



EUROPEAN UNION



Tiruchirappalli Regional Engineering College  
Science and Technology Entrepreneurs Park  
Tiruchirappalli - 620 015.



Knowledge partner



Capacity Leverage Programmes in  
Clean Coal Technologies (CCT) and  
Carbon Capture & Storage (CCS)

Training Programme on  
Introduction to CCS and CCT

Project funded by the European Union

Clean Coal Technology

Climate Change and CCS - Context Setting

CCS Policies

CCS - Technology and Innovation

CCS Roadmap for the Indian Thermal Power Sector

on 21<sup>st</sup> & 22<sup>nd</sup> December, 2011  
at Trichy

## The Project ...

The Indian Thermal Power Sector is poised to grow exponentially to meet the country's huge power demands. It is estimated that nearly 6 fold increase in power requirement is envisaged in the next 20 years. India being the third largest coal mining nation in the world, its share of coal energy generation stands at 55% compared to that of the world's share of 20.3%. Similarly, India's share of carbon emission due to coal is 69.78%, while that of globe is 41.2%. However, India has voluntarily committed to reduce its CO<sub>2</sub> emissions by 20 to 25% from its 2005 level. This is highly challenging, considering the facts that the per capita consumption of the power in India is very low, the whopping demand for energy and its per capita CO<sub>2</sub> emission being 20 times lesser than US and other developed countries.

India's heavy dependence on coal based power generation, criticality of energy demands and ambitions of CO<sub>2</sub> emission reduction targets, all warrant concerted efforts in capacity development in CCT and CCS technologies, primarily aimed at the country's Thermal Power Sector, the CO<sub>2</sub> emission major.

In order to assist the Indian Thermal Power Sector to address the challenges of reducing CO<sub>2</sub> emissions, TREC-STEP, in partnership with Bharat Heavy Electricals Ltd, India's largest public sector manufacturer of power plant equipments, has taken up a major development initiative, funded by the European Union, under its project for 'Developing a Cluster for Clean Coal Technologies (CCT) and Carbon Capture and Storage (CCS) for the Indian Thermal Power Sector'. This would be a first-of-its-kind initiative in India, for launching CCT - CCS initiatives and new set of innovative actions in this vital development front. With a comprehensive set of actions covering awareness building, capabilities development, demonstration and deployment projects, innovation development and dissemination platforms, this project is expected to promote a groundswell for CCT and CCS initiatives in India.

## Capacity Leverage Programmes in CCT and CCS

Under this unique EU supported project, among other project initiatives, TREC-STEP has planned to organize a series of Capability Leverage Programmes in CCT and CCS domain, for the benefit of the Indian Thermal Power Players, Policy Makers, Entrepreneurs and Innovators, Academicians, etc. This first 'Awareness Build-up Programme in Clean Coal Technologies and Carbon Capture and Storage', in association with Ernst and Young as the knowledge partner, is aimed at facilitating 'change champions' and building a constituency for CCT – CCS agenda in the future, for the Indian Thermal Power Sector.



## Programme Structure

This two-day awareness programme on Introduction to CCS and CCT will provide an overview of the global scenario of CCS and CCT initiatives, covering all essential, technology, regulatory and policy interventions in the carbon capture and storage domain. This programme is designed for the Thermal Power Players, Policymakers, Entrepreneurs, Innovators, Academicians and other technical personnel with an interest in Clean Coal Technologies and Carbon Capture and Storage.



## Training Programme on Introduction to CCS and CCT

on 21<sup>st</sup> & 22<sup>nd</sup> December, 2011  
at SRM Hotel, Trichy

### DAY 1 21<sup>st</sup> Dec '11

	<b>Topics Overview</b>
09:30 AM - 10:30 AM	<b>Inaugural Session</b> High Tea
Session I 10:45 AM - 12:45 PM	<b>Climate Change and CCS - Context Setting</b> <ul style="list-style-type: none"> <li>• Climate Change</li> <li>• Global Regulation and Initiatives</li> <li>• Economic Impact of Climate Change- Local and Global</li> <li>• CCS and its relevance to Global impacts</li> <li>• Future implications and roadmap</li> </ul>
	Lunch Break
Session II 01:30 PM - 03:30 PM	<b>CCS- Technology and Innovation</b> <ul style="list-style-type: none"> <li>• CCS- Summary of technologies</li> <li>• Key CCS technologies</li> <li>• Key Players and the Market place</li> <li>• Future of the technology</li> </ul>
	Tea Break
Session III 04:00 PM - 0 5:00 PM	<b>Summary and Group Task</b>

### DAY 2 22<sup>nd</sup> Dec '11

Session I 10:00 AM - 11:00 AM	<b>CCS Policy</b> <ul style="list-style-type: none"> <li>• Rules and regulations around CCS</li> <li>• Global CCS Policy - Status and critical synthesis</li> </ul>
	Tea Break
Session II 11:15 AM - 12:30 PM	<b>CCS Policy</b> <ul style="list-style-type: none"> <li>• CO<sub>2</sub> Pipelines and regulations</li> <li>• International Negotiations on CCS in United Nations Framework Convention on Climate Change (UNFCCC)</li> </ul>
	Lunch Break
Session III 01:30 PM - 03:30 PM	<b>Clean Coal Technology and CCS</b> <ul style="list-style-type: none"> <li>• Clean Coal technologies</li> <li>• Future CCS ready Power plants</li> <li>• Cost economics of CCS, in relation with power plants</li> <li>• Indian Perspective of CCS and the Power sector.</li> </ul>
	Tea Break
Session IV 04:00 PM - 0 5:00 PM	<b>Group Task - CCS Roadmap for the Indian Thermal Power Sector</b>

### About Ernst & Young...

Ernst & Young is a globally recognized leader in knowledge management. Ernst & Young has invested in developing processes and systems to create, share and reuse their intellectual capital on a global scale, enabling effective delivery the most relevant insights for you. Ernst & Young operates from 8 cities in India ([www.ey.com/india](http://www.ey.com/india)) with a work force of over 7500 people, who work towards the firm's vision of being the trusted business advisor that contributes most to the success of people and clients by creating value and confidence. Global Tax Advisory Services, Risk Advisory Services, Transaction Advisory Services and Business Advisory Services are the core services offered by the firm in India.



### About TREC-STEP...

TREC-STEP is a multi-dimensional developmental organization promoted in 1986, by the central and state governments of India, along with the financial institutions and other institutions for promoting technology and entrepreneurship initiatives. It is a technology business incubator with a strategic focus on promoting new entrepreneurial start-up ventures into successful high growth business ventures. TREC-STEP has worked with a number of international developmental organizations in development projects, such as the UNDP, the UNIDO, the European Commission, the World Bank infoDev, the British Council Division, etc. TREC-STEP has worked almost with all the government agencies, development agencies and major financial institutions in India, in development projects focusing on the technology and entrepreneurship domain. TREC-STEP has also won many awards and accolades from the Government of India, the World Bank, the European Union and others. For more information, kindly visit [www.trecstep.com](http://www.trecstep.com) ...



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#### A Project Implemented by

Tiruchirappalli Regional Engineering College -  
Science and Technology Entrepreneurs Park  
Thuvakudy,  
Tiruchirappalli - 620 015  
Tel: 0431 - 2500697, 2500085  
Fax: 0431 - 2501681, 2500175

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Delegation of the European Commission to India,  
65 Golf Links  
New Delhi - 110 003  
Tel : 011 - 24629237  
Fax : 011 - 24629206

#### The European Commission is the EU's Executive body.

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