

Course No.:	MPP 183
Course title:	Climate Change and Development
Number of credits:	3
Number of lectures-tutorial-practicals:	30-12-0
Course coordinator:	Dr Kaushik R Bandyopadhyay

Course Objectives

Students after successful completion of this course will be able to understand the challenges of climate change and identify a framework on how to synergise climate, energy and sustainable development. The learning process will be highly participatory and the students will be encouraged to take different positions while making their presentations or participating in discussions. The course will be foundational in nature and content and will facilitate the students in taking more advanced courses that address sectoral issues on climate change. Some of the core topics that the course captures are:

- Understanding the challenge of climate change and its impact
- Situating climate change in the context of sustainable development
- The nexus between energy and climate change.
- Policies and measures to combat climate change.
- International politics and negotiations on climate change.
- The role of business in combating climate change

Course Grading or Evaluation

The grading will be based on the students' participation in the class discussion, power point presentation accompanied by submission of a term paper/report on a suggested topic and a major exam at the end of the course.

Mode of Evaluation	Max Marks
▪ Class participation in discussion/debate	20
▪ Power point presentation	20
▪ Term paper	30
▪ Major exam	30
Total	100

Details of Course Content and Allotted Time

Modules	Topics	Lectures*	Case Analysis /Tutorials*
1	Climate Change: Understanding the phenomenon and its impact	3	1
2	Climate Change and Sustainable Development	3	1
3	Energy and Climate Change: Understanding the Crucial Nexus	6	1
4	Policies and Measures to Combat Climate Change	5	1

5	Overview of International Politics and Negotiation	2	
6	Emerging Issues in Climate Negotiation I : Technology Transfer and Finance	2	1
7	Emerging Issues in Climate Negotiation II: Carbon Leakage and Border Carbon Adjustment	2	1
8	Business and Climate Change: Select Topics	7	6
	Total	30	12

*equivalence in hours

Detailed Module-wise Breakup of the Topics

Topic 1: Climate Change: Understanding the phenomenon and its impact

- Brief narration of the phenomena and issues underlying climate change
- Characterising overall vulnerability to climate change
- Anticipated economic and socio-economic implications of climate change and their implications for development
- Greenhouse gases(GHG's) and climate change
- Why is it important to stabilise the concentration of GHG's?

Suggested Readings:

Metz (2010), Chapter 1 to 3; IPCC (2007); Richardson et.al (2009); IPCC (2012); UNEP (2012).

Topic 2: Climate Change and Sustainable Development

- Combating climate change: understanding adaptation and mitigation
- Climate change and sustainable development: understanding the synergy
- Mainstreaming climate change in sustainable development policies
- To what extent sustainable development itself is an effective tool for adaptation and mitigation?
 - understanding essence of double dividends or co- benefits approach

Suggested Readings:

Metz (2010), Ch 4; UNDP (2011); UNEP (2012); UN (2011); UNCSD (2012)

3. Energy and Climate Change: Understanding the Crucial Nexus

- The role of energy in meeting development challenges and realising the millennium development goals (MDGs) and path towards sustainable development goals (SDGs)
- The state of energy availability and access with special reference to India
- The current energy consumption profile with special reference to India (overall and sectoral)
- Why energy is the sector of biggest concern for climate change and sustainable development?
- Reducing energy intensity of production: conservation and efficiency issues (select sectoral case analysis)
- Fossil fuel subsidy and climate change
- Shifting the energy consumption base from conventional fossil fuels to renewable: Why is it crucial for addressing climate change and promoting sustainable development?

- The current state of play in renewable energy in South Asia with special reference to India
- National Action Plan on Climate Change (NAPCC)

Suggested Readings:

Fouquet (2013); REN 21(2012), Metz (2010), Ch 5; IPCC (2011); Sathaye (2009); Srivastava et. al (2012); UNDP (2011), UNEP (2012), UNCSD (2012), Schiermier et. al (2008); IEA (2013), Fouquet (2013), Palit and Chaurey (2011); Palit (2013); Bandyopadhyay (2008); Bandyopadhyay (2010a); Bandyopadhyay (2010b); Soni et al. (2012); GoI (2008); GoI (2006).

4. Policies and Measures to Combat Climate Change

- Policy instruments to tackle climate change
- Strengths and weaknesses of the various policy instruments
- Implementation and enforcement issues
- Market failure and role of international co-operation
- Clean Development Mechanism and Emission Trading System
- The state of play in carbon markets

Suggested Readings:

Das (2011); Metz (2010), Ch 11; Stern (2006); Fouquet (2013); Michaelowa and Purohit (2007), Gupta et al. (2007), Newell and Philip (2011); UNEP Risoe (2011), World Bank (2012), Paulsson (2009), Carbon Disclosure Project (www.cdp.net)

5. Overview of the International Politics and Negotiations

- Brief historical overview of evolution of international negotiations leading to the advent of the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol.
- Principles underlying the UNFCCC and Kyoto Protocol.
- Key features of the Kyoto Protocol.
- Launch of negotiations on post-2012 climate regime: The Bali Action Plan (BAP) of December 2007.
- Key components of the BAP: shared vision, mitigation; adaptation; technology; finance.
- Key features of the Durban Platform
- Brief outline and state of play of the on-going negotiations on the post-2012 climate regime till Doha.
- Discussions on sustainable development and 'Green Economy' in Rio+20 and beyond

Suggested Readings:

Chad (2012); Metz (2010), Chapter 12; IPCC (2007); UNDESA (2009); website of UNFCCC (www.unfccc.int), Earth Negotiation Bulletin (ENB) available at website of International Institute of Sustainable Development (www.iisd.ca).

6. Emerging Issues in Climate Negotiation I: Technology Transfer and Finance

- Role of clean technology in GHG emission reduction;
- Different kinds of climate-related technologies;
- Explaining the concept of technology transfer;
- Barriers to technology transfer including intellectual property rights; Mechanisms for climate-related technology transfer (case analysis of low carbon technology transfer);

- Role of climate finance
- Ongoing negotiations on technology and finance: state of play and way forward.

Suggested Readings:

Das (2011); Metz (2010), Chapter 12, IPCC (2007); IPCC (2000); SPRU and TERI (2009); website of UNFCCC (www.unfccc.int), Earth Negotiation Bulletin (ENB) available at website of IISD (www.iisd.ca).

7. Emerging Issues in Climate Negotiation II: Carbon Leakage and Border Carbon Adjustment

- Liberalization of trade in environmental goods and services.
- EU-ETS, carbon leakage and border tax adjustment.
- Issues relating to embodied carbon and their trade implications.
- Standards, labelling and certification.

Suggested Readings:

Carbon Trust (2010); Grubb et al. (2009); Stefano (2010)

8. Business and Climate Change: Select Topics

- Business case for green economy
- Climate change and business ecosystem services
- Innovation and low carbon business strategy
- Life cycle approach to low carbon management
- Greening of supply chain
- Carbon disclosure project and sustainability reporting

Learning outcomes

- 1. Get proper understanding of Sustainable Development and related issues
- recognize the issues related to man-environment interactions and various established theoretical perspective
- 2. discuss environmental problems from an social perspective
- 3. apply theoretical knowledge into practice while dealing with contemporary environmental problems

Suggested Readings:

CDP (2012); CDP (2013); Bandyopadhyay(2010b); UNEP (2011); UNEP (2012); Lash and Wellington (2007); MIT Sloan (2013) ; Nidumolu, Prahlad and Rangaswamy (2009); websites: World Resources Institute (www.wri.org); GHG Protocol (www.ghgprotocol.org); Harvard Business Review Green (www.hbrgreen.org); Life Cycle Initiative of UNEP and SETAC (www.lifecycleinitiative.org); Global Reporting Initiative (www.gri.org), Carbon Disclosure Project (www.cdp.net)

Select Readings:

Fouquet, Roger (2013), 'Handbook of Energy and Climate Change', Edward Elgar Publishing. Available at: http://www.e-elgar.co.uk/bookentry_main.lasso?id=14429

Katherine Richardson, Will Steffen, Hans Joachim Schellnhuber, Joseph Alcamo, Terry Barker, Daniel M. Kammen, Rik Leemans, Diana Liverman, Mohan Munasinghe, Balgis Osman-Elasha, Nicholas Stern, Ole Wæve (2009), 'Climate Change: Global Risks, Challenges and Decisions', available at <http://climatecongress.ku.dk/pdf/synthesisreport>

Metz, Bert (2010), 'Controlling Climate Change', Cambridge University Press.
http://www.cambridge.org/gb/knowledge/isbn/item2713453/?site_locale=en_GB

IPCC(2007), Summary for Policymakers. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.*

available at www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf

IPCC, 2012: Summary for Policymakers. In: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation, available at: http://ipcc-wg2.gov/SREX/images/uploads/SREX-SPMbrochure_FINAL.pdf

IPCC, 2011: Summary for Policymakers. In: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation available at- http://srren.ipcc-wg3.de/report/IPCC_SRREN_SPM.pdf

UNEP (2012), Global Environment Outlook-5, available at <http://www.unep.org/geo/geo5.asp>

UNDP (2011), 'Human Development Report- Sustainability and Equity: A Better Future for all', available at <http://hdr.undp.org/en/reports/global/hdr2011/>

UN (2011), Resilient People, Resilient planet, available at http://www.un.org/gsp/sites/default/files/attachments/GSP_Report_web_final.pdf

Stern, Nicholas (2006), Stern Review on the Economics of Climate Change available at: http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/sternreview_index.htm

UNCSD (2012), 'The Future We Want', Outcome Document of the Rio+20, available at <http://www.uncsd2012.org/thefuturewewant.html>

IEA(2013), Tracking Clean Energy Progress, Paris, available at: http://www.iea.org/publications/TCEP_web.pdf

Soni, Anmol, Anomito Chatterjee, Kaushik R. Bandyopadhyay, Kerry Lang and Damon Vis Dunbar (2012), A Citizen's Guide to Energy Subsidy in India, TERI and IISD, available at: <http://www.iisd.org/gsi/introductions-non-experts/citizens-guide-energy-subsidies-india>

REN21 (2012), Renewables 2012: Global Status Report, Renewable Energy Policy Network for the 21st Century (REN21), available at: http://www.ren21.net/Portals/0/documents/Resources/%20GSR_2012%20highres.pdf

Palit, Debajit (2013), 'Solar Energy Programmes for Rural Electrification: Experiences and Lessons from South Asia', available at: <http://www.uio.no/english/research/interfaculty-research-areas/milen/research-school/activities/seminars/palit-2013.pdf>

Palit, Debajit and Chaurey, Akansha (2011), 'Off-grid rural electrification experiences from South Asia: Status and best practices, *Energy for Sustainable Development*, Vol. 15, Issue 3, pp 266-276.

Available at : <http://www.sciencedirect.com/science/article/pii/S0973082611000500>

Das, Kasturi (2011), 'Technology Transfer under the Clean Development Mechanism: An Empirical Study of 1000 CDM Projects', GCD Working Paper 14, University of East Anglia. Available at : www.uea.ac.uk/international-development/research/gcd/Das+2011

Jayant Sathaye, Lecocq, Frank, Masanet, Erik, Najam, Adil, Schaeffer, Roberto, Swart, Rob, Winkler, Harald (2009), 'Opportunities to Change Development Pathway towards Low Green House Gas Emissions through Energy Efficiency', *Energy Efficiency, Volume 2, p 317 to 337*. Available at: <http://link.springer.com/content/pdf/10.1007%2Fs12053-009-9044-z.pdf>

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Srivastava, Leena and Sokona, Youba (2012) eds., 'Universal Access to Energy: Getting the Framework Right', *Energy Policy*, Vol. 47, Supplement 1, available at: <http://www.sciencedirect.com/science/issue/271097-1-s2.0-S0301421512X00065>

UNEP Risoe (2011), 'Progressing towards Post-2012 Carbon Markets', available at: <http://www.acp-cd4cdm.org/media/326892/post2012markets.pdf>

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Available at: http://www.undpcc.org/docs/Bali%20Road%20Map/English/UNDP_Taking%20Stock%20of%20Durban.pdf

Michaelowa, A. and P. Purohit (2007), *Additionality Determination of Indian CDM Projects: Can Indian CDM Project Developers Outwit the CDM Executive Board?* University of Zurich, Switzerland.

Available at: <http://www.internationalrivers.org/files/attached-files/additionality-cdm-india-cs-version9-07.pdf>

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Paulsson, E. (2009), 'A Review of the CDM Literature: From Fine-Tuning to Critical Scrutiny?', *International Environmental Agreements*, Vol. 9, 63–80, available at: <http://www.springerlink.com/content/4214wt5tt6547673/>

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Available at: <http://www.carbontrust.com/resources/reports/advice/tackling-carbon-leakage-sector-specific-solutions>

Grubb, Michael, Thomas L. Brewer, Misato Sato, Robert Heilmayr, Dora Fazekas (2009), 'Climate Policy and Industrial Competitiveness: Ten Insights from Europe on the EU Emissions Trading System', *Climate & Energy Paper Series 09*, The German Marshall Fund of the United States (GMF), Transatlantic Climate Bridge, Climate Strategies and Carbon Trust.

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Available at: http://planningcommission.gov.in/reports/genrep/rep_intengy.pdf

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Bandyopadhyay, Kaushik (2010a), 'Reconciling Economic Growth with Sustainable Mobility', Chapter 15, *India Infrastructure Report*, Oxford University Press.

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Carbon Disclosure Project (2013), *Reducing Risk and Driving Business Value*, CDP India Supply Chain Report 2012-13. Available at:

<https://www.cdproject.net/CDPResults/CDP-Supply-Chain-Report-2013.pdf>

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Nidomolu, Ram, Prahlad, C.K., Rangaswamy, M.R. (2009), 'Why Sustainability is the Key Driver of Innovation?', *Harvard Business Review*, September.

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<http://www.marmanie.com/cms/upload/file/Why%20Sustainability%20is%20now%20the%20Key%20Driver%20of%20Innovation.pdf>

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Available at: <http://sloanreview.mit.edu/reports/sustainability-innovation/>

UNEP, 2011, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*,

Available at: www.unep.org/greeneconomy

UNEP, 2012, *the Business Case for the Green Economy: Sustainable Return on Investment*
Available at:

<http://www.unep.org/greeneconomy/Portals/88/documents/partnerships/UNEP%20BCGE%20A4.pdf>

Select Websites:

World Resources Institute (www.wri.org);

GHG Protocol (www.ghgprotocol.org);

Harvard Business Review Green (www.hbrgreen.org);

Life Cycle Initiative of UNEP and SETAC (www.lifecycleinitiative.org);

Global Reporting Initiative (www.gri.org)

Legal texts and other relevant materials from www.unfccc.int

Earth Negotiation Bulletin (ENB) available at website of IISD (www.iisd.ca).

Carbon Disclosure Project (www.cdp.net)

This course has been reviewed by

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