National Workshop on Green Growth and Sustainable Development in India

November 23, 2015 | 4:30 – 8 PM
Viceregal Hall, Claridges Hotel, New Delhi

About the Workshop

Green growth is being widely recognized around the world. Nationally also, the Thirteenth Finance Commission and the Ministry of Environment, Forests and Climate Change of India have widely accepted the concept.

The Energy and Resources Institute in collaboration with the Global Green Growth Institute organized a workshop to disseminate insights from the project on green growth and sustainable development which aimed at building evidence for policy and action in India, Punjab and Himachal Pradesh.

The workshop brought together technical experts, development community, and policymakers from relevant domain to deliberate the prospects of green growth in India. The reports of the project were also launched at the event.

Workshop Agenda

4:00 PM to 4:30 PM	30 minutes	Registration
4:30 PM to 4:40 PM	10 minutes	Welcome remarks by TERI and GGGI • Siddarthan Balasubramania (Country Head-India, GGGI) • Suneel Pandey (Director, Green Growth and Resource Efficiency Division, TERI)
4:40 PM to 4:50 PM	10 minutes	Video on Green Growth
4:50 PM to 5:00 PM	10 minutes	Presentation on the Initiative of Green Growth and Development in India • Shailly Kedia (TERI), Anandajit Goswami (TERI), Ajith Radhakrishnan (GGGI), Prasoon Agarwal (GGGI) on behalf of study team
5:00 PM to 6:00 PM	60 minutes	**Panel 1: Exploring Green Growth in India: Opportunities and Challenges** • B K Chaturvedi (Former Member, Planning Commission) (Chair) • Chadrashekhar Dasgupta (Distinguished Fellow, TERI; Member Prime Minister's Council on Climate Change) • S Vijay Kumar (Distinguished Fellow, TERI) • Siddarthan Balasubramania (Country Head-India, GGGI)
6:00 PM to 6:10 PM	15 minutes	Tea/ Coffee break
6:10 PM to 6:15 PM	5 minutes	Presentation on financing for green growth in India • Ankit Singhvi (GGGI)
6:15 PM to 7:15 PM	60 minutes	**Panel 2: Implementing and Financing Green Growth** • Ajay Mathur (Director General, Bureau of Energy Efficiency) (Chair) • Piyush Dogra (Sr. Environment Specialist, World Bank) • R N Batta (Divisional Commissioner, Transport Department, Himachal Pradesh) • R V Verma (Member, Pension Fund Regulatory and Development Authority)
7:15 PM to 7:45 PM	30 minutes	**High-level Address and Report Launch** • Shri. Suresh Prabhu (Hon'ble Minister, Ministry of Railways) • Shri. Prakash Javadekar (Hon'ble Minister, Ministry of Environment, Forest and Climate Change) (via video)
7:45 PM to 7:50 PM	5 minutes	Vote of Thanks Aastha Sharma (TERI)
7:50 PM onwards	-	Reception and Dinner

Master of Ceremony: Rumbidzai Faith Masawi

1. Welcome Session

(a) Siddarthan Balasubramania, Country Head-India, Global Green Growth Institute

Mr. Balasubramania pointed out that the prevalent issue today is the disharmony between nature and human beings and how nature works differently and how human beings think differently. He was happy to see the turnout at the event, which according to him, suggested the growing commitment of wider audience to green growth. He detailed out GGGI's efforts in Indian states including Karnataka, Punjab and Himachal Pradesh.

He apprised the audience about the steering committee meeting before this event and the successful report launch in the state of HP for the same project. He explained how GGGI works as a funding agency and also as an implementing agency on occasions. He was hopeful for an informed discussion ahead.

(b) Dr. Suneel Pandey, Director, Green Growth and Resource Efficiency Division, The Energy and Resources Institute

Dr. Pandey informed the audience about the setting up of National Indian Resource Panel recently for improved resource efficiency. He believed that measures such as these are closely related to green growth and was excited to see the things shaping up. He welcomed everyone and wished success for the event.

2. Video on Green Growth (An interview with the Environment Minister)

Welcome remarks were followed up with a video featuring an interview the Hon'ble Minister for Environment, Forest and Climate Change, Shri. Prakash Javadekar. Mr. Javadekar talked about the need to eradicate poverty and achieving sustainable growth.

He said green growth is growing in a balanced manner by reducing emissions, reducing energy consumption and efficient energy usage. He said that growth without destruction is also possible for which the nation is taking measures.

He gave an example of the Delhi metro for which some of the trees uprooted were replanted to other places and when this was not possible equivalent afforestation was done at other places. He said this is how green growth should function in harmony with nature. Efforts to mainstream environment sustainability are on. Private sector and public sector undertakings have realized that this is important. Industries and other stakeholders are now partners in change.

Shri. Javadekar was enthusiastic with the idea of sharing knowledge and he believed that knowledge must be shared to add to one's experience, values and actions. The minister was of the view that climate justice and sustainable lifestyles are the issues that must be debated at the Paris Climate Summit.

3. Presentation on the initiative of Green Growth and Development in India

Ms. Shailly Kedia, Fellow, TERI and Mr. Anando Goswami, Fellow, TERI (on behalf of the study team)

Ms. Kedia started off by explaining the concept of green growth and its growing recognition India's policy discourse. She pointed out the need for green growth in India considering aspects such as air quality, forests and biodiversity, water, climate, energy, and urbanization. She mentioned that the project aimed to build evidence through which the Indian economy can move towards an inclusive green growth paradigm of development. The evaluation aimed to combine the rigorous studies done at the national and state levels (Punjab and Himachal Pradesh). For the oversight of the project there was a steering committee, state nodal agencies, technical reviewers, study team and the project management team helped to put together the project. A suite of models and tools were used in the project for the analysis of the data gathered. Groundtruthing was an essential component. It involved field visits which included focused group discussions, farmer interviews, consultation with policymakers and other stakeholders, participatory GIS analysis and feasibility studies.

Key findings for Himachal Pradesh include:

Climate

- Annual mean temperature projected to increase by 1.3-1.9°C for 2021-2050 period relative to 1971-2000.
- The variation in winter months is much larger i.e. from less than -10% to over 30% in some areas.
- Extreme rain events will also increase (both frequency and intensity).

Biophysical

- Increase in water yield for sub-basins of Beas, Ravi, Chenab and Yamuna. Decrease for Upper Indus and Sutlej.
- Apple productivity to decrease in future.
- 11.61% area of the state will have catastrophic soil erosion.

Energy

- Mandatory minimum discharge (currently at 15%) will have implications on hydro power generation – for a 5% change in mandatory discharge, the output would change by 6%
- The loss from forestry sector and tourism sector for every 1 GW hydro capacity addition is estimated to be INR 123 crores. This valuation does not include aspects relating to riparian rights such as drinking water, health, downstream livelihoods and entities with "incomparable value".
- Detailed case studies on hydro sites in the state suggest that in spite of a progressive hydropower policy, there are implementation challenges such as utilization of the Local Area Development Fund, employment of project affected population, and impacts due to tunnelling and blasting.

Key findings for Punjab include:

Climate

- Annual mean temperature projected to increase by 1.2-1.4°C for 2021-2050 period relative to 1971-2000.
- Model projects the percentage precipitation change for summer monsoon between the range 0-20%.
- State will experience higher number of extreme wet days. Higher levels of relative humidity is also expected in the near future.

Natural Resources

- Evapotranspiration in crops is expected to rise by 6% to 8% across all basins due to increase in temperature. Hence actual irrigation requirement will increase by 100 mm to 133 mm for a crop needing 500 mm irrigation water, considering the flood water irrigation method which is dominant irrigation method in the state.
- It was observed that Ravi and Beas sub-basins may have very high changes in soil erosion in future (2030s).
- 40% of blocks under reference scenario, 33.7% under policy and 28.9% under Ambitious scenario fall in the moderate – very high water deficit category
- While positive environmental externalities and labour are found to be determinants of crop diversification amongst females, male farmers attribute higher weightage for economic-drivers. Since women also seemed to be open to new technical know-how, it would be important for the State's policy-makers to consider the gender dimensions while refining their interventions on crop diversification.
- Farmer interactions highlighted the role of government in promoting crop diversification activities.

Energy

- If the state has to follow a green growth trajectory, primary energy supply from coal will reduce as the state economy transits from a reference to a policy and ambitious scenario. The increase in renewable energy based primary energy supply will also mean a rise in the capacity addition for renewable energy sources.
- On the energy demand side, agriculture, transport, industry and buildings will be the three key areas where energy consumption can be reduced.
- As a result of crop diversification measures, the energy consumption will go down in 2020s and 2030s.

The study team had also tracked the progress of nation on aspects related to environment and energy.

Mr. Goswami shared the national modelling part of the study. The modelling team created four different scenarios viz. reference, policy, ambitious 1 and ambitious 2 subjected to physical bounds such environment, export and import of products etc. Findings from the modelling projections include:

- Coal is projected to remain the mainstay of Indian energy system, although its share reduces considerably during the projection period over the scenarios. Coal-based installed capacity continues to be the single largest source of electricity generation.
- The three major energy-consuming sectors, namely industry, residential, and transport, continue their dominance of the final energy demand, contributing about 90% over the modelling horizon under reference scenario.
- Income generated from these measures and new investments get distributed, especially across the rural households, thereby reducing the inequality.
- A number of additional skilled and unskilled jobs created in renewable enegy, energy efficiency, and resource efficiency related sectors.

4. Panel 1: Exploring Green Growth in India: Opportunities and Challenges

Chair: Mr. B.K Chaturvedi, Former Member, Planning Commission

Panelists:

- Shri C. Dasgupta (Distinguished Fellow,TERI)
- Shri S. Vijay Kumar (Distinguished Fellow Emeritus, TERI)
- Shri S. Balasubramania (Country Head-India, GGGI)

The Chair allotted a time of 8-10 min for the speakers for their respective interventions.

Mr. Dasgupta started by posing a question “Can humankind eradicate poverty and still meet ecological needs”? According to the various projections, it has been conceded that people in 21st century will get rid of poverty and humanity will come out from the shackles of poverty. Energy in future would also be hydrocarbon based. The speaker mentioned that the developing countries need to rethink their growth trajectories as they are more likely to face the impacts of climate change. At the same time, rapid development is necessary for generating human, technological and financial resources to meet the needs of developing

countries. At the same time, developed countries can't put the blame on developing countries for the later emitting much more CO_2 emissions. There needs to be a reiteration of CBDR principle (Common But Differentiated Responsibilities) and hence it should be restored at the upcoming COP 21 negotiations in Paris.

Mr S. Vijay Kumar emphasised on achieving green growth in the context of Sustainable Development Goals. There should be a sustainable and judicious use of resources. Efforts must be taken to manage our resources ethically and responsibly. The speaker particularly emphasised on the status of hydropower development in Himachal Pradesh which is revenue earning unlike the centre but the state level strategies alone won't be sustainable in themselves unless they are complimented by the national level strategies and policies. Along with a bottom-up approach, top-down model also needs to be followed for a proper sync and coordination of the national and state level policies. Also, there is a need to strengthen administrative processes and other bureaucratic bottlenecks should be removed to go green. Capacity building is a very important component for the states to implement green growth strategies and sustainable development actions.

Mr. S Balasubramania started by explaining GGGI's stance on undertaking this project and collaborating with TERI. The vision was to generate new knowledge and unpack some financial issues when it comes to greening growth and development in the twin states of

Punjab and Himachal Pradesh. Through this project, the states can now plan their resources in a better way which would lead to green growth. They can also revisit their policies including SAPCC to ensure a holistic green development of the state. Mr. S Balasubramania also mentioned about their green budgeting project that they had undertaken for the state of Himachal Pradesh. He emphasised that capacity building needs to be strengthened for implementing these policies and translating them into action.

The session concluded by some closing remarks made by the chair. The chair, **Mr. Chaturvedi** summarised the discussions and raised some important issues:

- Technological empowerment is very necessary to achieve green growth –India has made very significant steps in terms of reducing solar tariffs and increasing the potential of various sources of renewable energy over the past few years.
- Achieving energy security is utmost important-India needs to move towards super-critical plants and energy-efficient appliances.
- Implementation of key policies needs to look at a careful allocation of fiscal resources between the state and centre.

5. Presentation on financing for green growth in India

Mr. Ankit Singhvi, Advisor, GGGI

He began by saying that Himachal Pradesh is a special category state getting larger share from centrally sponsored schemes and it enjoys privileges even in external development assistance.

HP has limited availability of raising debt. Private players have to be brought in or securitize future cash flows among other tools so that upfront investment from the state can be minimized. GGGI developed a 'filtering' tool which suggests which opportunities to prioritize and work on further. It is important to understand how can the opportunities be funded.

He said that while funds are available in plenty in Karnataka but because capacity gap issues these are not properly utilized. They used an adequacy and effectiveness framework. They looked at current policy interventions, where they stand and where will they stand a few years down the line. Are the policies adequate and how effective are they?

He stated that cobenefits needs to be quantified. In their project in Karnataka, they looked at electric mobility. Cobenefits in Karnataka on buses amounted to 22-23 lakh per bus. Within the cobenefits then they looked at the opportunities and moved ahead.

He informed the audience that GoHP has submitted a proposal to the Department of Heavy Industries for plying 25 electric buses. On the electricity side, they wish to come up with preferential tariff for electric buses utilizing the run-of-the-river hydroelectric projects.

6. Panel 2: Implementing and Financing Green Growth

Chair: *Dr. Ajay Mathur, Director General, Bureau of Energy Efficiency*

Panelists:

- *Mr. Piyush Dogra, Sr. Env Specialist, World Bank*
- *Dr. R. N. Batta, Divisional Commissioner, Himachal Pradesh*
- *Mr. R. V. Verma, Member, Pension Fund Regulatory and Development Authority*

Dr. R. N. Batta spoke about his experience of operationalizing green growth in HP. He indicated that key concerns in HP in going for green growth include excessive dependence of the state on natural resources, vulnerability and livelihood issues and high levels of air & water pollution. He also gave a brief overview of the social, economic and environmental overview of the state.

He stated the projected benefits of green growth in HP including local, national and global benefits. Advantages such as social inclusion, green jobs, ecological innovations and energy security are the key drivers of green growth in HP. The state worked under the national missions and got good support in form of funding from the centre.

The state also undertook a green transport project as their existing public transport is reeling under huge commercial losses and is inefficient as well. The state could actually make use of its surplus power for battery operated pollution free buses to bring a modal shift from private to public transport. The state came out with a comprehensive green transport policy and replaced the aged fleet of buses with fuel efficient Euro IV buses. Solar power generation units are under installation on roof tops of all bus terminals.

Mr. Pyush Dogra opined that green growth has to happen across sectors. He shared the experience from the World Bank study in HP. The discussion started off with fiscal reforms. Himachal was also eager to work on environmental management in the state. They came out with two development programme lending. Hydropower, tourism, agriculture and industry are their main revenue earning sectors.

They came out with reforms such as catchment area treatments, real-time monitoring and community benefits, public disclosure of data, strategic environmental assessment. Good political support from the state government helped them as well.

Mr. R. V. Verma, indicated that finance cuts across various sectors. It has to be geared up to provide funding under different ecosystems. The financial sector needs to be sensitized towards this need and it needs to be provided with directions for this purpose. It also would require prioritizing its lending to green sectors.

He felt that demand creation out of passion will be more sustainable in longer term. Funds are mostly a mix of short and long term, more being the long term. Regulators have done their bit. Policymakers are also contributing but the financial institutions are not fully on board.

He ended by saying that prioritizing the finance sector by sensitizing the financial sector institutes, capacity building among them and generation of demand across all sectors is vital. Investors have to be made more comfortable. Long terms engagement with stakeholders is necessary. There are lot of financing opportunities. Demand across different sectors need to be prioritized.

Dr. Ajay Mathur (Director General, Bureau of Energy Efficiency) emphasized on the need of creating and sustaining demand for green products. He emphasized that markets have a key role to play. A policy push is important for creating capacities as well as raising awareness.

Dr. Mathur had reiterated that the kind of financing interventions that exist at the state level for green financing are very specific but the kinds of financing lessons that we can learn from them for the national level are very broad based. Financial institutions can play a very major role in this regard. Green bonds can be used to fund renewable energy projects in India. Providing lending for green housing and energy-efficient homes can go a long way in reducing energy consumption from the household sector.

7. High-level Address

(a) Mr. Suresh Prabhu, Hon'ble Minister, Ministry of Railways

The minister pointed out that India is suffering from past wrong actions with respect to development. Coal-based power generation that accounts for a major chunk of electricity generation in India contributes to massive emissions from India. Energy usage in sectors like transport, buildings and industry needs to be curtailed by achieving energy efficiency in these sectors. Amongst the transport sector, railways need to move towards an energy efficient pattern of development. The energy mix in railways is changing attempting to utilise more energy from the renewables. Solar-rooftops are very gradually progressing and many waste-to-energy sector projects are underway.

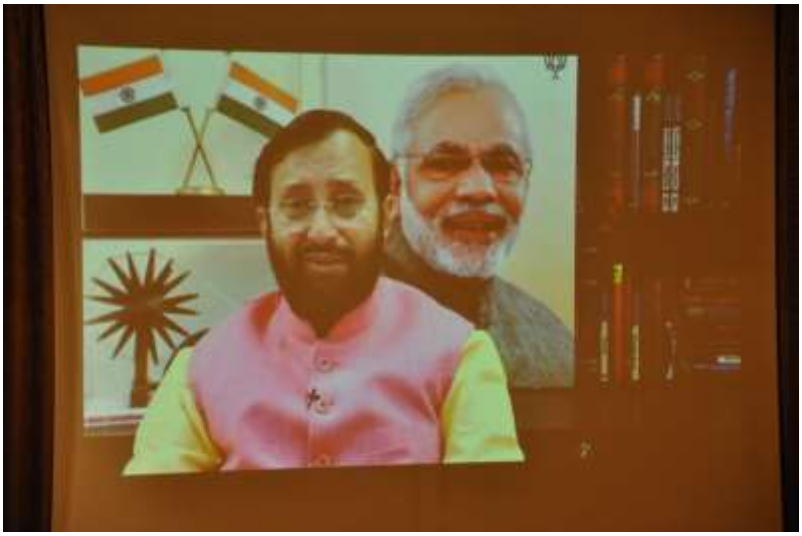
There are pood practices in Indian industries when it comes to resources efficiency. For example, ITC has reduced water consumption per unit of its products. Another issue which needs to be dealt with is that of e-waste. A very large amount of e-waste is generated in

India which needs to be handled carefully. The services sector which contributes more than 60% to India's GDP also needs to become green in its practices and act in a manner that leads to less energy consumption. Awareness needs to be raised about this issue of becoming green and lifestyle changes needs to be brought in to ensure sustainable production and consumption patterns. Giving incentives to industries for reducing energy and thus emissions is a good way ensure to compliance. Voluntary compliance is considered to be best and if industries can self-regulate, then emissions can be reduced to a reasonable level. The minister pointed out that the ministry of railways is collaborating with various research and engineering institutions to be apprised of the latest technologies which can lead to a sustainable future. The Hon'ble minister, also launched the five reports produced under the project.

(b) Video address by Mr. Prakash Javedekar, Hon'ble Minister, Ministry of Environment, Forest and Climate Change

Mr. Javedekar sent his message via a pre-recorded video. He mentioned that TERI has organized a very pertinent workshop. Green growth becomes important in the context of Paris Climate Summit. He mentioned that climate action is costly. New technologies are costly. Green growth and carbon neutral are important but meeting costs is key. Polluter pays principle is not being followed and the poor countries are paying for it.

India is, however, committed to be part of the solution. India's intended nationally determined contributions (INDC) also reflect sustainable path which may be called green growth which the world is appreciating. He expressed concern over the fact the developed world has not made their fair share of efforts. They need to make carbon space for developing countries without which green growth cannot be achieved. He was very happy with the workshop and mentioned that ministry takes inputs from such discussions.



8. Vote of Thanks

Ms. Aastha Sharma, Research Associate, TERI

On behalf of The Energy and Resources Institute, Ms. Sharma thanked the Ministry of Railways and Ministry of Environment, Forest and Climate Change and the respective ministers for accepting the invitation and spreading their message to the audience. She thanked the panelists for a knowledgeable discussion. Global Green Growth Institute also played a key role as a collaborator and supported in the project. TERI colleagues who worked hard to bring the work to fruition were also acknowledged. She was also grateful to the staff at the Claridges hotel for their hospitality. She specially thanked the audience for patiently hearing the sessions and being involved in the overall discussion.

List of Participants

No.		First Name	Last Name	Title	Organization
9.	Mr	Anirban	Ganguly	Research specialist	DIFD
10.	Mr	Pyush	Dogra	Senior Environment Specialist - Environmental and Natural Resource Global Practice	The World Bank
11.	Mr	G. S. V.	Amutaan	Assistant Director of Agriculture, Madurai	Government of Tamilnadu
12.	Mr	Abhijit	Banerjee	Technical Advisor - Resource Efficiency	GIZ
13.	Dr	Shyamala	Mani	Professor	National Institute of Urban Affairs
14.	Ms.	Kiran	Rajshekariah	Programme Head	WWF-India
15.	Ms.	Elizabeth	Gogoi	OPM	Consultant
16.	Mr.	Damandeep	Singh	Director	CDP India
17.	Dr	Rachna	Arora	Sr. Technical Advisor - Resource Efficiency & Management Secondary Raw Material	GIZ
18.	Mr	Manjeet	Saluja	Tehncial Advisor - Resource Efficiency	GIZ
19.	Mr	Leiv	Landro	Counsellor - Climate Change and Energy	Norwegian Embassy
20.	Ms	Shilpa	Chohan	Parnter	Indian Environment Law Offices
21.	Mr	Shawahiq	Siddiqui	Parnter	Indian Environment Law Offices
22.	Dr	Sanjib	Pohit	Professor	CSIR-National Institute of Science, Technology and Development Studies
23.	Dr.	Axel	Harneit-sievers	Head of New Delhi Office	Heinrich Boll Stiftung
24.	Ms	Sadia	Sohail	Programme coordinator	Heinrich Boll Stiftung
25.	Mr	Shuvendu	Bose	Executive Director - Advisory Services	Ernst & Young LLP
26.	Mr.	Ankit	Singhvi	Director	NN4 Energy
27.	Mr.	B K	Chaturvedi	Ex-Member, Planning Commission	
28.	Mr.	J. K.	Dadoo	Additional Secretary & Financial Adviser	Ministry of Commerce & Ministry of Textiles
29.	Dr.	R. N,	Batta	Commssioner, Revenue	Himachal Pradesh
30.	Mr	Maxwell	Ranga	Ambassador	Republic of Zimbabwe

No.		First Name	Last Name	Title	Organization
31.	Mr	Bothata	Tsikoane	High Commissioner	Lesotho
32.	Mr	Saurabh	Verma	Phd Scholar, RICS - School of built Environment	Amity University, Noida
33.	Ms	Apurba	Mitra	Assistant Project Manager - Climate and Energy Programme	World Resources Institute
34.	Mr.	Shyamasis	Das	Consultant - Energy, Utilities & Mining	PricewaterhouseCoopers Private Limited
35.	Dr.	Ajay	Mathur	Director General	Bureau of Energy Efficiency
36.	Mr.	R V	Verma	Member	Pension Regulatory Authority
37.	Dr.	Shabtai	Bittman	Scientist	Agriculture Agri-food, Canada
38.	Ms.	Deepali			CPWD
39.	Mr.	Bhuvaneshwar	Singh		Ministry of Railways
40.	Mr	R. Vijayar	Nair		Ministry of Railways
41.	Mr	Manoj	Pande	ED (Training), Manpowr Planning	Ministry of Railways
42.	Mr	Pradeep	Kumar	Member (Staff)	Ministry of Railways
43.	Shri	Suresh	Prabhu	Hon'ble Minister	Ministry of Railways
44.	Dr	Genevieve	Connors	Core member - Inter-disciplinary Water Resources Coordination Group	World Bank
45.	Mr	Siddarthan	Balasubramania	Country Head-India	GGGI
46.	Mr	Prasoon	Agarwal	Senior Advisor	GGGI
47.	Mr	Ajith	Radhakrishnan	Senior Advisor	GGGI
48.	Ms	Swati	Sharma	Consultant	GGGI
49.	Mr.	Karthik	Gopavarapu	Administrative Officer	GGGI
50.	Dr	R K	Pachauri	Director General	TERI
51.	Dr.	Prodipto	Ghosh	Distinguished Fellow	TERI
52.	Mr.	S Vijay	Kumar	Distinguished Fellow	TERI
53.	Mr	Shri	Prakash	Distinguished Fellow	TERI
54.	Dr.	Suneel	Pandey	Distinguished Fellow	TERI

No.		First Name	Last Name	Title	Organization
55.	Mr.	Chandrashekhar	Dasgupta	Distinguished Fellow Emeritus	TERI
56.	Mr.	Anandajit	Goswami	Fellow	TERI
57.	Mr	Saurabh	Bhardwaj	Fellow	TERI
58.	Dr.	Rajiv	Seth	Acting Vice Chancellor	TERI University
59.	Ms	Bhawna	Tyagi	Research Associate	TERI
60.	Mr.	Saswata	Chaudhury	Fellow	TERI
61.	Ms	Nitish	Arora	Research Associate	TERI
62.	Ms	Hina	Zia	Fellow	TERI
63.	Ms	Seema	Singh	Research Associate	TERI
64.	Ms.	Charu	Sharma	Research Associate	TERI
65.	Ms.	Ispita	Satapathi	Research Associate	TERI
66.	Mr.	Jonathan	Donald Syiemlieh	Associate Fellow	TERI
67.	Mr	Saurabh	Bhardwaj	Fellow	TERI
68.	Ms.	Shailly	Kedia	Fellow	TERI
69.	Dr	Prakashkiran S	Pawar	Fellow	TERI
70.	Mr.	Rinki	Jain	Associate Fellow	TERI
71.	Mr.	Nishant	Jain	Associate Fellow	TERI
72.	Ms.	Aastha	Sharma	Research Associate	TERI
73.	Mr	Kanwal Nayan	Singh	Research Associate	TERI
74.	Mr	Ashutosh	Senger	Research Associate	TERI
75.	Ms.	Rumbidzai	Masawi	Volunteer	TERI
76.	Mr.	Panchali		Student	TU
77.	Dr.	Atul	Kumar	Fellow	TERI