

# Green Growth and Development in Himachal Pradesh

Conference Hall, Armsdale Building, Shimla  
16 July 2014, 3:30 PM to 6:50 PM



# Introduction

A workshop was organized by The Energy and Resources Institute (TERI) and the Global Green Growth Institute (GGGI) in association with the Department of Environment, Science, and Technology (DEST), Government of Himachal Pradesh on July 16, 2014. The venue was the Conference Hall in Armsdale Building in Shimla. This workshop was part of the Initiative on Green Growth and Development in India. It was organized with the objective to engage with stakeholders from various state agencies that are relevant for green growth planning and implementation.

The Workshop began with welcome remarks by Shri Tarun Shridhar (Principal Secretary, Department of Environment, Science, and Technology, Government of Himachal Pradesh). This was followed by special remarks by Shri P Mitra (Chief Secretary, Government of Himachal Pradesh). Dr R K Pachauri (Director-General, The Energy and Resources Institute) then made a presentation on the global relevance of green growth. The consultative process began with a panel discussion on green growth and development in Himachal Pradesh chaired by Shri Tarun Shridhar (Principal Secretary, Department of Environment, Science, and Technology) and panelists including Dr Prodipto Ghosh (Distinguished Fellow, TERI; Former Secretary, Ministry of Environment and Forests), Shri S Vijay Kumar (Distinguished Fellow, TERI; Former Secretary, Ministry of Rural Development), Dr S S Negi (Director, DEST), Dr Jason Eis (Deputy Director, Global Green Growth Institute). There were interventions from the participants and a round of discussions on issues related to green growth and sustainability.

This was followed by a presentation made by the TERI research team. The chair for this session was Dr Prodipto Ghosh. A series of questions and answers followed the presentation; several useful insights and comments could be drawn from the discussion.

An important outcome of the workshop was the constitution of a 'Core Team' by the Department of Environment, Science, and Technology, Government of Himachal Pradesh that will guide the research team.



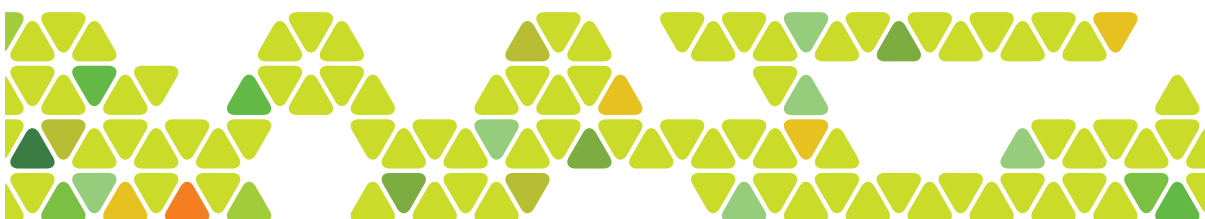


*L to R: Siddharthan Balasubramanian, India Country Head, Global Green Growth Institute; S Vijay Kumar, Distinguished Fellow, The Energy and Resources Institute; Prodipto Ghosh, Distinguished Fellow, The Energy and Resources Institute ; R K Pachauri, Director-General, The Energy and Resources Institute; P Mitra, Chief Secretary, Government of Himachal Pradesh; Tarun Shridhar, Principal Secretary, Department of Environment Science and Technology, Government of Himachal Pradesh; S S Negi, Director, Department of Environment Science and Technology , Government of Himachal Pradesh; Jason Eis, Deputy Director, Global Green Growth Institute*

**Welcome remarks by Shri Tarun Shridhar (Principal Secretary, Department of Environment, Science, and Technology, Government of Himachal Pradesh)**

Shri Tarun Shridhar welcomed the workshop participants and acknowledged the forward looking collaborative project by The Energy and Resources Institute (TERI) and the Global Green Growth Institute (GGGI)—Initiative on Green Growth and Development in India. He stated that the Department of Environment, Science, and Technology (DEST), being the nodal agency, would

continue to extend its support to the project. Briefly introducing the project to the participants, Shri Tarun Shridhar informed that the research study will examine options for Himachal Pradesh in the biophysical domain; climate change; techno-economic aspects; and natural resource management. He explained that case studies will also be developed to understand state policy frameworks for green growth strategies. He encouraged the gathering, which had participation from officials of state departments, research and academia, think tanks, and civil society.





## **Address by Shri P Mitra (Chief Secretary, Government of Himachal Pradesh)**

Shri P Mitra welcomed all the participants of the workshop and embarked upon a description of the state of Himachal Pradesh. The state provides economically valuable environmental services to northern India and serves as an important watershed supporting the livelihoods of around 200 million people in the regions of Haryana, Punjab, Uttar Pradesh, and Rajasthan—these watersheds also act as carbon sinks for greenhouse gas (GHG) emissions. It is also the major source of hydropower for the country. Owing to the fragility of the Himalayan ecosystem, the state faces several environmental challenges. At the same time, the state has good potential for hosting tourism activities.

Shri P Mitra stated that Himachal Pradesh has been treading on the path of green growth; however, concerns regarding natural resource use and sustainable development still remain as the state has been following the development template (largely unsustainable) used in the rest of the country. He expressed concern over the development patterns followed in hill states, which adds to the growing environmental issues. He then discussed various initiatives undertaken by the state to preserve its natural assets and build a platform for green growth and sustainable development. These include the creation of the State Department of Environment, Science, and Technology (DEST); adoption of an Environment Master Plan (EMP); undertaking a Comprehensive State Strategy and Action Plan on Climate Change; establishment of the Centre for Climate Change in the state; energy conservation and energy-efficiency programmes; introduction of environmental studies in the school curriculum; enactment of a blanket ban on the use of plastic bags; establishment of the Himachal Pradesh Environment Fund; mandatory rain water harvesting requirements in all newly constructed buildings; and avoidance of the use of fossil fuel for space heating. He acknowledged the need to build

upon the state's existing initiatives and to further promote inclusive green growth. The programme for sustainable development should strengthen sustainable development across the key engines of economic growth in the state, namely sustainable energy, integrated watershed management, sustainable industrialism, and tourism.

Shri P Mitra welcomed the project initiative and state workshop organized by TERI, GGGI, and DEST; and the prospect of valuable inputs for future policy action in the state, developing out of the workshop.

## **Address on the global relevance of green growth by Dr R K Pachauri (Director-General, The Energy and Resources Institute)**

After introducing the areas of focus for the project, its analytical components, project stakeholders, and why Himachal Pradesh must turn its attention towards green growth, Dr R K Pachauri reflected upon the challenges that threaten the commons while building up the rationale for a green economy. Economic opportunities, scarcity of resources, energy security, and climate change, he said, are the key drivers of green growth. Flagging that, Dr Pachauri shared the various definitions and discourses around green growth that the world has been engaging in and how the Thirteenth Finance Commission of India articulates green growth.

Reiterating the relevance of green growth in Himachal Pradesh, Dr Pachauri quoted the State Strategy and Action Plan on Climate Change, which highlights that the fragile ecosystem of Himachal Pradesh is exposed to great vulnerability on account of climate change. He pointed that equity and green growth can go together, and that the state needs to have a coherent policy for the development of its non-farm sector. Dr Pachauri said it was essential for the state to undertake long-term planning and structural economy reforms for climate resilient sustainable development and green growth.





He then discussed some of the key findings of the Intergovernmental Panel on Climate Change (IPCC) Assessment Report 5 (AR5). According to the report, it is 95 per cent certain that the warming witnessed since the mid-20th century has been caused due to human interference with Earth's system and the changes seen within the system since the 1950s are unprecedented. He highlighted that IPCC AR5 affirms the likeliness of increase in the frequency and intensity of extreme events. Delayed responses to climate change can increase mitigation costs in the future. In his closing remarks, Dr Pachauri deliberated that there is an increased need for policies that focus on the convergence of multiple societal goals leading to the common purpose of sustainability, which while increasing co-benefits, reduce adverse side-effects.

### **Policy discussion panel on green growth and development in HP**

*Shri Tarun Shridhar (Principal Secretary, Department of Environment, Science, and Technology, Government of Himachal Pradesh)*

Shri Tarun Shridhar chaired the policy discussion panel and acknowledged that environment and development can go together. He reiterated that there is a need to define and identify 'green growth pathways'. He cited the various initiatives that Himachal Pradesh has been undertaking or plans to undertake. This included its Catchment Area Treatment Plans, and its recent Sustainable Tourism Policy. He stated that Himachal Pradesh is determined to adopt the path of inclusive green growth and agreed that there is a need for strong policies and strategies, especially for soil conservation and provision of voluntary funds against climate variability.

*Dr Prodipto Ghosh (Distinguished Fellow, The Energy and Resources Institute; former Secretary, Ministry of Environment and Forests)*

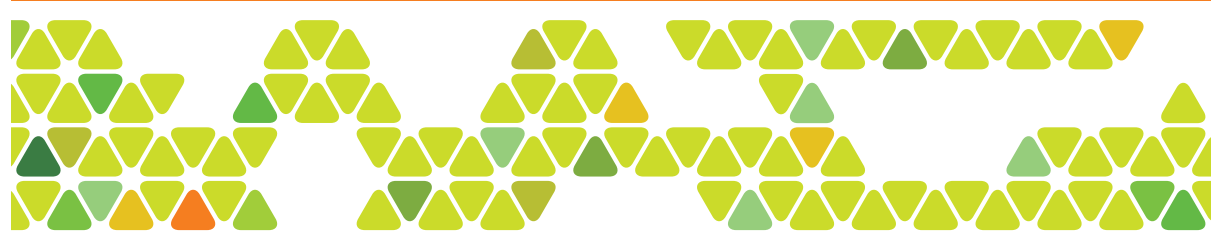
Dr Prodipto Ghosh set the context by explaining the significance and criticality of the Himalayan mountain ecosystems and their susceptibility to

anthropogenic and climate change impacts, as explained in the National Environment Policy 2006 and the National Action Plan for Climate Change 2008. In the Himalayas, deforestation, pollution of water sources and climate-induced glacier retreat are causing stress on the perennial river systems, biodiversity, dependent human populations, and tourism. Dr Ghosh pointed out the proximate causes of degradation as illegal logging, unplanned urbanization, and over-use of chemicals in farms, large-scale mining and lack of identification of polluting industries. In this context, he also mentioned that the underlying causes are more at the policy and implementation level. Policies that enable forest-dependent communities to secure their livelihoods by afforestation activities could help a great deal. Lack of institutional capacity of the environmental monitoring and evaluation institutions, poor capacity of the urban and regional planning institutions, and incompetent appraisal process of Environmental Impact Assessments (EIAs) for infrastructure, were also underlined amongst the underlying causes for increasing environmental degradation.

He made his closing remarks by shedding some light on the potential strategies that can be adopted to rectify the situation. Dr Ghosh mentioned that planned land use and watershed management were the first strategies to be followed for infrastructure planning, access to natural assets, and tourism activities. In the same context, it is important to follow the 'best practices' norms. He highlighted the concept of 'incomparable values' from the National Environment Policy 2006. The unique features of the mountain ecosystem must be valued as 'incomparable' and its ecological boundaries must be respected with very strictly regulated access to its resources.

*Shri S Vijay Kumar (Distinguished Fellow, The Energy and Resources Institute; former Secretary, Ministry of Rural Development)*

Shri S Vijay Kumar emphasized that in order to pursue a green growth path, the state should identify



and focus on low-hanging fruits. For example, with initiatives like NREGA, the state has a good potential for providing socio-economic benefits, by improving the uptake of the scheme. He stressed on involving local communities in the process of development and the importance of attaining cooperation between local institutions and forest department for effective implementation of Joint Forest Management (JFM). There were discussions regarding the growing facets of urbanization in the state. It was discussed that urbanization in rural areas should be planned instead of unplanned densification of towns to avoid pressure on natural resources. The state is experiencing increasing trend of towns outgrowing their limit. Keeping this in mind, appropriate planning is required for water supply and transportation. It is essential that the overall state planning takes into account the principles of sustainable development, including the issues of poverty and job creation.

*Dr S S Negi (Director, Department of Environment, Science, and Technology, Government of Himachal Pradesh)*

In his presentation, Dr S S Negi mentioned the various initiatives and participatory management practices for the forests and grasslands, protected area network, agriculture, and energy sector in Himachal Pradesh. Some of the initiatives discussed included the Integrated Watershed Management Programme (IWMP), the Comprehensive Catchment Area Treatment (CAT) Plan, the solar initiative, ban on the use of non-biodegradable carry bags, and green road technologies. The presentation also included the measures undertaken by the state to tackle the problem of industrial pollution. Dr Negi discussed the role of the Department of Environment, Science, and Technology (DEST) as the nodal department for all matters related to environment in the state. He also discussed the major initiatives of DEST in the field of environment and climate change. These included the Environment Master Plan, the Green House Gas Emission Inventory, the State Strategy and Climate Change Action Plan, the State Centre on Climate

Change, the Wetland Conservation Programme, the Aryabhata Geo-informatics and Space Application Centre (AGiSAC). Dr Negi highlighted the state's initiative on the Sustainable Tourism Policy 2013 and the Sustainable Water Policy 2013.

*Dr Jason Eis (Deputy Director, Global Green Growth Institute)*

Dr Jason Eis asserted that economic growth and development are inevitable for the state; hence considering the issue of environmental protection, it will be important to explore win-win situations. He expressed his agreement with Dr Pachauri's argument of driving through the Environment Kuznets Curve, emphasizing that reduction in environmental damage can result in increase in Gross State Domestic Product (GSDP). Dr Eis also expressed that there is a need to consider the issue of urbanization in the Himachal Pradesh, as the state presents immense opportunities for green growth in the domain of urbanization. There was also a discussion regarding the establishment and creation of sustainable forest industries within the state. Dr Eis spoke about the good practices that exist around the globe, setting examples of countries which have pursued green growth and countries which have avoided the path of conventional development.

### ***Insights from the Participants***

Though there exists a gap between green growth as a concept and the actions that need to be undertaken to achieve green growth, there was a consensus that environment and development can go hand-in-hand. This should form the basis to direct the pathways to green growth. Himachal Pradesh as a state has been providing positive externalities to other parts of the country. It is important that the citizens, especially youth, are educated so that they would be aware of the various resource use choice that they might make. The session deliberated on how legislations made for environmental management may appear to be hindrances for the developmental process in the state, if they do not consider the need of communities.





## Project Presentation

The presentation made by the project team began with a discussion on the analytical framework and overall structure of the project. The environmental, social, and economic indicators of the state were discussed. The presentation enlisted the initiatives and priorities that the state has undertaken for environmental protection, response to climate change, and sustainable development. The energy sector in Himachal Pradesh was discussed. Key fiscal policy areas for consideration were presented to better target the energy-related provisions, while at the same time improving the state's fiscal health.

A bottom-up state energy model and its policy relevance was also discussed. Key aspects for the state using climate change were reviewed. Climatological trends for temperature and rainfall for the period of 1951–2010 were presented, followed by discussions around increasing

water requirement in the state for domestic and industrial purposes, also on how the SWAT (Soil and Water Assessment Tool) model will be used by the research team to facilitate policy formulation for various land management practices related to groundwater development, land use/land cover, and forestry, and cropping pattern were analysed.

Specific policy initiatives including the Ecotourism Policy, Organic Farming Policy, and the Payment for Ecosystem Services Policy were discussed—these would form the basis of the study component on case studies of the state. Parameters for institutional and policy analysis were discussed and preliminary findings from the case study analysis were presented. The project presentation was summed up by discussing the ways forward and deliverables of the study which were as follows:

- State green growth strategy
- Technoeconomic model
- Availability of high resolution climate dataset for HP





L to R: Saurabh Bhardwaj, Associate Fellow, The Energy and Resources Institute; Shailly Kedia, Fellow, The Energy and Resources Institute; Prodipto Ghosh, Distinguished Fellow, The Energy and Resources Institute; Prakashkiran S Pawar, Associate Fellow, The Energy and Resources Institute; Shyamasis Das, Associate Fellow, The Energy and Resources Institute; Anandajit Goswami, Fellow, The Energy and Resources Institute



- Climate information to be integrated into an impact model (SWAT model) for future scenarios and projections
- Future projections for soil, water, crop (patterns and productivity), and LULUCF (land use, land-use change, and forestry)
- Case studies of activities in the state

### ***Insights from the Participants***


The state officials pointed out that data would need to be updated to make the model robust. A 'Core Team' would be constituted to guide the research team. The core team comprising state government officials and others nominated by the state government would provide guidance to

the research team on data-related challenges and other issues to be covered as part of the project.

There was an intervention made regarding data related to administrative boundaries. It was answered by the TERI team that under this project, various data sources shall be considered including spatial, household, and data received through interactions with state government officials. There were discussions if the project would cover aspects of environmental accounting. In this regard, it was stated that the Government of Himachal Pradesh is already working with The World Bank and an official from the Department of Finance gave a quick overview of the project. A suggestion was made to strengthen the state energy balance by extending







the calculations beyond the utilities data and also including the state-specific data for electricity generation. It was discussed that the issue around tax and subsidies is an inter-state concern as most of the transportation vehicles running in the state are registered in the neighbouring states.

**Wrap-up session by Shri S Vijay Kumar  
(Distinguished Fellow, TERI;  
Former Secretary, Ministry of Rural  
Development, Government of India)**

The important discussion points emerging from the workshop were briefly summarized by Shri S Vijay Kumar. He discussed how the project will be instrumental in promoting better understanding of green growth-related aspects in the state. Shri S Vijay Kumar deliberated that the project would be very timely placed and the state of Himachal Pradesh would require reconsidering its growth policy options, given the growing environmental degradation and the nature of its fragile ecosystem.

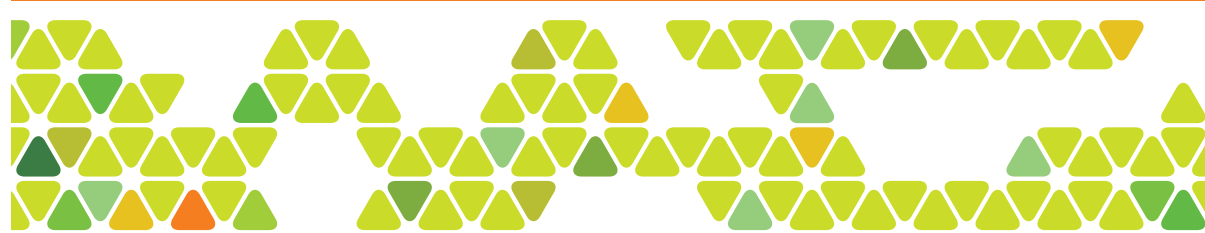
He acknowledged that it will be extremely useful to have a core team comprising Himachal Pradesh government officials, working with the TERI research team to help sort data discrepancies and other project-related issues.

**Vote of thanks by Shri Siddarthan Bala  
(India Country Head, Global Green  
Growth Institute—GGGI)**

At the end of the workshop, Shri Siddarthan Bala delivered a vote of thanks to all the participants

of the workshop. He appreciated the forward looking approach of the Government of Himachal Pradesh (GDHP) on issues relating to environment and sustainability—which was well reflected in the speech of Shri P Mitra (Chief Secretary, GoHP). He thanked the Chief Secretary for expressing his support to the project and research team. Shri Siddarthan Bala acknowledged the support extended by Shri Tarun Shridhar (Principal Secretary, DEST), Dr S S Negi, (Director, DEST), and the team of officials from DEST in helping organize the state workshop.

He expressed his opinion that the slogan of green growth will have to be transformed into concrete objectives and that the current project will be helpful in aiming for that. He thanked all participants for taking out time from their busy schedules to attend the workshop and deliberate on issues concerning the state's environment and sustainability. Shri Siddarthan Bala acknowledged the efforts of the TERI team for the project. He assured the state government officials present during the workshop that the research findings presented by the project team would be coherent with the data and information provided by the state government. ■



# Workshop on Green Growth and Development in Himachal Pradesh

Organized by  
Global Green Growth Institute (GGGI) and The Energy and Resources Institute (TERI)  
in association with  
Department of Environment, Science, and Technology (DEST),  
Government of Himachal Pradesh (GoHP)

**Date:** 16 July 2014 (Wednesday);

**Time:** 3:30 PM to 6:50 PM

**Venue:** Conference Hall, Armsdale Secretariat Building

## Draft Agenda

<b>3:30 PM – 4:00 PM</b> (30 mins)	Registration and welcome tea
<b>4:00 PM – 4:15 PM</b> (15 mins)	Welcome Remarks <b>Shri Tarun Shridhar, (Principal Secretary, DEST, GoHP)</b>
<b>4:15 PM – 4:25 PM</b> (10 mins)	Address by <b>Shri P Mitra, Chief Secretary, GoHP</b>
<b>4:25 PM – 4:45 PM</b> (20 mins)	Address by <b>Dr R K Pachauri (Director-General, TERI)</b> on the global relevance on green growth
<b>4:45 PM – 5:30 PM</b> (45 mins)	Policy discussion panel on green growth and development in HP Chair: <b>Shri Tarun Shridhar (Principal Secretary, DEST)</b> <ul style="list-style-type: none"><li>• <b>Dr Prodipto Ghosh (Distinguished Fellow, TERI; former Secretary, Ministry of Environment and Forests)</b></li><li>• <b>Shri S Vijay Kumar (Distinguished Fellow, TERI; former Secretary, Ministry of Rural Development)</b></li><li>• <b>Dr S S Negi, (Director, DEST)</b></li><li>• <b>Shri Siddharthan Bala (India Country Head, GGGI)</b></li><li>• Discussions</li></ul>
<b>5:30 PM – 6:00 PM</b> (30 mins)	Presentation by TERI team Chair: <b>Dr Prodipto Ghosh</b>
<b>6:00 PM – 6:30 PM</b> (30 mins)	Question and answer session
<b>6:30 PM – 6:45 PM</b> (15 mins)	Wrap up by <b>Shri Vijay Kumar</b>
<b>6:45 PM – 6:50 PM</b> (5 mins)	Vote of thanks

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## List of Participants

SI No.	Name	Organization
1	Shri P Mitra	Government of Himachal Pradesh
2	Shri Tarun Shridhar	Department of Environment, Science, and Technology
3	Shri S K B S Negi	Department of MPP & Power
4	Dr S S Negi	Department of Environment, Science, and Technology
5	Dr Suresh C Attri	Department of Environment, Science, and Technology
6	Shri Pradeep Chauhan	Department of Economics and Statistics
7	Dr (Prof) Ashwani Randev	UHF, Nauni, Solan
8	Mr Anil Vaidya	Himachal Pradesh Forest Department
9	Er P K S Rohela	Directorate of Energy
10	Mr Duni Chand Thakur	Department of Environment, Science, and Technology
11	Dr Ranveer Singh	Agro-Economic Research Centre (AERC)
12	Mr P Dorje Gyamba	Central Water Commission and Central Ground Water Authority
13	Mr Ajay Swami	Central Water Commission and Central Ground Water Authority
14	Er H M Dhareuala	Directorate of Energy
15	Er Niraj Kapoor	Directorate of Energy
16	Dr Srikant Baldi	Department of Finance
17	Shri K R Bharti	Budget Department of Finance
18	Mr Rajeev Sharma	Department of Forest
19	Mr Surender Kumar	Department of Forest
20	Dr Prabal Thakur	Department of Horticulture
21	Shri Ramesh Gupta	Department of Health
22	Dr H R Thakur	Department of Health
23	Professor Chetan Singh	Indian Institute of Advanced Study
24	Dr Rajinder Chauhan	Department of Industry
25	Er R K Sharma	Department of Irrigation
26	Dr Manmohan Singh	Indian Meteorological Department
27	Shri Basu Sood	Department of Planning
28	Shri J C Chauhan	Department of Rural Development
29	Mr Mohan Chauhan	Department of Tourism and Civil Aviation
30	Ms Arti Gupta	WWF-India, Shimla Office
31	Dr O C Vrema	H P
32	Dr Rakesh Sharma	IBES, Neri
33	Dr Tarsem Verma	SAMETI, Mashobra
34	Dr Neena Thakur	Department of Horticulture, Shimla
35	Mr Prakaram	Channel 9

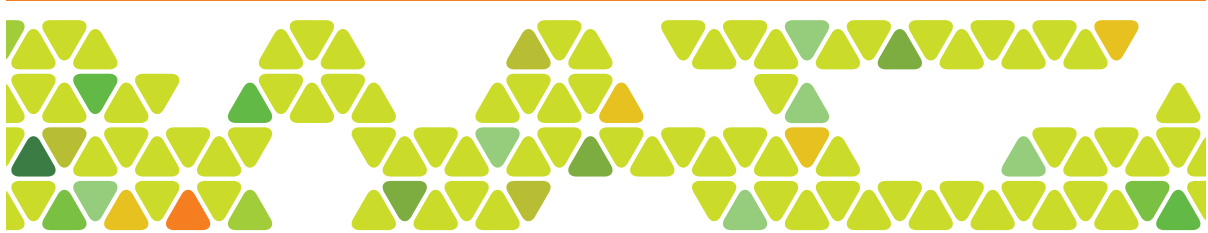


36	Mr Virender Khagta	Indian Bulletin News
37	Dr S R Kalia	Department of Agriculture
38	Dr Hemant Gupta	Department of Environment, Science, and Technology, Shimla
39	Dr R S Thakur	Department of Agriculture
40	Dr K S Pathania	Animal Husbandry Department
41	Mr Anil Bahri	Irrigation and Public Health Department
42	Mr Yogesh Behl	Himachal Pradesh Tourism Department
43	Er S P Gupta	Directorate of Energy
44	Er Deepak Jasrotia	Energy
45	Mr K K Guleri	Horticulture
46	Dr R S Singta	ETV News Channel
47	Mr Aatish Chauhan	ETV News Channel
48	Captain J M Pathania, IAS	Directorate of Urban Development
49	Mr Naresh Sharma	Himachal Pradesh Public Works Department
50	Er M S Thakur	Himachal Pradesh Public Works Department
51	Dr V S Minhas	Directorate of Health Safety and Regulation
52	Mr T C Chandel	State Level Nodal Agency of Integrated Watershed Management Programme, Rural Development Programme
53	Mr Jayant Sharma	Information and Public Relations Department
54	Mr S K Justa	Tourism and Civil Aviation Department
55	Mr Pradeep Kunwar	Information and Public Relations Department
56	Er K C Dhiman	Information and Public Relations Department
57	Dr V S Thakur	Dr Y S Parmar University of Horticulture and Forestry
58	Ms Tanma Negi	Youth Services and Support
59	Ms Asha Mehta	Town and Country Planning Department
60	Dr Arvind Bhatt	Himachal Pradesh University
61	Mr Lokinder Rathore	HP Horticultural Produce Marketing and Processing (HPMC)
62	Mr Surinder Chauhan	HP Horticultural Produce Marketing and Processing (HPMC)
63	Dr Jason Eis	Global Green Growth Institute
64	Mr Siddharth Balasubramanian	Global Green Growth Institute
65	Mr Prasoon Agarwal	Global Green Growth Institute
66	Mr Ajith Radhakrishnan	Global Green Growth Institute
67	Mr Ankit Singhvi	Global Green Growth Institute
68	Dr R K Pachauri	The Energy and Resources Institute
69	Dr Prodipto Ghosh	The Energy and Resources Institute
70	Mr S Vijay Kumar	The Energy and Resources Institute
71	Dr Prakashkiran S Pawar	The Energy and Resources Institute





72	Mr Anandajit Goswami	The Energy and Resources Institute
73	Mr Saurabh Bhardwaj	The Energy and Resources Institute
74	Mr Shyamasis Das	The Energy and Resources Institute
75	Ms Shailly Kedia	The Energy and Resources Institute
76	Ms Aparna Vashisht	The Energy and Resources Institute
77	Ms Aastha Sharma	The Energy and Resources Institute
78	Mr Kanwal Nayan Singh	The Energy and Resources Institute
79	Mr Ashutosh Senger	The Energy and Resources Institute
80	Mr M K Bineesan	The Energy and Resources Institute
81	Mr Amit Thakur	The Energy and Resources Institute
82	Dr Narayan Singh	Dalas, Kullu, HP
83	Dr P L Sharma	Dalas, Kullu, HP



# Steering Committee

<b>Shri B K Chaturvedi</b>	Former Member, Planning Commission (Chair)
<b>Dr R K Pachauri</b>	Director-General, TERI
<b>Mr Rakesh Singh</b>	Chief Secretary, Government of Punjab
<b>Ms Seema Jain</b>	Principal Secretary, Department of Science, Technology, Environment, and Non-conventional Energy, Government of Punjab
<b>Shri Sudripta Roy</b>	Chief Secretary, Government of Himachal Pradesh / Shri P Mitra, Acting Chief Secretary, Government of Himachal Pradesh
<b>Mr Tarun Shridhar</b>	Principal Secretary, Department of Environment Science & Technology, Government of Himachal Pradesh
<b>Dr Mattia Romani</b>	Deputy Director - General , GGGI
<b>Ms Naina Lal Kidwai</b>	Country Head, HSBC India and Director HSBC Asia Pacific
<b>Mr Onnu Ruhl</b>	India Country Director, The World Bank
<b>Ms Lise Grande</b>	UN Resident Coordinator, United Nations Development Programme (UNDP)
<b>Mr R V Verma</b>	Chairman and Managing Director, National Housing Bank
<b>Mr Prabir Sengupta</b>	Distinguished Fellow, TERI and Former Secretary, Ministry of Commerce and Industry
<b>Dr Prodipto Ghosh</b>	Distinguished Fellow, TERI and Former Secretary, Ministry of Environment and Forest (MoEF)
<b>Mr Shri Prakash</b>	Distinguished Fellow, TERI and Former Member, Ministry of Railways
<b>Mr S Vijay Kumar</b>	Distinguished Fellow, TERI and Former Secretary, Ministry of Rural Development







## Project overview

The Initiative on Green Growth and Development in India is a collaborative project which is being undertaken by The Energy and Resources Institute and the Global Green Growth Institute. The Department of Environment, Science, and Technology is the nodal agency for the project, for Himachal Pradesh.

The analysis will evaluate options by which the Indian economy can move towards an inclusive green growth paradigm of development. The activities proposed for this project would be carried out with due consideration to the federal nature of the Indian polity (where broad macro-economic directions and strategies are defined in keeping with national priorities), and to local authorities as provided in the Indian Constitution. To this end, the initiative will examine strategies pursued at the national level and for the two states, namely Punjab and Himachal Pradesh.

For Himachal Pradesh, the study will seek to understand in an integrated framework -- soil and water assessment, climate change and techno-economic analysis. Case studies will also be developed under this initiative. Given the specific context of Himachal Pradesh, the study will seek to evolve a framework to look at the interdependencies between climate, water and hydropower. The study will use a rich mix analytical tools and stakeholder consultation.



**Project Coordinator**

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