

<b>Course title:</b> Environment and Economic Development				
<b>Course code:</b> MPE 185		<b>No. of credits:</b> 4	<b>L-T-P:</b> 60-0-0	<b>Learning hours:</b> 60
<b>Pre-requisite course code and title (if any):</b> MPE 131 Microeconomics and MPE 121 Macroeconomics				
<b>Department:</b> Department of Policy Studies				
<b>Course coordinator(s):</b> Dr Nandan Nawn			<b>Course instructor(s):</b> Dr Nandan Nawn	
<b>Contact details:</b> <a href="mailto:nandan.nawn@terisas.ac.in">nandan.nawn@terisas.ac.in</a>				
<b>Course type:</b> Core			<b>Course offered in:</b> Semester 2	
<b>Course description</b> This course situates the processes of economic growth and development within the larger ecosystem that contains the economic system. In particular it emphasises on the 'source' and 'sink' functions of ecosystem, irrespective of the <i>scale</i> of economic activity. The course links that theory, concepts and method of analysis with the practice--recent developments in the UN System of Environment and Economic Accounting. It begins with the following questions: How does the recognition of ecosystem--economic system linkages, interconnections and exchanges alter the mainstream/historical understanding of development? What are the consequences? Does it get reflected in the making of development policy? If it does, how? If not, why not? At the end of this course, a student is expected to have some answers to these big questions.				
<b>Course objectives</b>				
<ol style="list-style-type: none"> <li>1. To understand the objective, nature, type and constituents of development, underdevelopment, and economic development through an analytical lens</li> <li>2. To locate the multidimensional connections between development, environment, economic development and sustainable economic development</li> <li>3. To comprehend the centrality of ecosystem/environment in both process and outcome of economic growth and development, in both theory and practice</li> <li>4. To appreciate the influences, impacts and interventions in the policy space vis-a-vis economic growth and development due to recognition of contributions of ecosystems in the functioning of economic system.</li> </ol>				
<b>Course content</b>				
<b>Module</b>	<b>Topic</b>	<b>L</b>	<b>T</b>	<b>P</b>
1.	<b>Making and Unmaking of <i>Development</i> and Economic Development</b> The objective of this module is to gain familiarity with the phrases, terms and jargons employed in the trajectory of development discourse. The intention is to underscore that it is just not economics that matters in development, but <i>politics, social structure, cooperation, power</i> , etc. This discussion also shows why and how important actors and powerful institutions emerged to attain a set of conflicting goals, more often than not. Two central threads in this module are these questions: <ol style="list-style-type: none"> <li>a. Why the ecology/environment was conspicuously absent in the development discourse till early 1970s?</li> <li>b. In which form the ecology/environment received its recognition since early 1970s and why?</li> </ol>	12		
2.	<b>Environment and Economic System</b> The purpose of this module is to showcase the centrality of the set of ecosystems (that define the environment) in the functioning of economic systems, in particular through the <i>source</i> and <i>sink</i> functions. Various types of resources are analysed in terms of their characteristics and contributions in the economic system, with particular reference to 'well-being' of humans. It also discusses how value systems and valuation processes influences 'value' of a good or a service <i>in economic and sociological terms</i> . This module addresses the following questions: <ol style="list-style-type: none"> <li>a. How economic, social and ecological systems are connected, and to what extent such connections can be captured?</li> <li>b. Does ecosystem services contribute to well-being of all humans, and if not, why not? Is it to do with accessing ecosystem services, or is it the accounting processes involved or <i>incomplete information about the complementarity</i></li> </ol>	10		

	<i>between ecological entities?</i>			
3.	<p><b>Environment, Development and Sustainable Development</b></p> <p>This module connects various issues and themes of ‘development’ with environment. It builds on the previous two modules. The objective is to appreciate the impact of recognition of environment in the development discourse in contemporary times. Three approaches are employed here: (a) through the academic plain, in terms of semantics, concepts and meanings of sustainability and sustainable development, (b) by looking through the explicit connections between environment and ‘development’ issues (income-pollution and poverty-environmental degradation) and (c) problematizing the construction and measurement of indicators for sustainable well-being with environment as one of its determinants. The following questions are addressed by this module:</p> <ol style="list-style-type: none"> <li>If the phrase sustainable development does not have a precise and unique meaning, how did and does it influence the development discourse? Which aspects are prioritised and which are neglected?</li> <li>How ecosystem services' contributions to sustainable development are captured?</li> <li>Which environment-development linkages are recognised and explored in the contemporary literature, and in which ways?</li> </ol>	8		
4.	<p><b>Sustainable Economic Development: concepts, theories and principles</b></p> <p>This and the next module are focussed on the most recognised interpretation of sustainable development among the policymakers, namely, sustainable economic development. The reasons are not just a more precise meaning in contrast to other interpretations, but for the sound theoretical grounding, conceptual clarity and sound principles with wide implications on the course of (economic) development. The objective of this module is to understand (a) how various shades of ‘environmentalism’ visualize sustainable economic development (or 'sustainability') and the associated assumptions, along with their implications, (b) various rules and principles that follow the two important variants of environmentalism, namely 'weak' and 'strong' sustainability, and (c) the role that rate of discount plays in these formulations. Following questions are addressed in this module:</p> <ol style="list-style-type: none"> <li>What are the meanings of sustainable economic development, and how do they differ in terms of conceptual frameworks and the associated assumptions? What are the consequences of considering one particular meaning over others? On whom? Which ways?</li> <li>What are the principles behind various constructions of sustainable economic development?</li> <li>What are the possibilities and difficulties in operationalizing various principles embedded in and pathways of sustainable economic development?</li> <li>How does <i>political</i> power play a role in prioritising one meaning of sustainable economic development over the others?</li> </ol>	10		
5.	<p><b>Sustainable Economic Development: practices</b></p> <p>This module builds the 'weak' notion of sustainability further. After making the students familiar with the capital theoretic basis of the notion of sustainable (economic) development in the previous module, it takes them to the associated protocols like natural resource accounting, genuine savings, green national income accounting and inclusive wealth. In this module UNESCO MGIEP's simulation based learning game 'Cantor's World' is also employed as a teaching aid to facilitate the understanding of the Inclusive Wealth Index and the uncertainties involved in governing the complex socio-economic system of a country. Following questions are addressed in this module:</p> <ol style="list-style-type: none"> <li>What are the assumptions behind the framework adopted for incorporating ecosystem-economic system linkages in accounting frameworks?</li> <li>What do the results of indicators of progress, other than GDP, show in terms</li> </ol>	12		

	of sustainability of economic systems? What are the implications?			
6.	<p><b>Environment and Economic Development: the Indian case</b></p> <p>The churning in the cusp of environment and economic development in various international spaces have reached the Indian shores as well--this module discusses few such ripples. Following developments are discussed here:</p> <p>(a) Green National Accounts in India: A Framework [Report of the MOSPI Expert Group]</p> <p>(b) The Western Ghats Ecology Expert Panel and High Level Working Group on Western Ghats [conflicts and contestations on environment-development axis through the lens of political economy]</p> <p>Following questions are addressed in this module:</p> <p>a. What are the steps associated with wealth accounting for natural resources? What are the assumptions that are taken in the process?</p> <p>b. How stakeholders influence the 'development' pathway-- constrained by environmental concerns, more clearly--to be adopted?</p>	8		
	<b>Total</b>	<b>60</b>	<b>0</b>	<b>0</b>
<p><b>Evaluation criteria</b></p> <p><b>Test 1: Written test</b> [at the end of teaching of modules 1 - 3] -- <b>30%</b></p> <p><b>Test 2: Submission of a literature survey -- 40%</b></p> <p>Details: Collation and 're-production' of the existing knowledge with marginal additions through a Literature Review of 3500 words (+/- 20%)</p> <p>i. Structure: (1) identification of an important question; (2) explain why it is important for environment and economic development interlinkage (theory and/or policy); (3) how has this question been addressed in the literature; (4) what are the gaps in addressing the question--in scope, method, data or tools.</p> <p>ii. Indicators for assessment: (a) Identification of research problem; (b) Identification of research question(s); (c) Structure and form; (d) Content, language, clarity (Academic Merit); (e) Sincerity.</p> <p>Note: (d) shall carry a weight of 2x while the rest will carry x each</p> <p><b>Test 3: Written test</b> [at the end of teaching of module 4-6] -- <b>30%</b></p>				
<p><b>Learning outcomes</b></p> <p>By the end of the course, students will:</p> <ul style="list-style-type: none"> <li>- command a critical understanding of the key concepts of development, underdevelopment, ecosystem services, sustainable economic development and their uses in practice. [test 1 ]</li> <li>- be equipped with the 'toolset' for writing a literature survey [test 2]</li> <li>- understand the environment-economic development linkages, at the conceptual, theoretical, methodical, policy and operational plains, with illustrations from India.[ test 3]</li> </ul>				
<p><b>Pedagogical approach</b></p> <ul style="list-style-type: none"> <li>- the course doesn't focus on new mathematical tools</li> <li>- the course critically investigates the notions of "sustainability", "the economy", "development"</li> <li>- key importance of class interactions and discussions</li> </ul> <p>playing a simulation based learning game</p>				
<p><b>Reading Materials (* = compulsory readings)</b></p> <p><b>Module 1</b></p> <p>*Gilbert Rist, 2008, <i>The History of Development: From Origins to Global Faith</i>, Third Edition, Zed Books</p> <p>Chapter 1: pp. 8-21 [to note: the importance of definition],</p> <p>Chapter 4: pp. 69-79 [what was brought by the pursuit of <i>development</i> and how it changed the policy space],</p> <p>Chapter 5: pp. 80-88 [Bandung Conference and common 'development' policy; and inception of 'Development Agencies'],</p> <p>Chapter 6: pp. 94-99 [Stages of Growth],</p> <p>Chapter 7 [Dependency School],</p> <p>Chapter 8 pp. 123-125, 134-139 [Self-reliance],</p> <p>Chapter 9, pp. 143-150, 154-157, 162-170 [New International Economic Order, Basic Needs Approach],</p> <p>Chapter 10, pp. 178-196 [Sustainable Development],</p> <p>*Gilbert Rist, 2014, <i>The History of Development: From Origins to Global Faith</i>, Fourth Edition, Zed Books</p>				

Chapter 14: The Great Turnaround [section on Ecology as a victim of Crisis]

Chapter 15: Beyond 'Development': From Downscaling to a Change in the Economic Paradigm

\*Dag Hammarskjöld project, 1975, *What Now: Another Development*, Dag Hammarskjöld Report of on Development and International Cooperation, *Development Dialogues* 1/2, part one, pp. 23-43 [development of a non-mainstream framework of 'development' with satisfaction of basic needs and poverty reduction through an endogenous process depending on self-reliance and in harmony with the environment]

ILO, 1976, *Employment, Growth and Basic Needs—a one-world problem*, International Labour Office, Overseas Development Council and International Labour Office, Praeger Publishers, New York and London

Introduction (pp. 1-11) and Chapter 2, Basic Needs (pp. 31-43) [why basic needs approach, and how]

## Module 2

Kenneth E Boulding, 1970, *Economics as a Science*, McGraw-Hill

Economics as an Ecological Science [concept of social entropy]

Economics as a Moral Science [culture, value systems, values]

\*Herman E Daly and Joshua Farley, 2011, *Ecological Economics: principles and applications*, Island Press

Chapter 2: The Fundamental Vision (concepts like optimal scale, throughput, open and closed systems, circular flow, entropy, uneconomic growth, steady state economy)

Chapter 4 The Nature of Resources and the Resources of Nature [stock-flow and fund-service resources, intra- and inter-general rivalry and exclusivity in access/consumption]

Chapter 5 Abiotic Resources (application of concepts from chapter 4 on abiotic resources)

Chapter 6 Biotic Resources (application of concepts from chapter 4 on biotic resources)

Chapter 7 From Empty World to Full World (empirically testing fullness of the world across resources)

\* MA, 2005, 'Chapter 3: Ecosystems and Human Well-being' in *Millennium Ecosystem Assessment, Ecosystems and Human Well-being: A Framework for Assessment*, Island Press, pp. 71-84

[what can constitute human well-being; how they are connected with ecosystem services; substitutability among components of well being; trade-off between present and future well-being, both intra- and inter-generational]

Rudolf S de Groot, Matthew A Wilson, Roelof M J Boumans, 2002, 'A typology for the classification, description and valuation of ecosystem functions, goods and services', *Ecological Economics*, 41 (3), pp. 393-408 [a classic paper on the matter of valuation of ecosystem services]

Richard B. Norgaard, Astrid J. Scholz and Sarah Fleisher Trainor, 2001, 'Chapter 6: Values, valuation and valuing processes' in Ekko C. Van Ierland, Jan van der Straaten and Herman Vollebergh, *Economic Growth and Valuation of the Environment*, Edward Elgar [introductory reading on how value systems and accounting processes employed in any valuation influences the value of an ecosystem service]

Stephen C Farber et al, 2002, 'Economic and ecological concepts for valuing ecosystem services', *Ecological Economics*, 41 [connected with the previous paper, it showcases how 'value' of various ecosystem services are constructed]

Herman E. Daly, 'On Economics as a Life Science' *Journal of Political Economy*, 76 (3): 392-406 [this and the next paper together examines the potential and limitations of analysing an ecological system as a mimic of economic system and vice versa]

Robert U Ayres, 2004, 'On the life cycle metaphor: Where ecology and economics diverge', *Ecological Economics* 48(4):425-438

SharachchandraLélé and Richard B Norgaard, 1996, 'Sustainability and the Scientist's Burden', *Conservation Biology*, 10(2): 354-365

Erik Gómez-Baggethun, Rudolf de Groot, Pedro L. Lomas and Carlos Montes, 2010, 'The history of ecosystem services in economic theory and practice: From early notions to markets and payment schemes', *Ecological Economics*, 69: 1209–1218 [from classical days to neoclassical formulation and its limitation in conceiving ecosystem services as a commodity to sustain economic systems] [Advanced]

## Module 3

M V Nadkarni, 2000, 'Poverty, Environment, Development: a many patterned nexus', *Economic and Political Weekly*, April 1

\*SharachchandraLele, 1991, 'Sustainable Development: A critical review', *World Development* [What this phrase means and does not mean]

\*Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi, 2010, 'Chapter 3: Sustainable Development and Environment' in *Report by the Commission on the Measurement of Economic Performance and Social*

*Progress*, The New Press [for understanding the matters associated with measurement of 'environment']

- \*Soumyananda Dinda, 2004, 'Environmental Kuznets Curve Hypothesis: A Survey', *Ecological Economics*, 49 [a survey of literature on the theoretical, methodical and empirical basis for Environmental Kuznets curve]
- \*Partha Dasgupta and Karl-Göran Mäler, 1995, 'Chapter 39: Poverty, Institutions, and the Environmental Resource-base' in Hollis Chenery & T.N. Srinivasan (ed.), *Handbook of Development Economics*, volume 3A, Elsevier, pp. 2371-2463 [selected sections]  
Part III: Poverty, institutions, and the environment  
14. Markets and their failure: Unidirectional and reciprocal externalities  
15. Property rights, Coase's theorem, and non-convexities
- Mohan Munasinghe, 2001, 'Implementing sustainable development: a practical framework' in Cutler J. Cleveland, David I. Stern, Robert Costanza, eds., *The economics of nature and the nature of economics*, Edward Elgar, pp. 134-192 [selected sections]
- David I. Stern, 2001, 'The environmental Kuznets curve: a review', in Cutler J. Cleveland, David I. Stern, Robert Costanza, eds., *The economics of nature and the nature of economics*, Edward Elgar, pp. 193-217
- William D. Nordhaus and James Tobin, 1972, 'Is Growth Obsolete?' in *Economic Research: Retrospect and Prospect*, Volume 5, Economic Growth, National Bureau of Economic Research, Chapter URL: <http://www.nber.org/chapters/c7620> [Advanced]

#### Module 4

- \*Edward B. Barbier, 1987, 'The Concept of Sustainable Economic Development', *Environmental Conservation*, 14 (2), pp. 101-110 [One of the earliest papers on the matter of Sustainable Economic Development]
- \*R Kerry Turner, David Pearce and Ian Bateman, 1993, 'Chapter 2: Environment and Ethics' in *Environmental Economics: an elementary introduction*, John Hopkins University Press, Baltimore, pp. 1-40 [introduction to varieties of environmentalism]
- \*David Pearce, Edward Barbier and Anil Markandya, 1990, 'Chapter 1: Sustainable Development: ecology and economic progress' and 'Chapter 2: Discounting the Future' in *Sustainable Development: economics and environment in the Third World*, Edward Elgar [first chapter is an excellent introduction to the capital theoretic notion of sustainable economic development; second chapter offers a comprehensive overview of matters related to discount rate, including intra- and inter-generational equity]
- \*Eric Neumayer, 2013\*, 'Chapter 2: Sustainable Development: conceptual, ethical and paradigmatic issues' in *Weak and Strong Sustainability: exploring the limits of two opposing paradigms*, Fourth Edition, Edward Elgar, pp. 8-48 [to be added]
- Herman Daly, 1990, 'Sustainable Development: From Concept and Theory to Operational Principles', *Population and Development Review*, 16, pp. 25-43 [principles and rules]
- R Costanza and H Daly, 1992, 'Natural Capital and Sustainable Development', *Conservation Biology*, 6 (1), pp. 37-46 [how ecologists and economics saw the connection]
- David W. Pearce and Giles D. Atkinson, 1993, 'Capital theory and the measurement of sustainable development: an indicator of "weak" sustainability', *Ecological Economics*, 8 [the classic paper that differentiated weak from strong sustainability]
- K.J. Arrow, W.R. Cline, K. G. Maler, M. Munasinghe, R. Squitieri and J.E. Stiglitz, 1995, 'Intertemporal Equity, Discounting, and Economic Efficiency' in J.J. Houghton, L.G. Meiro Filho, B.A. Callander, N. Harris, A. Kattenberg and K. Maskell, eds., *Climate Change 1995: Economic and Social Dimensions of Climate Change*, Contribution of Working Group III to the Second Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, pp. 129-142.
- Kenneth J. Arrow et al, 2014, 'Should Governments Use a Declining Discount Rate in Project Analysis?' *Review of Environmental Economics and Policy*, 8 (2): 145-163
- Partha Dasgupta, Stephen Marglin and Amartya Sen, 1972, 'Chapter 1: The Rationale for Social Cost Benefit Analysis' and 'Chapter 13: Intertemporal Choice: the Social Rate of Discount' in *Guidelines for Project Evaluation*, Project Formulation and Evaluation Series no. 2, United Nations, New York [Assumptions and theory behind social rate of discount]
- Salah El Serafy, 1989, 'The proper calculation of income from depletable natural resources' in Yusuf J Ahmad, Salah El Serafy, and Ernst Lutz, eds., *Environmental Accounting for Sustainable Development*, Washington, D.C.: World Bank
- \*Nick Hanley, Jason F Shogren and Ben White, 2007, 'Chapter 2: The economics of Sustainable Development' in *Environmental Economics: in theory and practice*, Palgrave, pp. 14-41

## Module 5

- \*Giovanni Ruta and Kirk Hamilton, 2007, 'The capital approach to sustainability' in Giles Atkinson, Simon Dietz and Eric Neumayer, eds., *Handbook of Sustainable Development*, Edward Elgar, pp. 45-62 [a seminal paper]
- \*World Bank, 2006, 'Where is the Wealth of Nations? Measuring Capital for the 21<sup>st</sup> Century', World Bank, Washington DC (Chapters 1-4, 9) [Operationalising the Wealth Accounting]
- \*United Nations, 2014, *System of Environmental-Economic Accounting 2012—Central Framework*, Final Version, New York: United Nations, selected sections
- Chapter II: Accounting structure [Concepts like environmental assets, stocks and flows, production boundary, economic activity, physical and monetary use tables, asset, functional and economic accounts, economics units, accounting rules and principles, valuation rules and principles]
- Chapter V: Asset accounts [selected sections: scope and valuation of environmental assets, principles of asset accounting and illustrations from mineral and energy resources]
- Annex A5.1: The net present value method for valuation of stocks and the measurement of depletion and revaluation for natural resources
- Annex A5.2: Discount rates
- \*UNEP and UNU-IHDP, 2014, 'Chapter 4: Human capital: country estimates using alternative approaches' in *Inclusive Wealth Report 2014: measuring progress toward sustainability*, Cambridge University Press.
- Robert Repetto, et al, 1989, 'Chapter 1: The Need for Natural Resource Accounting' in *Wasting Assets: Natural Resource in the National Income Accounts*, World Resources Institute, pp. 1-25 [a classic paper that introduced the notion of natural resource accounting to the world]
- Kirk Hamilton and Michael Clemens, 1997, 'Chapter 2: Are We Saving Enough for the Future?' in World Bank, *Expanding the Measure of Wealth Indicators of Environmentally Sustainable Development*, World Bank, Washington DC
- Robert Costanza, Steve Farber, Beatriz Castaneda and Monica Grasso, 2001, 'Green national accounting: goals and methods' in Cutler J. Cleveland, David I. Stern, Robert Costanza, eds., *The economics of nature and the nature of economics*, Edward Elgar, pp. 34-56 [selected sections, and table 11.1 in particular]
- Joan Martinez-Alier, Giuseppe Munda and John O'Neill, 2001, 'Theories and methods in ecological economics: a tentative classification' in Cutler J. Cleveland, David I. Stern, Robert Costanza, eds., *The economics of nature and the nature of economics*, Edward Elgar, pp. 34-56 [selected sections, and table 2.1 in particular]
- Simon Dietz and Eric Neumayer, 2007, Weak and strong sustainability in the SEEA: Concepts and measurement, *Ecological Economics* 6 1: 617 – 626 [application of varieties of environmentalism in SEEA 2003]
- Partha Dasgupta and Karl-Göran Mäler, 1995, 'Chapter 39: Poverty, Institutions, and the Environmental Resource-base' in Hollis Chenery & T.N. Srinivasan (ed.), *Handbook of Development Economics*, volume 3A, Elsevier, pp. 2371-2463 [selected sections]
- Appendix 2: Net national product in a dynamic economy

## Module 6

- \*Government of India, 2013, 'Green National Accounts in India: A Framework', Report of Expert Group [Chair: Partha Dasgupta], National Statistical Organization, Ministry of Statistics and Programme Implementation, Government of India [Chapter 3-6] [Operationalisation of Greening of GDP and Wealth Accounting in India]
- \*Madhav Gadgil et al., 2011, Mapping ecologically sensitive, significant and salient areas of Western Ghats: proposed protocols and methodology, *Current Science*, 100 (2), pp. 175-182 [Applications of rigorous theory and methods in Policymaking]
- \*Kanchan Chopra, 2014, 'Conservation and Development in the Western Ghats: A Tale of Two Committees and More', *Economic and Political Weekly*, 59 (11) [Political Economy of Policymaking]
- \*Madhav Gadgil, 2014, 'Western Ghats Ecology Expert Panel: A Play in Five Acts', *EPW*, May 3 [commentary on the political economy of policymaking]
- \*Kanchan Chopra, 2017, *Development and Environmental Policy in India: The Last Few Decades*, Springer
- Chapter 4: Rights-Based Approaches: Do Environmental Movements Make a Dent on Policy?
- Chapter 5: Does a Good Knowledge Base Influence Policy-Making [a critical take on stakeholders' influence]
- Government of India, 2000, Report of the Committee on Identifying Parameters for Designating Ecologically Sensitive Areas in India [Chair: Pronab Sen], Ministry of Environment & Forests
- M. N. Murty and Manoj Panda, 2016, Current Status of Environmental and Economic Accounting: Review of

<p>Some Countries Experiences and Way Forward for India,in N Ghosh et al., eds., <i>Nature, Economy and Society</i>, Springer and Indian Society for Ecological Economics (INSEE)</p> <p>Ashish Kothari, 2013, 'Development and Ecological Sustainability in India: possibilities for the post-2015 framework', <i>EPW</i>, 48 (30) [Wish list!]</p> <p><b>Journals</b>  <i>Environmental and Development Economics, Ecological Economics, Ecology, Economy and Society--the INSEE Journal</i></p>
<p><b>Additional information (if any)</b></p>
<p><b>Student responsibilities</b>  The students are expected to submit assignments in time and come prepared with readings when provided.</p>

**Course reviewers:**

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