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## **Environmental Economics**

### **Course Outline**

**2020**

**59617 871**

#### **MODULE FACILITATORS**

Lecturer: Prof Martin de Wit  
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Faculty Economics and Management Sciences

Guest Lecturer: Prof James Blignaut

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#### **INTRODUCTION**

The deteriorating quality of the natural environment remains a cause for great concern. Within economics the subject field of environmental economics developed as a response, offering a way to analyse the complex trade-offs faced in dealing with environmental issues. The subject-field often tends to be technical and geared towards the economic specialist, but given its practical importance in environmental management and policy deserves a much broader understanding.

## **AIM OF THE MODULE**

The aim of this module is to provide you with an introduction to and an overview of environmental economics. The objective of the course is to show how economic analysis can help identify the causes of environmental degradation and the policy measures to deal with environmental problems.

## **PREREQUISITES**

- There are no specific prerequisites for the course.

## **MODULE OUTCOMES**

After successful completion of the module, the student will be able to:

1. understand the emergence of environmental concerns in economics;
2. explain various models of economy-environment interdependence;
3. understand basic economic concepts and tools used in the analysis of environmental problems;
4. outline the process of doing a cost-benefit analysis, have a clear understanding of the problems in using cost-benefit analysis for environmental management *and be able to do a cost-benefit analysis that includes environmental damages and benefits*;
5. provide an overview of various concepts of value, the economic rationale for the monetary valuation of environment and an understanding of valuation methods;
6. understand the various policy instruments used in environmental management and how to choose among them in the political context *and be able to develop an environmental policy proposal for a specific environmental problem*;
7. provide an economic analysis for ecosystems services, air pollution, water pollution or solid waste;
8. explain the relationship between economic growth, energy and the environment.

## ASSESSMENT

Assessment	Weight	Date	Topic
Class assessments (Quizzes)*	15%	At the start of every lecture	Prescribed readings
Research paper (2000 words +/- 10%)**	60%	29 May	A list of topics will be provided in class
Cost-benefit Analysis and Environmental policy Proposal	25%	22 April	Assignment to be explained in class

\*Class assessments.

Students are expected to have read the readings before coming to class. A quiz will be written on the assigned readings for each day. Required readings per date are indicated in the module outline and resources section.

\*\* Research paper of 2000 words. Papers with a deviation of more than 10% on word count will be penalized.

## MODULE OUTLINE AND RESOURCES

### 1. History and ethics of economic approaches to environmental management and policy – 5 Feb

Perman, R., Ma, Y., McGilvray, J.M. & Common, M. 2003. Natural resource and environmental economics. 3<sup>rd</sup> ed. Harlow etc.: Pearson/Addison Wesley. Chapter 1 – An Introduction to Natural Resource and Environmental Economics, pp 3-15

Spash, 1999. Chapter 3 - The Development of Environmental Thinking in Economics, pp 41-60.

Field, B.C. and Field, M.K. 2009. Environmental Economics. An Introduction. 5<sup>th</sup> ed. Singapore etc.: McGrawHill. Chapter 1 -What is Environmental Economics? pp 2-10.

## **2. Economy-environment relationships – 12 Feb**

Blignaut, J.N. & De Wit, M.P. 2004. Sustainable Options. Development Lessons for Applied Environmental economics. Chapter 3 – The economics of the environment, pp 53-81.

Common & Stigl, 2005. Ecological Economics. An Introduction. Chapter 4 – The economy in the environment – a conceptual framework, pp 86-94 and 98-121.

Fullerton, D. & Stavins, R. 1998. How Economists See the Environment. *Nature*. 395: 433-434.

## **3. Basic economic concepts and tools – 19 Feb**

### ***Economic concepts***

Field & Field, 2009. Chapter 3 - Benefits, Costs, Supply and Demand, pp 44-64

### ***Economic efficiency, equity and sustainability***

Field & Field, 2009. Chapter 4 – Economic Efficiency and Markets. pp 65-83

Common & Stigl, 2005. Chapter 9 – Limits to markets, pp 337-358

### ***Economics of environmental quality***

Tietenberg & Lewis, 2009. Environmental and Natural Resource Economics. 9<sup>th</sup> edition. Chapter 15 - Economics of pollution control: An overview, pp 359-368.

Pearce & Turner, 1991. Chapter 4 – The Optimal Level of Pollution, pp 61-69.

#### **4. Economic analysis – 26 Feb**

##### *Cost-benefit and cost effectiveness analysis*

Hanley & Spash, 2003. Cost-benefit Analysis and the Environment. Chapter 1, pp 3-25

Tietenberg & Lewis, 2009. (9<sup>th</sup> edition) Chapter 3 - Evaluating Trade-Offs: Benefit–Cost Analysis and Other Decision-Making Metrics, pp 46-72.

VandeVeer & Pierce, 2003. Cost-Benefit Analysis, pp 336-352.

#### **5. Economic valuation of environmental benefits – 4 Mar**

Tietenberg & Lewis, 2009. (9<sup>th</sup> edition) Chapter 4 – Valuing the Environment: Methods, pp 74-101.

Farber et al, 2005. Chapter 2 – Economic and Ecological Concepts for Valuing Ecosystem Services, pp 18-40.

#### **6. Economic approaches to environmental policy – 11 Mar**

Stern, 2003. Part Two, Chapters 6-9 - Review of Policy Instruments, pp 67-108.

Goulder & Parry, 2008. Instrument Choice in Environmental Policy. *Review of Environmental Economics and Policy*, 2(2): 152-174.

Sterner, 2003. Chapter 18 – Design of Policy Instruments, pp 212-218. [OPTIONAL READING, NOT INCLUDED IN QUIZ]

## **7. Economics of biodiversity loss and ecosystem services – 18 Mar**

Bateman et al, 2011. Economic Analysis for Ecosystem Service Assessments. *Environmental and Resource Economics*, 48:177-218 [read only pages 177-196, 208-210]

Wittmer, H. 2012. The Economics of Ecosystems and Biodiversity in Local and Regional Policy and Management. Chapter 1 – The value of nature for local development, pp 8-32.

## **Guest lecture “Economics of ecological restoration” by Prof JN Blignaut – 1 Apr**

### **NB: QUIZ on this article:**

Bester, R., Blignaut, J.N. and Crookes, D.C. 2018. The impact of human behavior and restoration on the economic lifespan of the proposed Ntabelanga and Laleni dams, South Africa: A systems dynamics approach. *Water Resources and Economics*.

## **8. Economics of pollution and waste – 8 Apr**

### ***Air pollution***

Cropper, M et al, 1997. The Health Benefits of Air Pollution Control in Delhi. *American Journal of Agricultural Economics*, 79(5): 1625-1629

### ***Water pollution***

Shortle, J. 2013. Economics and Environmental Markets: Lessons from Water-Quality Trading. *Agricultural and Resource Economics Review*, 42(1): 57-74.

### ***Solid Waste***

Fullerton, 2004. Chapter 3 – Economic Analysis of Solid Waste Policies, pp 39-62

## **9. Green Economics – 15 Apr**

Arrow et al, 1995. Economic Growth, Carrying Capacity and the Environment. *Science*, (268): 520-521

Blignaut & De Wit, 2004. Chapter 1 – A perspective on the South African economy, pp 5-12

Ekins et al, 2017. Chapter 7 - Economic Approaches to Energy, Environment and Sustainability, pp 274-323.

## **10. Masters students' presentations of CBA and environmental policy proposals – 22 April**

**NOTE: No quiz on 22 Apr. Class reserved for Masters students' general discussion, questions and closing comments.**