1. Purpose of this unit. The objectives are to provide participants with:

- Knowledge so that they can appreciate the way economists view environmental problems using market-based economic models. Participants will be taught enough environmental economics so that they can appreciate the perspective environmental economics adopts.
- Background knowledge so that important techniques in economics to analyzing environmental problems can be understood and, in some cases, applied.
- An understanding of environmental policy and its ethical underpinnings.
- Practical experience in environmental economics and research by studying some important environmental problems.

By in large the objective is not to provide settled conclusions on contentious resource and environmental issues but to illustrate approaches and techniques economists have developed to help examine such issues. The view developed is that an understanding of economic principles can improve environmental outcomes.

Prerequisite: Basic microeconomics is helpful and early tutorial classes should bring everyone up to speed. If you have not studied economics before – or if you studied it many years ago – you need to attend these “optional” classes.

Timetable:

Tutorials: Beginning week 2. Class Monday 4-15 to 5-15 pm at 757 Swanston Street and at other times (to be advised if) needed. At most 2 tutorials will operate depending on popularity. These are for tutorial/discussion and consultation. The first 5 are extra classes on economics. If you have not done economics before you should attend all of these. If your economics is rusty and you have forgotten basic game theory you should attend selectively.

Lectures: Beginning Monday March 2 from 6-15 to 9-15pm at the G73 Theatre, 200 Berkeley Street.

If you have questions on the course please visit me Monday afternoon in The Spot. Level 3, Room 345. All groups will need to discuss with me their class presentations – this is not optional. I will advise on material to be presented and on the structure of the presentations.

Always email me first since, if no one advises that they want help, I will not turn up. I am often not in my office.

My email is hrclarke@unimelb.edu.au and my mobile (usually switched off!) is 0400857951. Email is much more reliable.
Every student in the course will need to participate in the writing of a report on a topic to be assigned and a presentation on this topic to the class. All students must discuss topic selection and progress on this topic with me before they present in class. This discussion will normally occur by appointment in The Spot 3034.

2. Assessment: Assessment consists of 2 components:

- Report plus seminar presentation using Powerpoint presentation worth 30%, comprising 10% for presentation and 20% for written report.
- Final examination worth 70%. This is a 2-hour written exam held at the end of the course.

3. Text: Powerpoint notes on the lectures are provided at the subject website. Any of the texts below can be utilized. None are required reading.

References and background reading


R. Costanza, J. H. Cumberland, H. Daly, R. Goodland, R. Norgaard, *An Introduction to Ecological Economics*. 1997, St. Lucie Press. (A free online text but it focuses on “ecological economics” which has a different emphasis to resource and environmental economics).


An excellent overview of much material is:


There are many texts that are good substitutes for these. **You do not need to buy any text. There are many good readings that on the course website.**
4. Course outline

You should try to read the notes marked with a snowflake (*). Other material is optional – it is material I have drawn on in class. Most of the articles are provided at the course website or can be accessed directly from the hyperlink provided. A more extensive set of background readings is provided at the course website.

Topic 1. Background ideas (5 classes).


References

(*) H. Clarke, Powerpoints and drafted notes.
Tietenberg/Lewis Chapters 1 & 2.

Topic 2: Externality modeling (about 2 classes).


References

(*) H. Clarke Powerpoints and advanced level notes.
Tietenberg/Lewis Chapters 4, 15, 16, 18, 19.

Topic 3: Road transport externalities (about 2 classes).

Background road transport economics. The standard congestion model. Developments in congestion modeling and parking economics. Other externalities: Road damages, traffic accidents. A little road supply economics.
References

(*) H. Clarke, *Powerpoints*.


A recent paper that also addresses pollution externalities is:

**Topic 4: Cigarette smoking – internalities and externalities (2 classes).**

Background on tobacco, myopia and internalities. Controlling internalities and externalities. Secondary tobacco smoke as an externality. Here in developed countries externality issues are not as significant as are issues of consumer rationality. An exercise in thinking clearly about what motivates policy on the basis of market failure issues. Smoking policies in China.

References

(*) H. Clarke, *Powerpoints*.


**Topic 5: Property rights and public goods (1 class).**


References

(*) H. Clarke, *Powerpoints* and drafted notes.

(*) Tietenberg Chapter 17.

**Topic 6: Climate change economics (4 classes).**


**References**

(*) H. Clarke, *Powerpoints*.

On the science I like:


Intergovernmental Panel on Climate Change (IPCC) (here). There are three recent reports here: The Physical Science Basis; Impacts Adaptation and Vulnerability; and, Mitigation of Climate Change. There is a vast amount of material here summarized in the Synthesis Report (here). The 5th Assessment Report has been released. It is worthwhile reading the Summary for Policymakers of the various reports.

On the basic economics I like:


For an assessment of the Stern Review methodologies see:


J. Quiggin, ‘Stern and the critics on discounting’ mimeographed. 2006. (hopefully here).

For a critique of Stern based on the perspective that it understates dangers see:


On biodiversity adaptations you might want to look at:


On climate change policies under uncertainty:
M. Dunlop & P. Brown, *CSIRO, Climate Change and the National Reserve System*, CSIRO, 2008 ([here](#)).

On strategic issues see:
The excellent wikipedia entry on global emissions ([here](#)) and this from *Carbon Planet.*

**Topic 7. Valuing environments (1 class).**


**References**

(*) H. Clarke, *Powerpoints*.
(*) Tietenberg Chapter 3.
Ward 93-126, 127-149, 150-188, 581-590. (Lengthy but very good!)
Basic material is available in all environmental economics texts. See e.g.: Callan & Thomas *op cit*. Chapters 6-8.
For advanced discussion see:

**Topic 8. Exhaustible resources & population economics (3 classes).**

Exhaustible resources and increasing scarcity. The Hotelling rule. Resources as a limit to growth. An introduction to dynamic policy modeling of environmental and resource issues.
Exhaustible energy resources. Peak oil and development economics. The welfare economics of population growth.

References

(exhaustible) (*) H. Clarke, Powerpoints.
(*) Tietenberg & Lewis pps. 128-180.

(population) (*) H. Clarke, Powerpoints.

Topic 9. Renewable Resources (2 classes).

Economics of renewable resources (fisheries, forestry, aquifers, self-renewing environments). Modeling of renewable resource management issues.

Open access and common property resources. Extinctions, collapses and the Easter Island case study.

References

(*) H. Clarke, Powerpoints.
(*) Tietenberg pps. 258-313.
World Resources Institute & others, pps. 292-302, 313-318.
Topic 10. Uncertainty and Irreversibility (2 classes).


References

(*) H. Clarke, *Powerpoints*.
(*) R.S. Pindyck, ‘Uncertainty in Environmental Economics’, Available online [here](http://www.aei-brookings.org/admin/authorpdfs/page.php?id=1349&PHPSESSID=712b1a7d3c6f4b98e73ffb8c51090e13)

5. Environmental Report and Discussion of Report

Members of the class will be split into groups of up to 3 people who are asked to jointly examine environmental topics of current policy interest.

All of this material is examinable – all members of the class are expected to participate in the discussion of all presentations and to have a grasp of the main ideas covered. In the final examination a component will offer 3 questions based on these presentations and students will be required to do exactly one that was not the topic they themselves prepared.

Starting in week 5 the final class will be devoted to student presentations of topics. The task is initially to set out a balanced account of the scale of an environmental problem or issue and to articulate its core economic and institutional features.

The final report should be written as a joint essay of probably no more than 3000 words consisting of 3 components: (i) An introduction setting out the character of the problem examined; (ii) The body of the essay where the analysis is implemented, and, (iii) A conclusion summarizing the main findings of the study.

The report must be fully and completely referenced. Information is provided below.

Important dates

- From about week 5 – week 10 all student groups must make a presentation of about 15 minutes to class.
The final version of report is due to be submitted on or before the class taught in Week 10. **Marks will be deducted for late submission – normally 25% of total deducted per week late.** If mailed late the data adopted will be that date stamp-marked. If handed in a staff member must verify that it is handed in with a signature and date.

More detailed notes follow.

**Topics**

1. Should carbon emissions be taxed or should the abatement of emissions be subsidized?


2. How should road use externalities be priced? What other alternative policies might be used if pricing is ruled out?


3. What are the ethical difficulties of using cost benefit analysis to assess the desirability of environmental projects?


Steve Kelman, “Cost-Benefit Analysis: An Ethical Critique (with replies)”. Originally published in 1981 the following online version has a useful attached critique of Kelman’s views:

http://www2.bren.ucsb.edu/~kolstad/secure/KelmanCostBeneCritiqu.pdf


4. Assess the case for using contingent valuation procedures in assessing the benefits from environmental projects.


5. What constraints do Australia’s environmental problems place on the size of Australia’s population?


6. Can cost-benefit analysis be usefully employed to optimize the conservation of biodiversity?

Martin Weitzman has written many articles on this. The best non-technical treatment is:


Some criticisms by Neil Perry seem good to me. They are here: http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.13.3.235

I also have unpublished lecture notes on this – and more general cost-benefit issues involved in using checklists to prioritize conservation efforts. These can be made available.

7. When are common property institutions efficient?
Elinor Ostrom has written many books and articles on “common property”. This is an opportunity to examine her views. A good start is:


The bibliography to this article provides many other references. One that I like (but which has largely been ignored) is:

[http://college.holycross.edu/RePEc/eej/Archive/Volume1/V1N1P7_10.pdf](http://college.holycross.edu/RePEc/eej/Archive/Volume1/V1N1P7_10.pdf)

8. How should a large city (such as Melbourne) adapt to the problems it will experience in addressing climate change? (Emphasize private sector responses).

**Refs:** For background I liked the futurologist M. Kahn’s *Climatopolis*, Basic Books 2010.

Much case study information can be obtained from the Melbourne City Website.  

9. What are the prospects for devising a comprehensive international agreement to control greenhouse gas emissions?

**Refs:** There is an enormous literature here. Many now believe that different countries must pursue their own policy approaches. A good – though opinionated - starting point is:

R. Garnaut, Chapter 9.  

The ideas presented in class are expanded in:


10. What will happen to oil prices over the next 50 years? When will we encounter “peak oil”? (I want some assessment of longer-term prospects for oil as well as a discussion of what is driving current blow prices).

**Refs:** One strand of literature sees an inevitable decline in oil production having already occurred or occurring soon (the “peak oil” view) as discussed at the ASPO website:  

But over the last year oil prices have fallen dramatically. There are many commentaries on what is happening – falling demand, new sources of oil etc. A good starting point is:


11. Evaluate the Grattan Institute’s proposals for pricing electricity?

Refs: There are many good reports on the electricity sector from Grattan. A useful start is:


12. How should the case for desalination technologies be assessed when there is uncertainty about the extent of future climate change?


Class presentation

The actual presentation should be in Powerpoint or equivalent format. They must be provided to the instructor by email (h.clarke@latrobe.edu.au) early on or before the Friday morning before the presentation. I cannot place on the web if the presentation is not provided before that time.

The presentation should be rehearsed carefully and timed to run, at a relaxed pace, for no more than 20 minutes. At 20 minutes your presentation WILL BE ENDED and the presentation graded down if it was not presented in the time allocated.

A few major points only should be made and discussed carefully.

If you have more than about 15 slides you have far too much material. Likewise if large amounts of text are crammed onto single slides you will be graded down. It should be a relaxed and carefully prepared presentation that emphasizes major ideas. You will get lower marks not more if excessive amounts of clutter are included.

The single greatest problem with presentations in the past has been the presentation of vast amounts of data and an excessive elaboration of theory. Be concise and try to get the main
ideas across succinctly. The objective of the presentation should be to convey the main ideas on a topic in simple direct language and not every conceivable idea! Encyclopedic treatments are not sought and will receive low grades. Less is more!

After the presentation there will be discussion in class.

This presentation will be assessed on the basis of the clarity of the exposition and evidence of knowledge of the topic. Those not turning up to make a presentation will receive zero grades for this portion of the assignment.

The grades will be allocated equally among team members unless a contrary claim for differential assessment is made. If participants in a group free-ride this should be reported to the instructor before assessment is made. ‘Free-riding’ will be penalised in accord with the judgement of the instructor.

Writeup

The final report must be provided both electronically and in hard copy form to the instructor at h.clarke@latrobe.edu.au on or before week 10 of the course.

The format of the presentation should be as below.

Structure of the final report

The report should be submitted as Word documents in a one-sided typed document and also sent electronically to h.clarke@latrobe.edu.au.

If the files are very big (roughly > 5MB) then hand to instructor on a USB stick. Obviously do not email huge files.

The report should be presented in Calibri (Body) 12 point format with at least 2.5 cm margins.

The report should begin with a title page with a title summarising the main idea of the project. This might differ from the initial suggested topic name. The names of all authors should be listed. An abstract of no more than 250 words should summarise the objectives and conclusions of the project.

Then should follow an introduction (titled 1. Introduction) that outlines the reasons the topic is of interest and the objectives of the study and an outline of the organisation of the study. The introduction should concisely set out the issues that will be discussed in each section.

The body of the study should follow with numbered sections (2,3,4,...) and perhaps subsections (2.1, 2.2, ...) where the main analysis of the report is implemented.

A final numbered section (XX. Conclusions and Final Remarks) should outline the major conclusions and unresolved issues in the study. It should be less than 500 words in length.
A complete list of references (books, journals, and websites) should be provided. Documents in Chinese can be cited in the original but if they are they should have an English or Pinyin translation. See below.

If you do wish to use notes then please use only endnotes (not footnotes) which should be listed after the references.

Please carefully proofread and spellcheck the report before submission.

The intention is to provide 10 coherent studies which can be put together as a useful document for the School of Economics and for future classes.

Referencing is important. Failure to reference comprehensively and accurately will result in a reduced grade.

Structure is also important. The essay must follow the Introduction-Body-Conclusions format and Final Remarks format. It must be clear what your objectives are, these objectives should be discussed in the body of the essay and the final section should set out what you have and have not shown. Long, meandering sets of unstructured facts are not acceptable.

Style guidelines.

The Harvard (author, date) system of referencing should be used (examples are given below). In the text give the author’s name followed by the year in parentheses: Smith (2000). If there are two authors use 'and': Smith and Jones (2001); but if cited within parentheses use '&: (Smith & Jones 2001). When reference is made to a work by three or more authors, the first name followed by et al. should be used: MacDonald et al. (2002). In the reference list, references should be listed in alphabetical order.

Plagiarism – the use of material by others without acknowledgement of their source - is a serious form of misconduct. Certainly use other people’s ideas but acknowledge those materials.

Checks for plagiarism will be implemented. Assignments involving plagiarism will be awarded zero grade. Please be careful to cite the sources of material you use.

In the reference list, cite the names of all authors when there are six or fewer; when seven or more, list the first three followed by et al. Do not use ibid. or op cit. Reference to unpublished data and personal communications should not appear in the list but should be cited in the text only (e.g. Smith A, 2000, unpublished data). All citations mentioned in the text, tables or figures must be listed in the reference list.

Examples:

For a journal article:

For a journal article only available online:
For a book:

For a chapter in a book:

For a reference from a website:
Note the n-dashes between the page numbers. Write (ed.) or (eds). Do not put line-spaces between the individual references. Do not leave spaces between the initials of people's names in the references.

Appendices (if any)

Avoid if possible.

If essential they should be placed at the end of the paper, numbered in Roman numerals and referred to in the text.

Tables

Tables should be self-contained and complement, but not duplicate, information contained in the text. Number tables consecutively in the text in Arabic numerals. Type tables on a separate page with the legend above. Legends should be concise but comprehensive - the table, legend and footnotes must be understandable without reference to the text. Vertical lines should not be used to separate columns. Column headings should be brief, with units of measurement in parentheses; all abbreviations must be defined in footnotes. Footnote symbols: †, ‡, §, ¶, should be used (in that order) in the tables and *, **, *** should be reserved for P-values. Statistical measures such as SD or SEM should be identified in the headings.

Figures

All illustrations (line drawings and photographs) are classified as figures. Figures should be cited in consecutive order in the text.

Figure legends.

Legends should be concise but comprehensive - the figure and its legend must be understandable without reference to the text. Include definitions of any symbols used and define/explain all abbreviations and units of measurement.

Equations.
Use a package like *Equation Editor* for Equations. Equations should be numbered sequentially with Arabic numerals; these should be ranged right in parentheses. All variables should appear in italics. Use the simplest possible form for all mathematical symbols.

**Footnotes and endnotes.**

Do not use footnotes *at all*. It is best to use endnotes very sparingly.

Prof H. Clarke  
February 2015.