Course No.:	PPM 133A
Course title:	**Energy Policy and Management**
Number of credits:	3
Number of lectures-tutorial practicals:	42
Course coordinator:	Dr O P Rao

Course Objective

"Energy policy is the manner in which a given entity (Government of India) decides to address issues of energy development including energy production, distribution and consumption. The attributes of energy policy may include legislation, international treaties, incentives to investment, guidelines for energy conservation, measures for environmental protection, taxation and other public policy techniques."

Therefore, the course objectives aim to sensitize students on:

1. The important role of energy in industrial, and economic development of the country and in providing a better quality of life to people
2. The present and projected energy scenarios in the country depicting the energy requirements, availability, dependence on imports, resource & technological constraints, socioeconomic issues etc
3. Need for an appropriate energy policy in the country based on the major driving forces influencing our policy such as rapidly growing economy, exponential growth in energy demand, limited indigenous fossil fuel reserves, meager contribution from renewable energy sources, large importer of energy and increasing emissions from energy use

4. Energy policy issues of energy independence, energy security, sustainable development, energy conservation, subsidy and taxation etc.
5. Energy use has detrimental effects on environment- students will be apprised about the ill effects and the control measures required and the international protocols in vogue
6. Energy use and environment linkages

7. Finally the students will learn about formulating an integrated energy policy for the country based on the points 1 to 6

Course contents

Introduction

Energy Resources, Energy Scenerio, Issues & Challenges, Vision, Need for an Energy Policy, synopsis of earlier National Energy Policies in India

Energy Requirements

Commercial Energy Needs, Demand for Coal, Oil and Natural Gas, Reneable Energy, Electric power and Traditional Fuels

Supply Options

Energy Reserves, Supply Scenarios, Imports, Energy Efficiency and Demand Side Management,

Energy Policy Options/Initiatives

Energy for Growth, "Lifeline" Energy for All: Role of Different Fuels: Energy Intensity, Growth in a Constrained Energy Market: , Investments, Pricing, Regulation, Taxation, Subsidies, Penalties/Awards, Waste Utilisation, Clean Fuels & Technologies, Energy Conservation Act, Star Rating for Electrical Appliances, Integrated energy policy 2006 of India

Energy Independence, Energy Security, Sustainable Development of Energy Sector

Whole-of-Government Approach, Role of NGOs, International Cooperations, Indo-US Nuclear Deal, Energy Related R&D, Energy policies of few countries (USA, France, China etc), Energy strategy of corporate entities

Energy policy implementation and monitoring aspects

Environment Implications of Energy Use

Energy-Environment Linkage, pollutants from energy uses and control measures, Greenhouse Gases, Greenhouse Effect, Global Warming, Climate Change, IPCC, Montreal Protocol, Kyoto Protocol, Emission Trading, Clean Development Mechanism,

Organisations Involved, Functions and Role

Ministries of Coal, Petroleum, MNRE, IREADA, MOEF, PCRA, BEE, DAE, Planning Commission, GEF, UNFCC

Note: Topics underlined are included based on comments received from experts

Pedagogy

Lecture mode: The traditional format of the lecture mode will be followed through power point presentation to the maximum extent

Sources of data: Authentic and published data and information from Government sources will be used in the lectures

Lecture notes: Students will be provided with lecture notes

Evaluation procedure:

Quiz	20%

Project	20%
Mid Term Examination	30%
End Term Examination	30%

Details of course content and allotted time

Module No.	Topic	Issues in Sustainability	No. of hours**
I	Course Introduction, Pedagogy and evaluation pattern discussion followed by discussions on the energy policy and management perspectives for the 21st Century	*The module links the basic concepts of energy policy and management to the issues in sustainability. Particularly, how the advanced countries are managing to balance between energy sector development and sustainability*	2
II	**Introduction:** Energy Resources, Energy Scenario, Issues & Challenges, Vision, Need for an Energy Policy, synopsis of earlier National Energy Policies in India	*Today more and more countries are realizing the importance of sustainable development of energy sector as a strategy. The module explores the possibility of judicious use of various energy resources available in the country that can be sustained over a long period of time*	4
III	**Energy Requirements** Commercial Energy Needs, Demand for Coal, Oil and Natural Gas, Renewable Energy, Electric power and Traditional Fuels	*The commercial energy requirements particularly the oil demand which is increasing at alarming rate and which is also imported on a large scale is a crucial factor in sustainability. The module brings out demand of various energy resources in the country*	4
IV	**Supply Options** Energy Reserves, Supply Scenarios, Imports, Energy Efficiency and Demand Side	*Energy supply options are critical for sustainable development particularly the imports. The efficient use of energy resources and managing the demand*	4

	Management,	*of energy also contribute significantly towards sustainable development. Accordingly in this module the discussions would be on energy supplies and their efficient management.*	
V	**Energy Policy Options/Initiatives** Energy for Growth, "Lifeline" Energy for All: Role of Different Fuels: Energy Intensity, Growth in a Constrained Energy Market: , Investments, Pricing, Regulation, Taxation, Subsidies, Penalties/Awards, Waste Utilisation, Clean Fuels & Technologies, Energy Conservation Act, Star Rating for Electrical Appliances, Integrated energy policy of India 2006 Energy Independence, Energy Security, Sustainable Development of Energy Sector, Whole-of-Government Approach, Indo-US Nuclear Deal, R&D, Energy strategy of corporate entities, energy policies of few countries, Energy policy implementation and monitoring	*Government has committed to provide adequate and quality energy to citizens/industries/commercial establishments etc as a part of sustainable development.. This module discusses the energy policy options, initiatives and measures for India in that endeavor*	14
VI	**Environment Implications of Energy Use** Energy-Environment Linkage, pollutants from energy uses and control measures, Greenhouse Gases, Greenhouse Effect, Global Warming, Climate Change, IPCC, Montreal Protocol, Kyoto Protocol, Emission Trading, Clean Development Mechanism,	*Environmental implications of energy use must be a part of sustainable approach. The module looks at energy environment interface, ill effects of energy use and control measures and various protocols and incentives in vogue for safeguarding the environment*	8

VII	**Organisations Involved, Functions and Rol**e Ministries of Coal, Petroleum, MNRE, IREADA, MOEF,	*All the organizations concerned with the energy sector in India have to play key role in sustainable development. The module discusses the functions*	6
	PCRA, BEE, DAE, Planning Commission, GEF, UNFCC, Role of NGOs,	*and roles of such national and international organizations*	

Module Wise Teaching Plan

Module I: The introductory module gives a perspective on how energy policy as a concept has evolved over a period of time. In this introductory session the learning objectives, course contents, pedagogy, evaluation method will be explained, and the subject of energy policy will be introduced. **Objectives**

1. Understand the importance of energy sector in the development of country 2. Understand the concept of energy policy

Understand the linkage between energy and sustainable development

Module II: In this module the various energy resources available in the country and the energy scenario will be explained. Also the student would know about issues and challenges of energy sector and appreciate the need for energy policy **Objectives**

1. Understand the various energy resources available in the country
2. Review and analyse the Energy Scenario, Issues & Challenges involved and the Vision,
3. Understand the Need for an Energy Policy,
4. Synopsis of earlier National Energy Policies in India

Module III: The commercial energy requirements in the country sector wise (industrial, agriculture, and domestic sectors) and also energy source wise would be explained

Objectives

1. Understand the extent of commercial energy requirements in the country
2. Know about demand of various energy resources of Coal, Oil and Natural Gas, Renewable Energy, Electric power and Traditional Fuels

Module IV: The energy demand can be met only through adequate supply of energy resources available indigenously and supplemented through imports wherever required. Thus various supply options available would be discussed

Objectives

1. Understand the reserves of various energy resources and the supply scenario
2. Know the extent of import of energy and the trends

3. Analyse the avenues for reduction in energy demand through measures like improving energy efficiency and demand side management etc

Module V: Government is committed to provide energy for all through an appropriate energy policy that include several technical and financial measures, & initiatives. All these would be discussed in this module.

Objectives

1. Understand the role of different energy resources in providing energy for growth and life line energy

2. Analyse the influence of measures like pricing, regulation, taxation, subsidies etc in the energy policy

3. Understand effects of use of clean fuels and technologies

4. Understand energy conservation act and star rating introduced for electrical appliances

5. Understand the concepts of energy independence and energy security

Module VI: The module looks at energy environment interface, ill effects of energy use and control measures and various protocols and incentives in vogue for safeguarding the environment

Objectives

1. Understand the linkage between energy and environment
2. Analyse the various pollutants that are emitted from combustion of fossil fuels and the available control techniques
3. Understand about greenhouse gases and greenhouse effect
4. Understand global warming and climate change
5. Know about the various protocols and avenues for protecting the environment

Module VII: All the national and international organizations concerned with the energy sector in India have to play a key role in the energy policy. The module discusses the functions and roles of such national and international organizations

Learning Outcomes

1. Develop an understand the reserves of various energy resources and the supply scenario
2. Ability to understand the extent and importance of energy in business and management.
3. Develop the ability to analyse the avenues for reduction in energy demand through various measures like improving energy efficiency, demand side management etc.

Objectives

1. Understand the functions and roles of Ministries of Coal, Petroleum, MNRE, IREADA, MOEF, PCRA, BEE, DAE, Planning Commission, NGOs in evolving an appropriate energy policy in the country

2. Analyse the assistance that can be useful from international organizations like GEF, UNFCC in our energy policy

Basic Text

1. Chopra S.K, Energy Policy for India, Oxford & IBH Publishing , ISBN 812041604X

2. Alagiri, Dhandapani, Energy Security in India, ICFAI UNIVERSITY PRESS, ISBN8131404617

3. Energy Security, Climate Change And Sustainable Development, ANAMAYA PUBLISHERS, ISBN 8188342815

Recommended Reading

1. Report of the Expert Group on Integrated Energy Policy, Planning Commission

2. Web sites of Ministries of Coal, Petroleum, MNRE, IREADA, MOEF, PCRA, BEE, DAE, Planning Commission, GEF, IPCC

3. India Energy Book 2007, World Energy Council,

4. Energy policies of IEA countries, special 30th Anniversary edition, International Energy Agency

5. France's Energy Policy

6. India's Energy Security, Edited by Ligia Noronha and Anant Sudarshan, Routledge, ISBN 13:978-0-415-46838-8

7. Energy Issues and options for developing countries, published for and on behalf of United Nationa, Taylor & Francis, ISBN 0-8448-1578-0