Natural Resource Economics

Unit Outline

Professor Daniel J. Packey, PhD
1. Introduction

Unit Overview

This unit applies standard economic concepts, theories and analysis to the understanding of natural resources. An emphasis is placed on understanding why natural resources pose particular analytical and policy problems, and on illustrating the contribution that economic analysis can make to the solution of these problems.

Aims and Objectives

The aim of this unit is to equip students with the special insights and analytical methods that economics can provide for the understanding of the use of natural resources, and government policy towards the use of natural resources.

Unit Lecturer

The lecturer for this unit is Dr Daniel J. Packey

Class Timetable

Formal classes are held 9:00 am to 13:00 and 14:00 to 18:00 pm and will include tests, and lecture/seminar style presentation of the unit content as well as group work.

Unit Organisation

This unit will examine the following topics with readings indicated. It is not expected that the students will read everything on the list. The Notes and articles supplied are to help students by presenting the same or similar material in clearer or more applied areas.

Topic 1 - The Study of Mineral Economics
- Definitions of Economics and the Economic Way of Thinking
- Economics and mineral economics
- The focus of mineral economics

Topic 2 – Demand, supply and market: a review
- Demand and supply functions
- The market
- Elasticity

Topic 3 - Minerals and Economic development - foundations
- Economic growth and development
- Periods of history and minerals
- Minerals and economic development - the traditional view
• Mineral consumption - recent trends
• The intensity of use
• Complicating factors with mineral production and consumption

**Topic 4 - Mineral resources – Course or blessing?**

• Resources booms and Dutch disease
• The Resource Curse thesis
• Empirical evidence
• Minerals in Chile
• Minerals Australia
• Minerals in Africa - Curse or blessing?

**Topic 5 – Non-renewable Natural Resources**

• Natural resources
• Analytical concepts in Mineral Markets
• The mineral supply function and output constraint
• Mineral markets and price cycles
• Demand and supply responses

**Topic 6 – Renewable Natural Resources**

• Renewable Energy Technologies
• Rets
• Renewable Energy Technologies Characteristics
• Placement Principles
• Quality of Resource
• Integration of Resource
• Value of Resource
• Uses and Limits

**Topic 7 – Market failure**

• Market failure
• Property rights and externalities
• Lags and capital markets
• Information and uncertainty
• The Economics of Pollution
• Externalities
• Pigovian taxes and subsidies
• Tradable pollution permits and other policy measures
• Valuation of Natural Resources

**Topic 8 – Mineral Taxation and Royalties**
- Concept of Economic Rent / Royalties
- Tax Types
- Design Principles
- Australian mineral taxation
- Super Profit Tax

**Topic 9 – Mineral Policy**

- The aims and Practice of Economic Policy
- The Context of Mineral Policy
- Mineral Policy in Practice

**Unit Materials**

To study in this unit, you will need:
- This Study Guide
- The additional Notes supplied
- Additional Reading supplied
## Some Internet Resources for Natural Resource Economics

### Topic 1: The Study of Mineral Economics

**Recommended Reading**

### Topic 2: Demand, supply and markets: a review

**Recommended Reading**
The core reading for this topic is an online microeconomics text book. The site also contains other links to useful for enhancing an appreciation of modern economic thought. The web address is: [http://economics.about.com/od/microeconomics/a/micro_text.htm](http://economics.about.com/od/microeconomics/a/micro_text.htm) Another useful online reading appears at: [http://www.intute.ac.uk/socialsciences/economics/](http://www.intute.ac.uk/socialsciences/economics/)

**Other Reading**
You may find it useful to consult with an introductory microeconomics text book. Additional material will be provided during class.

### Topic 3: Minerals and economic development – foundations

**Recommended Reading**

### Topic 4: Mineral resources – Curse or blessing?

**Recommended Reading**
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<th><strong>Topic 5: Nonrenewable Natural Resources</strong></th>
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### Minerals and the Economy

**Resources. The Journal of the South African Institute of Mining and Metallurgy**, Vol 107, 539—555. This reading provides a good overview of the theory of exhaustible resources and its usefulness to mineral economics. **Websites**

[http://www.intute.ac.uk/socialsciences/economics/](http://www.intute.ac.uk/socialsciences/economics/)

### Topic 6: Renewable Natural Resources

**Recommended Reading** Most environmental economics or resource economics textbooks cover this relevant material for this topic. Materials will be provided in class. Field, Barry C. Natural Resource Economics Section 5 Chapter 10: Mineral Economics. New York: McGraw Hill 172-198. This website has some useful PowerPoint slides that can be downloaded for free. **Websites**

[http://www.intute.ac.uk/socialsciences/economics/](http://www.intute.ac.uk/socialsciences/economics/)

### Topic 7: Mineral Policy


### Topic 8: Mineral Taxation and Royalties


### Chile’s mineral royalty system-Media comment


### Topic 9: Mining, Sustainability and Sustainable Development

2. Assessment

Brief Description

There are three pieces of assessment for this unit:
1. Midterm Examination
2. Final Examination and
3. An Scholarly Paper/Presentation.

Assessment weighting

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<th>Assignment</th>
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<tr>
<td>Midterm Examination</td>
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<tr>
<td>Final Examination</td>
<td>30%</td>
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<tr>
<td>Paper/Presentation</td>
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Assessment details

The Examinations

The two examinations are designed to provide you with an opportunity to consolidate what you have learned in this unit. Students will be asked to answer four questions from a set of six questions in two hours.

Paper/Presentation

A current topic relevant to mineral economics will be selected for each paper. The student will present their findings to the class. The paper and presentation are worth 20% each.