is a need to develop various policy scenarios using different modeling techniques to evaluate impacts.

Shri Vaibhav Chaturvedi, CEEW made presentation on Understanding India's Water Energy Nexus. The nexus approach integrates management and governance across sectors and scales. He observed that India's future electricity generation mix may have huge water implication but on the key results from an initial comparison, it appears that lower emission intensity also lowers the pressure on water resources. Thus, the policy induced shift to water efficient technologies does matter significantly

Shri Vaibhav Chaudhary, DFID made the presentation on Energy Modelling. Shri Vaibhav mentioned that there are different models for different needs. UK TIMES is the dynamic, linear programming optimisation model of the UK energy system which models the energy system that meets energy service demands with the lowest cost, given constraints on greenhouse gas emission. But the model assumes perfect knowledge of all technology costs and maximum deployment rates from 2010-2050. It takes no account of risks around cost and technology availability.

Conclusion:

In the third session on Integrated Energy Modelling it was felt that modelling is central to Planning and Policy making. The modelling in the Energy sector is particularly important due to long gestation period of projects. It was concluded that the multi model analysis enables to gain better understanding to informed decision making. ***There was an endorsement to NITI Aayog's plan to set up an integrated energy modelling unit.***

V. Valedictory Session:

Shri Dharmendra Pradhan, Hon'ble Minister, Petroleum and Natural Gas lauded the collaboration of NITI Aayog with Government of US and UK. He informed that the Government is going to provide energy to the community upto the bottom of the pyramid. Under Pradhan Mantri Ujjwala Yojana the Government was adding on new consumers from budgetary support and in the next three year we plan to add 15 million new consumers, essentially those who are living below poverty line. In this regard, about 10,000 new LPG distributors in the country particularly in the rural areas will be established. Hon'ble Minister stressed the need for data, modelling and mapping as India is expected to lead the energy market for the future. He also stressed about strong coordination between the Departments.

While expressing thanks, the Adviser (Energy) stated that the Conference covered all aspects of energy data. Data is mainly considered as collection of numbers. It is intended to put all the data on a map digitally to know who are the consumers of oil and gas, where is the gas, coal, electricity coming from. In the digital map of India all the energy demand centres would be put together. NITI Aayog is mandated to network with different agencies and to advise the

Ministries. Good quality advice can be given only when we ourselves are well informed about the best options. In order to perform that duty we have tie-ups with the best of the class energy think tanks in India and the world. Today we have signed three SoPs with USAID, EIA and Department of Business, Energy and Industrial Strategy (DBEIS), UK. We also have collaboration with IEEJ which is the Japanese agency working dedicatedly on Energy, and also with top class national laboratories of the US. We bring together all these institutions to look at specific problems of the Indian Energy Scene. India is one of the rare countries where Energy demand is rising and it is expected that after 2020 India will have the highest growth rate of energy in the world which will be even more than China. We must know how to supply that energy. If we can introduce modern techniques, introduce models and study behavioural patterns, we will have much better and informed projections and that is what all this exercise is all about. NITI Aayog has decided to set up an integrated energy modelling unit in the NITI Aayog. This will be the first such attempt in the Government. We would like to factor in different available models. Different models have different objectives. Some are working on climate change issues, cost minimisation etc. we want to take all those models and give advice to the Ministries what is the best way forward.

The Conference ended with a vote of thanks to all the speakers and participants.

List of Participants

S. No.	Name (S/ Shri)	Designation/ Organization
Dignitary		
1.	Anil Madhav Dave	Hon'ble Minister-Environment and Climate Change
2.	Dharmendra Pradhan	Hon'ble Minister-Petroleum and Natural Gas
3.	Sir Dominic Asquith,	UK High Commissioner
4.	Richard R. Verma	Ambassador, US Embassy
5.	Dr. Arvind Panagariya	Vice Chairman, NITI Aayog

Delegates		
1.	S Mazumdar	Executive Director (Corporate Planning and Economic Studies), Indian Oil Cooperation Limited
2.	Dr. S K Dam	General Manager (Corporate Planning and Economic Studies / Human Resources), IOCL
3.	Sanjeev Gupta	General Manager (Strategic Planning), IOCL
4.	Dr. Probal Ghosh,	IRADe
5.	Satish Kumar	Executive Chairman, AEEE
6.	P. Esther Kamala	CEA
7.	Jyostana Kapoor,	CEA
8.	Sarita Sewak	CEA
9.	Pawan Meena	CEA
10.	Ashish Sarswat	BEE
11.	Krishan Dhawan	Shakti Sustainable
12.	Srihari Dukipatti	Prayas
13.	Varghese Paul	USAID
14.	Mark Newton	USAID
15.	Jonathan Addleton	USAID
16.	Preetesh Singh	Normura Research Institute
17.	Sidanshu Das	Normura Research Institute
18.	Dave Williams	Embassy of the U.S.A
19.	Reji Kumar Pillai	ISGF
20.	Dr. Gautam Kumar Pandey	Ministry External Affairs
21.	Anant Sudarshan	Executive Director, EPIC
22.	Pooja Vijay Ramamurthi	EPIC
23.	Dr. Amrutha Amarnath	IIT Madras
24.	Dr. Anupam Khanna	

25.	Anantha Lakshmi	CSTEP
26.	Dr. Amar Pal	Govt. of Punjab
27.	Devender Pratap, Senior Fellow	NCAER
28.	Ashok B Chakraborty	IICA
29.	S.K. Goneka	WOW Factor
30.	Aakash Khandelwal	Educore
31.	Sanjiba Bisoyi	JSSATE
32.	Kabir Sharma	TERI
33.	Sumit Sharma	TERI
34.	Aayushi Awasthy	TERI
35.	Atul	Associate Professor, TERI
36.	Suman Bery	
37.	C. Srinivasa Rao	TSTRANSCO
38.	Anindya Chowdhury	Shell India
39.	Sidharth Prasad	Shell India
40.	P K Agarwal	POSOCO
41.	Kiran Pramanik	Senior Joint Commissioner (Minor Irrigation), MoWR, RD & GR
42.	Shobha Sharma	Ministry of Statistics & Programme Implementation
43.	Dr. Kapil Narula	Commander (Indian Navy), Research Fellow, National Maritime Foundation,
44.	Preeti Jain	Joint Director, (Economic Policy & Planning), PetroFed
45.	R.P Pandey	GM ONGC
46.	Neeraj Lal	DGM ONGC
47.	R.K Dixit	DGM ONGC
48.	Manoj Garg	DGM ONGC
49.	Rishikesh Sonthalia	CM ONGC
50.	Rakesh Kaul	DGM ONGC
51.	Anindya B hattacharya	Ernst & Young LLP
52.	Kathleen Nawaz	NREL
53.	Mohini Singh	Synurja LLC
54.	Manik Singh	NITI Aayog
55.	Moh.Kazim Rizvi	British High Commission
56.	Vijay K Sethi	PNGRB
57.	Anurag Mishra	USAID
58.	Ching Acharya	USAID
59.	Fracis Hooper	US
60.	Gurpreet Chugh	ICF
61.	Ashok Kumar	BL2 L2
62.	Mnoj Garg	ONGC
63.	Roy Sudeep	U.S Embassy

64.	S.Murphy	Australian High Commission
65.	R.MN.Mealu	British High Commission
66.	H.Roy	UPES
67.	Dr.N.N.Dalee	UPES
68.	D.K.Shome	USAID
69.	Daljit Singh	Brooks India
70.	Suresh Devraj	TERI-IHC
71.	Uparna	TERI-IHC
72.	Kishore Dudan	MEA (RID)
73.	K.R.Arya	IMER Delhi
74.	Niti Zamwick	ICF, Delhi
75.	Sarbojit Pal	Independent Consultant
76.	Rahul Tongia	Brookings India
77.	Nishpash Ashista	GAIL (I) Ltd.
78.	Abhinav Goyal	GE
79.	Navroz Dubash	SPR
80.	K.K.Shankar	PTI
81.	Vinay Kumar	MEA
82.	Sidharth Singh	Advocate,MNRE
83.	Sutapa Majoomdar	MNRE
84.	Amit Kanshi	KanORS
85.	Kaushiti Sin	Petrofed
86.	Prahlad	CEA(OOP)

Speakers		
87.	Varsha Joshi,	Joint Secretary MNRE
88.	Anthony Lopez	NREL
89.	Dr. Gaurav Kapoor	CSTEP
90.	Dr. P.G. Diwakar,	Scientific Secretary, ISRO
91.	K. Bhoopati,	Additional Director, NIWE
92.	Dr. Arunabha Ghosh	CEEW
93.	Rajnath Ram	NITI Aayog
94.	Geeta Singh Rathore	MOSPI
95.	Ajay Kansal,	DGM , DGH
96.	Dr. Kirit Parikh	IRADe
97.	Avik Sarkar,	OSD, NITI Aayog
98.	Ritu Mathur	TERI
99.	Vaibhav Chaturvedi	CEEW
100.	Leone Clark,	BNL
101.	Vaibhav Chowdhary	DFID

NITI Aayog		
102.	Alok Kumar	Additional Secretary

103.	Anil Kumar Jain	Adviser
104.	Dr. Manoj Singh	Adviser
105.	Surinder Singh Sur	Joint Adviser
106.	Harendra Kumar	Joint Adviser
107.	Tapasya Obhrai Nair	Office of Vice Chairman
108.	Tribhuvan Roy	Consultant
109.	Dr. R.K. Pradhan	Senior Research Officer
110.	Amit Bhardwaj	Senior Research Officer
111.	Manoj Upadhyay	Senior Research Officer
112.	Dinesh Dhawan	Senior Research Officer
113.	Poonam Kapoor	Economic Officer
114.	Ripunjay Bansal	Young Professional
115.	Shafqat Mobarak	Young Professional
116.	Ruchi Gupta	Young Professional
117.	Rinku Kharkia	Consultant