

ENERGY POLICY ANALYSIS

EN 653/ PS 611

January 3, 2019

The course will provide the tools and techniques necessary for analyzing energy policies. Students will be expected to carry out a project to analyse an existing policy in a specific context or design a policy intervention for a specific goal.

- Overview of energy policy instruments – pricing, regulation, Incentives, subsidies
- Framework for policy analysis, stakeholders, criteria – energy access, security, sustainability, development
- Case studies of a few energy policies – successes and failures, Free riders and rebound effect
- Reference Energy system, End Use Analysis
- Modelling Energy Demand, Elasticities
- Substitution- S-shaped Logistic curves, Examples of accelerated diffusion- factors affecting diffusion
- Economy wide impacts- Input-Output models, Optimisation models, TIMES-MARKAL
- Scenario generation – approach and examples
- Energy policy analysis project

Assessment

Assignment	10 marks
Course project	30 marks
Midsem Test	10 marks
Weekly Quizzes	10 marks
Endsem Exam	40 marks

Lecture Timings

Monday 10.35, Tuesday 11.35, Thursday 8.30

Venue: LT 202

Attendance: Attendance in classes, presentations, computer tutorials is compulsory. To encourage 100% attendance, an incentive of + 5 marks in the in semester will be given for 90%+ attendance, a penalty of -3 marks for attendance between 70-80 % and a penalty of -5 marks for attendance less than 70%.

Rangan Banerjee

Extn:7883, e-mail: rangan@iitb.ac.in / Contact: Balkrishna Surve (balkrishna@iitb.ac.in)

Tentative Lecture plan:

Topic	No. of Lectures
Introduction, Course Objective, Plan, Reference Energy System, End use Analysis	2
Framework for Energy Policy Analysis – stakeholders, criteria, instruments	2
Energy Access, Energy and Development, Energy and Climate- Kaya identity	2
Energy Pricing, Energy Regulation, Incentives/ Subsidies- Examples	2
Free Riders and Rebound Effect	1
Analysis of Country- National Commitments-Group presentations	3
Energy Demand Modelling-Elasticities	3
Substitution-S shaped, Logistic curves, Learning curves	2
Factors affecting diffusion, Accelerating diffusion	1
Scenario Generation- Drivers, exploratory, normative	2
IESS Scenarios	1
IPCC Scenarios	1
Mid Semester Examination (22-28, February 2019)	
Mid Sem Test Discussion	1
Writing a Policy Brief	1
Interim Course project presentations	3
Input Output Models for Energy	3
Examples of I-O models for policy analysis	2
India's Energy Policies- Integrated Energy Policy, Solar Mission, Niti Aayogs Energy Policy	2
Optimisation Models – Energy Economy- TIMES-MARKAL	2
Soft Linking of Energy Models	1
Case studies of policy successes/failures	4
Analysis of Energy Policy briefs	2
Final Course project presentations	3

Assignment

(Groups of 3): 10 marks

Analyse the nationally determined contribution (NDC) of your (allotted) country. The NDC submissions are available at:

<https://www4.unfccc.int/sites/submissions/indc/Submission%20Pages/submissions.aspx>

Compare the energy and carbon intensity, carbon space share and past trajectory of the country vis-à-vis India and the world. Comment on the targets declared by the country and the policies proposed to achieve them. You may access the energy data for your country from the International Energy Agency statistics and other supplementary information from other national sources, papers, reports (clearly state all sources).

Present the NDC on behalf of the country and suggest its position in the global negotiations. Your report should contain the following three parts (suggest individual reports by each group member)

- a) NDC, Policies, Plans-vis-à-vis existing country situation
- b) Comment/ Critique- Comparison with India/ World
- c) Discuss country's position and strategies in the global negotiations and defend its NDC

Suggested countries:

China, USA, Canada, Germany, UK, Sweden, France, Brazil, Saudi Arabia, South Africa, Argentina, Ethiopia, Kenya, South Korea, Sri Lanka, Nepal, Russia, Indonesia

Course project on energy policy analysis (groups of 3) 30 marks

The course project will consist of a real life policy context and will involve both quantitative and qualitative analysis. The analysis would involve identification of stakeholders, impacts and suggest policy interventions and implementation strategies

Suggested themes for policy projects (indicative)

- a) Energy Access
- b) Sustainable Mass Transit for a city
- c) Energy R&D- policies to enable future technology development
- d) Distributed Smart Energy Systems
- e) Global Carbon Management
- f) Low Carbon Industrial Processes
- g) Low Carbon Growth strategy for a campus
- h) 100% Renewable Scenario
- i) Energy from Wastes

Important dates:

January 7	:	Assignment country allotment
January 14	:	Finalisation of course project groups
January 22	:	Assignment submissions
Jan 24, 29 (2 hours)	:	Assignment presentations/ discussions
February 5	:	Submission of course project plan / write-up
March 7, 11,12	:	Interim presentation on course project progress
April 11	:	Final submission of course project
April 12-19	:	Final presentation (Extra slots to be decided for presentations)

Reports for assignment and course project must be original work and your own writing. Any assignment or project that is copied will be rejected. Please use an anti plagiarism software such as Turnitin to check your score (preferred score less than 10%)

References (papers and links will be provided on Moodle)

- M. Munasinghe Energy Policy Analysis and Modelling, Cambridge University Press, 2008.
- R. Miller and P.D. Blair, Input Output Analysis, 2nd Edition, Cambridge University Press, 2009.
- P.Meier Energy Systems Analysis for Developing countries, Springer Verlag 1984.
- Shell Energy Scenarios till 2050, <https://rjohnwilliams.files.wordpress.com/2016/02/shell-energy-scenarios2050.pdf> last accessed 20th February 2018.
- India Energy Scenarios 2047 [iess2047.gov.in/](https://www.ess2047.gov.in/) last accessed 20th February 2018.