

Course no.:	MPE 146
Course title:	Economics of natural resources methods and applications)
No. of credits:	4
Number of lectures-tutorial-practicals:	56-0-0
Course coordinator:	Nandan Nawn

Course objectives:

To provide an in-depth exposure to the students on various Methods and Applications within the mainstream Neoclassical Environmental Economics and Heterodox Ecological Economics with a specific focus on South Asian context

To prepare the students on constructing a research proposal followed by the Master’s Thesis to be carried out in the second year of the programme.

Assessment:

1. Presentation of a classic paper -	20%
2. Literature survey of a method or application of a method-	20%
3. A term paper-	20%
4. End semester-	40%

Learning outcomes:

- Ability to ‘see’ the link between the concepts, theories and principles with the methods and applications in the area of ecological, environmental and resource economics (EERE)
- Exposure to a variety of methods in both mainstream and alternative frameworks that connect economy with its environment or the eco-system within which it functions.
- Skill to apply various methods in EERE in the South Asian context
- Prepare for the Thesis proposal and the Master’s Thesis itself to be carried out during the second year of the programme

Details of course contents and allotted time

Sl. No.	Topic	Allotted time	
		Presentation	Lecture
1.	The big picture: Environment, Resources and Development—the key linkages and why they are important		02
2.	Schools of thought—linking ideology, values and methods		04
3.	Methodical Frameworks		06
4	Ecology-economy interactions at the Micro Level		
4.1	Wetland, Biodiversity and Ecosystem Services		06
4.2	Air Pollution		02
4.3	Solid Waste Management		02
4.4	Water		06
4.5	Valuation Matters		08
4.6	Energy		02
4.7	Institutions		06
5.	Ecology-economy interactions at the Macro level		
5.1	Natural Resource Accounting		04
5.2	Social Metabolism		04
5.3	Ecological Footprint, HANPP, et al		04

List of Main Readings:

1. The big picture: Environment, Resources and Development—the key linkages and why they are important

- 1.1. V Dayal, 2014, 'Chapter 1: Context and Overview of Environment and Development Economics', in *The Environment in Economics and Development: pluralist extensions of core economic models*, Springer, New Delhi, pp. 1-17
- 1.2. Charles Perrings, 2014, 'Environment and development economics 20 years on', *Environment and Development Economics*, 19, pp. 333–366

2. Schools of thought—ideology, values and methods

- 2.1. Ha-Joon Chang, 2014, 'Chapter 4: Let a Hundred Flowers Bloom: how to 'do' economics', in *Economics: the user's guide*, Pelican, pp. 109-169
- 2.2. Alan Randall, 1985, 'Methodology, Ideology, and the Economics of Policy: Why Resource Economists Disagree', *American Journal of Agricultural Economics*, 67 (5), Proceedings Issue, pp. 1022-1029
- 2.3. Manfred A. Max-Neef, 2005, 'Foundations of transdisciplinarity', *Ecological Economics*, 53, pp. 5– 16
- 2.4. S Lele, 'Chapter 12: Reflections on Interdisciplinarity in Environmental Economics in India' in Chopra and Dayal, eds. *Handbook of Environmental Economics in India*, OUP, pp. 305-325
- 2.5. G H Hadorn et al., 2006, 'Implications of transdisciplinarity for sustainability research', *Ecological Economics*, 60, pp. 119 – 128
- 2.6. R Norgaard, 1989, 'The case for Methodological Pluralism', *Ecological Economics*, 1, pp. 37-57
- 2.7. Robert U. Ayres, 2004, 'On the life cycle metaphor: where ecology and economics diverge', *Ecological Economics*, 48, pp. 425– 438
- 2.8. Tim Forsyth, 2012, 'The Politics of Environmental Science: recent trends and important questions', in J Bandyopadhyay, K Chopra and N Ghosh, eds., *Environmental Governance: approaches, imperatives and methods*, INSEE and Bloomsbury, pp. 17-31
- 2.9. M Gadgil, 1999, 'Bottom-up Science', *Ecological Economics*, 4, pp. 203-236
- 2.10. Richard B. Norgaard, 2007, 'Deliberative economics', Kenneth E. Boulding Lecture delivered at the 9th Biennial Meeting of ISEE, December 2006, Delhi India, *Ecological Economics*, 63, pp. 375-82

3. Methodical frameworks

- 3.1. P Dasgupta and K G Maler, 2009, 'Environmental and Resource Economics: some recent development' in K Chopra and V Dayal eds., *Handbook of Environmental Economics in India*, OUP, pp. 17-68, in particular, pp. 32-38?
- 3.2. J Martinez-Alier, G Munda and J O'Neill, 20 , 'Chapter 2: Theories and methods in ecological economics: a tentative classification' in C J Cleveland, D I Stern and R Costanza, eds., *The Economics of Nature and the Nature of Economics*, Edward Elgar, pp. 34- 56
- 3.3. J Martinez-Alier et al, 1998, 'Weak comparability of values as a foundation for ecological Economics', *Ecological Economics*, 26, pp. 277–286
- 3.4. J Gowdy and J D. Erickson, 2005, 'The approach of ecological economics', *CJE*, 29, pp. 207–222
- 3.5. V Dayal, 2014, 'Chapter 2: Models and Frameworks' in *Pluralist Extensions*, pp. 19-30
- 3.6. G Kadekodi, 'Tools and Methods of Economic Analysis' in 'Chapter 1: Environmental Economics through Case Studies' in G Kadekodi, ed., *Environmental Economics through Case Studies*, pp. 33-42
- 3.7. K Chopra and G Kadekodi, 1999, 'Chapter 1: Economic-Ecological Modelling—Conceptual Framework' in *Operationalising Sustainable Development: economic-ecological modelling for developing countries*, Sage Publications, pp. 17-41
- 3.8. S K. Pattanayak, 2009, 'Rough Guide to Impact Evaluation of Environmental and Development Programs', (SANDEE Working Papers, ISSN 1893-1891; 2009- WP 40)

4. Ecology-economy interactions at the Micro Level

Wetland, Biodiversity and Ecosystem Services

- 4.1. K Chopra and S K Adhikari, 2004, 'Environment Development Linkages: modeling a wetland system for ecological and economic value', *Environment and Development Economics*, 9, pp. 19-45
- 4.2. A C Gupta, 2012, 'An investigation into the Relationship between Fish Biodiversity and Profit maximisation' in J Bandyopadhyay, K Chopra and N Ghosh, eds., *Environmental Governance: approaches, imperatives and methods*, INSEE and Bloomsbury, pp. 340-370
- 4.3. V Dayal, 2014, 'Chapter 5: Complex Ecology' in *Pluralist Extensions*, pp. 49-60
- 4.4. V Dayal, 2007, 'Social diversity and ecological complexity: how an invasive tree could affect diverse agents in the land of the tiger', *EDE*, 12 (4), pp. 553-71
- 4.5. S Lele, et al., 2013, 'Ecosystem Services: Origins, Contributions, Pitfalls, and Alternatives', *Conservation & Society*, 11(4): 343-358
- 4.6. R U Ayres, 1998, 'The price-value paradox', *Ecological Economics*, Special Section: Forum on Valuation of Ecosystem Services, 25, pp. 17-19.
- 4.7. R Costanza, et al, 1997, 'The value of the world's ecosystem services and natural capital', *Nature*, 387, pp. 253 – 260
- 4.8. P Dasgupta, 2009, 'Valuation of Ecosystem Services: Methodologies, Illustrations, and Use in Chopra and Dayal, *Handbook*, pp. 137-150
- 4.9. R Costanza, et al., 2011, 'Valuing ecological systems and services', *Biology Reports*, pp. 3:14
- 4.10. R Costanza, et al, 2014, 'Foreword' in K N Ninan ed., 2014, *Valuing Ecosystem Services: methodological issues and case studies*, Edward Elgar, pp. xviii-xxiii
- 4.11. K N Ninan, 2014, 'Chapter 1: Introduction' in K N Ninan ed., 2014, *Valuing Ecosystem Services: methodological issues and case studies*, Edward Elgar, pp. 1-22
- 4.12. K N Ninan and M Inoue, 2014, 'Chapter 9: Valuing forest ecosystem services: what we know and what we don't' in K N Ninan ed., 2014, *Valuing Ecosystem Services: methodological issues and case studies*, Edward Elgar, pp. 189-226
- 4.13. J Sathyapalan and K N Ninan, 2005, 'Ecological and Economic Aspects of Biodiversity Conservation in a Protected Area, India' in N Sengupta and J Bandyopadhyay, *Biodiversity and Quality of Life*, MacMillan for INSEE, pp. 205-213
- 4.14. K Chopra, P Dasgupta and P Kapuria, 'Estimating the Economic Value of Forest Lands in Different Bio-Geographic Zones in India: A Methodology Report of a Research Project', Submitted to the Ministry of Environment and Forests, June 2005

- 4.15. Report of the Expert Committee on Net Present Value [Chair: K Chopra] submitted to Hon'ble SC of India
- 4.16. Supriya Singh, 'Chapter 14: Payments for ecosystem services (PES) in India from the bottom-up' in H Haily et al. 2013, *Ecological Economics from the Ground Up*, Routledge, pp. 390-402
- 4.17. P Mukhopadhyay and G Kadekodi, 2011, 'Missing the Woods for the Ore: Goa's Development Myopia', *EPW*, 66 (46), pp. 61-67
- 4.18. K Chopra and S Das, 2012, 'Towards 'Green Growth' Measuring the Trade-off between Conservation of Protected Areas and Hydel Power Generation', *EPW*, December 22, pp. 59-68

Air Pollution

- 4.19. V Dayal, 2014, 'Chapter 3: Traditional and Modern Pollution' in *Pluralist Extensions*, pp. 31-40
- 4.20. P R Babu, 2004, 'Environmental Impact Assessment Process in India and Air Quality management in G Kadekodi, ed., *Environmental Economics through Case Studies*, pp. 153-172
- 4.21. J Parikh, 2004, 'Valuing the Health Impacts of Air Pollution' in G Kadekodi, ed., *Environmental Economics through Case Studies*, pp. 240-267
- 4.22. T Chowdhury and Md Imran, 2010, 'Morbidity Costs of Vehicular Air Pollution: Examining Dhaka City in Bangladesh', SANDEE Working Papers, 2010- WP 47.

Water

- 4.23. R Bhatia, 'Water and Energy Interactions' in John Briscoe and J P S Malik, 2007, *Handbook of Water Resources in India: development, management, and strategies*, OUP for World Bank
- 4.24. A Mishra, N Nayak, R Ghate and P Mukhopadhyay, 2008, *Common Property Water Resources: dependence and institutions in India's villages*, TERI Press
- 4.25. J Jalan and E Somanathan, 2008, 'The Importance of Being Informed: Experimental Evidence on the Demand for Environmental Quality', *Journal of Development Economics* 87 (2008) 14-28
- 4.26. J Jalan, E Somanathan and S Choudhuri, 2003, 'Awareness and the demand for environmental quality: drinking water in urban India', SANDEE Working paper no 4-03.
- 4.27. A K E Haque et al., 2014, 'Red Wells or Green Wells and Does it Really Matter? Examining Household Use of Arsenic-contaminated Water in Bangladesh' in S Barrett, K-G Maler and E

S Maskin, eds. *Environment and Development Economics: essays in Honour of Sir Partha Dasgupta*, Oxford, pp. 174-201

- 4.28. Joyashree Roy, 2007, 'Estimating the Economic Benefits of Arsenic Removal in India: A Case Study from West Bengal', (SANDEE Working Papers, ISSN 1893-1891; 2007 - WP 20)
- 4.29. V Ratna Reddy, 2005, 'Costs of resource depletion externalities: a study of groundwater overexploitation in Andhra Pradesh, India', *Environment and Development Economics*, August, pp. 533-556

Valuation matters

- 4.30. P Dasgupta, 2004, 'Valuing health damages from water pollution in urban Delhi, India: a health production function approach', *Environment and Development Economics*, 9 (1), pp 83-106
- 4.31. P I Devi, 2007, Pesticide Use in the Rice Bowl of Kerala: Health Costs and Policy Options, (SANDEE Working Papers, ISSN 1893-1891; 2007- WP 20)
- 4.32. S Das, 2011, Examining the Storm Protection Services of Mangroves of Orissa during the 1999 Cyclone, *EPW*, June 11, pp. 60-68
- 4.33. S Das and H Sandhu, 2014, 'Role of Exotic Vegetation in Coastal Protection: An Investigation into the Ecosystem Services of Casuarina in Odisha', *EPW*, January 4, pp. 42-50
- 4.34. I Guha and S Ghosh, 2009, 'A Glimpse of the Tiger: How Much are Indians Willing to Pay for It?', (SANDEE Working Papers, ISSN 1893-1891; 2009- WP 39)

Energy

- 4.35. R Sengupta, 2009, 'High Economic Growth, Equity, and Sustainable Energy Development' in Chopra and Dayal, *Handbook*, pp. 151-189
- 4.36. R Sengupta, 2013, 'Chapter 12: Energy' in *Ecological Limits and Economic Development*, OUP, pp. 255-292

Solid Waste Management

- 4.37. P P Appaswamy, 2004, 'Economic Benefit-cost Analysis of a proposed solid waste resource recovery plant' in G Kadekodi, ed., *Environmental Economics through Case Studies*, pp. 268-291
- 4.38. R K Turner, 2000, 'Waste Management' in H Folmer and H L Gabel, eds., *Principles of Environmental and Resource Economics*, Edward Elgar, pp. 700-744

Institutions

- 4.39. V Dayal, 2014, 'Chapter 4: Livelihood and the Commons' in *Pluralist Extensions*, pp. 41-47
- 4.40. R Ghate, N S Jodha, and P Mukhopadhyay, 2007, 'Introduction' in R Ghate, N S Jodha, and P Mukhopadhyay eds., *Promise, Trust, and Evolution: Managing the Commons of South Asia*, OUP, pp. 1-16
- 4.41. K Chopra, G K Kadekodi and M N Murty, 1989, 'Peoples' Participation and Common Property Resources', *EPW*, December 23-30
- 4.42. K Chopra and G K Kadekodi, 1991, 'Participatory institutions: The context of common and private property resources', *Environmental and Resource Economics*, 1 (4), pp 353-372
- 4.43. A K E Haque, 'Does Afforestation Ensure Sustainability? A Study of the Haors of Bangladesh', in in R Ghate, N S Jodha, and P Mukhopadhyay eds., *Promise, Trust, and Evolution: Managing the Commons of South Asia*, OUP, pp. 99-121
- 4.44. T P Singh and R Hegde, 2004, 'Stakeholder Analysis in JFM in India—a case study of Haryana Shivaliks' in G Kadekodi, ed., *Case Studies*, pp. 204-239
- 4.45. R Ghate, 2003, Ensuring 'Collective Action' in 'Participatory' Forest Management, SANDEE Working Paper No. 3-03
- 4.46. B Agarwal, 2001, 'Participatory Exclusions, Community Forestry and Gender: an Analysis for South Asia and a conceptual framework', *World Development*, 29 (10), pp. 1623-48
- 4.47. S Singh, 2013, 'Participatory Forest Management in Mendha Lekha, India' in Hali Healy et al., eds., *Ecological Economics from the Ground Up*, Routledge
- 4.48. P Shyamsundar and R Ghate, 2011, 'Rights, Responsibilities and Resources: Examining Community Forestry in South Asia', (SANDEE Working Papers, ISSN 1893-1891; WP 59–11)
- 4.49. N S Jodha, 1990, Rural Common Property Resources: Contributions and Crisis', *EPW*, June 30.
- 4.50. K Chopra and P Dasgupta, 2008, 'Nature of Household Dependence on Common Pool Resources: An Empirical Study', *EPW*, February 23, pp. 58-66
- 4.51. K Chopra and S C Gulati, 1998, 'Environmental degradation, property rights and population movements: hypotheses and evidence from Rajasthan (India)', *Environment and Development Economics*, 3, 35–57
- 4.52. Z Husain, and R N Bhattacharya, 2004, Common pool resources and contextual factors: Evolution of a fishermen's cooperative in Calcutta', *Ecological Economics* 50 (2004) 201–217

- 4.53. E Ostrom, 2005, Response to Zakir Husain and Rabindra Bhattacharya's Common pool resources and contextual factors: Evolution of a fishermen's cooperative in Calcutta', *Ecological Economics* 55 (2005) 139– 142
- 4.54. P Mukhopadhyay, 2005, 'Now that your land is my land...does it matter? A case study in Western India', *Environment and Development Economics*, (1), pp. 87-96
- 4.55. R. Balasubramanian, Community, 2007, Tanks vs Private Wells: Coping Strategies and Sustainability Issues in South India in R Ghate, N S Jodha, and P Mukhopadhyay eds., *Promise, Trust, and Evolution: Managing the Commons of South Asia*, OUP, pp. 283-304
- 4.56. P Mukhopadhyay, 2007, Heterogeneity, Commons, and Privatization: Agrarian Institutional Change in Goa, in R Ghate, N S Jodha, and P Mukhopadhyay eds., *Promise, Trust, and Evolution: Managing the Commons of South Asia*, OUP, pp. 213-237
- 4.57. M Gadgil et al., 2011, 'Mapping ecologically sensitive, significant and salient areas of Western Ghats: proposed protocols and methodology', *Current Science*, 100 (2)
- 4.58. MoEF, 2013, 'Chapter 5: Identification of Ecologically Sensitive Areas in Western Ghats Region' in Report of the High Level Working Group on Western Ghats, volume 1, pp. 43-97

5. Ecology-economy interactions at the Macro level

Natural Resource Accounting

- 5.1. V Dayal, 2014, 'Chapter 7: Sustainable Development and Institutions' in *Pluralist Extensions*, pp. 73-81
- 5.2. J R Vincent, 2000, 'Green accounting: from theory to practice', *EDE*, 1 &2, pp. 13-2
- 5.3. R Costanza et al, '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
- 5.4. V Dayal, 2009, 'Recent Developments in Natural Resource Accounting in India in Chopra and Dayal, *Handbook*, pp. 121-136

Social Metabolism

- 5.5. H Haberl, F Krausmann, S Gingrich, 2006, Ecological Embeddedness of the Economy: A Socioecological Perspective on Humanity's Economic Activities 1700-2000, *EPW*, November 25, 4896-4904
- 5.6. S J Singh, et al., 2012, 'India's biophysical economy, 1961–2008. Sustainability in a national and global context', *Ecological Economics*, 76, pp. 60-69
- 5.7. S J Singh and W Haas, 2013, 'Aid, social metabolism and social conflict in the Nicobar Islands', in Haily et al., *Grounds Up*, pp. 35-54

Ecological Footprint and other indicators

- 5.8. Haberl, H., 1997. Human appropriation of net primary production as an environmental indicator: implications for sustainable development. *Ambio* 26, 143– 146.
- 5.9. Haberl, H., et al., 2002. Human appropriation of net primary production. *Science* 296, 1968–1969.
- 5.10. Haberl H., et al., 2005, 'HANPP as Determinant of Avifauna diversity in Austria', *Agriculture, Ecosystem and Environment*, 110, pp. 119-131
- 5.11. H Haberl, 2007, 'Quantifying and mapping the human appropriation of net primary production in earth's terrestrial ecosystems', *PNAS*, 104 (31), pp. 12942–12947
- 5.12. F Krausmann et al. 2013, 'Global human appropriation of net primary production doubled in the 20th century', *PNAS*, 110 (25), pp. 10324–10329
- 5.13. R Costanza et al., 2004, Estimates of the Genuine Progress Indicator (GPI) for Vermont, Chittenden County and Burlington, from 1950 to 2000', *Ecological Economics*, 51, pp. 139–155.

Additional Readings

The big picture: Environment, Resources and Development—the key linkages and why they are important

- 1.A.1. All the articles in the special issue of *EDE*, 19.
- 1.A.2. Thomas Sterner et al, 2014, 'The Environment for Development Initiative: lessons learned in research, academic capacity building and policy intervention to manage resources for sustainable growth', *Environment and Development Economics*, 19, pp. 367–391
- 1.A.3. P Dasgupta and K-G Mäler, 1997, 'Chapter 1: The Resource-Basis of Production and Consumption: An Economic Analysis' in P Dasgupta and K-G Mäler, eds., *The Environment and Emerging Development Issues*, 2 Volumes, Volume 1, Clarendon Press, Oxford, pp. 1-32, reprinted in P Dasgupta, 2010, 'Chapter 5: The Environment and Emerging Development Issues' in *Selected Papers of Partha Dasgupta*, 2 volumes, volume 2, Oxford, pp. 147-173
- 1.A.4. P Dasgupta and K-G Maler, 'Poverty, Institutions, and the Environmental Resource-Base' in J Behrman and T N Srinivasan, 1995, *Handbook of Development Economics*, 3 Volumes, Volume III, Elsevier , pp. 2371-2463

Schools of thought—ideology, values and methods:

- 2.A.1. J-F Gerber and R Steppacher, 2011, 'Introduction' in J-F Gerber, R Steppacher eds., *Towards an Integrated Paradigm in Heterodox Economics: Alternative Approaches to the Current Eco-Social Crises*, Palgrave.
- 2.A.2. Ó Carpintero, 2013, 'When Heterodoxy Becomes Orthodoxy: Ecological Economics in *The New Palgrave Dictionary of Economics*', *American Journal of Economics and Sociology*, Vol. 72, No. 5, pp. 1287-1314
- 2.A.3. L Venkatachalam, 2007, 'Environmental economics and ecological economics: Where they can converge?', *Ecological Economics*, 61, pp. 550-558
- 2.A.4. Robert U. Ayres, 2008, 'Sustainability economics: Where do we stand?', *Ecological Economics*, 67, pp. 281-310
- 2.A.5. G Munda, 1997, 'Environmental Economics, Ecological Economics, and the Concept of Sustainable Development', *Environmental Values* **6**, 213-33
- 2.A.6. J Pezzey, 1992, 'Sustainability: An interdisciplinary guide', *Environmental Values*, 1, pp. 321-62, reprinted in J C V Pezzey and M A Toman, eds., 2002, *The Economics of Sustainability*, Ashgate
- 2.A.7. M Common and C Perrings, 1992, 'Towards and Ecological Economics of Sustainability', *Ecological Economics*, 6, pp. 7-34, reprinted in J C V Pezzey and M A Toman, eds., 2002, *The Economics of Sustainability*, Ashgate
- 2.A.8. A F Repko, 2012, *Interdisciplinary Research: process and theory*, Second Edition, Sage

- 2.A.9. S Lele and R Norgaard, 1996, 'Sustainability and the Scientist's Burden', *Conservation Biology*, 10 (2), pp. 354-365
- 2.A.10. S Lele, 1991, 'Sustainable Development: A Critical Review', *World Development*, 19 (6) pp. 607-621.
- 2.A.11. J C M van der Bergh, 2001, 'Ecological Economics: themes, approaches, and differences with environmental economics', *Regional Environmental Change*, 2, pp. 13-23

Methodical frameworks

- 3.A.1. C Perrings, 2005, 'The Economics of the Environment: lessons from Ecology' in N Sengupta and J Bandyopadhyay, *Biodiversity and Quality of Life*, MacMillan for INSEE, pp. 49-60
- 3.A.2. F P Gale, 1998, 'Theorizing power in ecological economics', *Ecological Economics*, Ecological Economics, 27, pp. 131 – 138

Ecology-economy interactions at the Micro Level

- 4.A.1. K Chopra and P D N Srinivasu, 2005, *The Role of Systems Modeling in Policy: A Study of Keoladeo National Park (KNP) India*, Working Paper no 259, Institute of Economic Growth, Delhi.
- 4.A.2. K Chopra, 2004, 'Economic Valuation of Biodiversity: the case of Keoladeo National Park', in G Kadekodi, ed., *Case Studies*, pp. 86-121
- 4.A.3. E S Brondízio, F W Gatzweile, 2010, Chapter 4: The Socio-cultural Context of Ecosystem and Biodiversity Valuation, in Pushpam Kumar, ed. *The Economics of Ecosystems and Biodiversity: Ecological and Economic Foundations*, London, UK: Earthscan.
- 4.A.4. B R Labajos and J Martinez-Alier, 2013, 'The economics of ecosystems and biodiversity: when is money valuation appropriate?' in Haily et al., *Grounds Up*, pp. 488-512
- 4.A.5. N Hanley, 2000, 'Cost-Benefit Analysis' in H Folmer and H L Gabel, eds., *Principles of Environmental and Resource Economics*, Edward Elgar, pp. 104-129
- 4.A.6. P Kumar and B S Reddy, eds., 2007, *Ecology and Human Well-being*, Sage for INSEE
- 4.A.7. C Perrings, 2014, *Our Uncommon Heritage: Biodiversity Change, Ecosystem Services And Human Wellbeing*, Cambridge University Press
Additional Readings
- 4.A.8. P-O Johansson, 2000, 'Microeconomics of valuation' in H Folmer and H L Gabel, eds., *Principles of Environmental and Resource Economics*, Edward Elgar, pp. 34-71
- 4.A.9. M Shechter, 2000, 'Valuing the Environment' in H Folmer and H L Gabel, eds., *Principles of Environmental and Resource Economics*, Edward Elgar, pp. 72-103

- 4.A.10. Giovanni Baiocchi, 2012, 'On dimensions of ecological economics', *Ecological Economics*, 75, pp. 1-9
- 4.A.11. Tanvir Ahmed and Bashir Ahmad, 2013, 'Why Do Farmers Burn Rice Residue? Examining Farmers' Choices in Punjab, Pakistan', (SANDEE Working Papers, ISSN 1893-1891; WP 76-13)
- 4.A.12. D D Vaus, 2002, *Surveys in Social Research*, Fifth Edition, Routledge
- 4.A.13. E Ostrom, 2009, 'Beyond markets and states: polycentric governance of complex economic systems', Nobel Prize Lecture
- 4.A.14. S K Pattanayak and A Pfaff, 2009, 'Behaviour, environment and health in Developing Countries: evaluation and valuation', *Annual Review of Resource Economics*, 1, pp. 183-207
- 4.A.15. S Lele and V Srinivasan, 2013, 'Disaggregated economic impact analysis incorporating ecological and social trade-offs and techno-institutional context: A case from the Western Ghats of India', *Ecological Economics*, 91, pp. 98-112.

Ecology-economy interactions at the Macro level

- 5.A.1. R Sengupta, 2013, 'Concept of Sustainable Development: Macroeconomic Resource and Income Accounting' in *Ecological Limits*, OUP, pp. 35-66
- 5.A.2. Jeroen C.J.M. van den Bergh, 2011, 'Environment versus growth A criticism of "degrowth" and a plea for "a-growth"', *Ecological Economics*, 70, pp. 881-890
- 5.A.3. R Sengupta, 'Chapter 5: Ecological Footprint' in *Ecological Limits*, pp. 92-105