

The Environment and Economic Development (ARE/ECN 215D)

Department of Agricultural and Resource Economics

University of California, Davis

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Classes: When: 12:10 – 2:00, Tuesdays and Thursdays. Where: 113 Hoagland Hall

Office Hours: 3:00-4:00, Tuesdays and Thursdays.

Course Description and Objectives:

The Environment and Economic Development is an interdisciplinary course that draws on recent and ongoing theoretical and empirical research into interactions between environmental resource use and economic development. The primary objective of this course is to expose students to, and stimulate their independent thinking and analysis of, some important issues emerging at the interface of the environmental and development economics. In doing so, it brings together relevant theoretical and empirical insights obtained from economics, ecology, demography, economic institutions and development policy. The course addresses the interactions of the environment and economic development both at the levels of national economies and rural communities in poor countries. At the *economywide* level, it emphasizes (1) possible relationships between environmental quality on the one hand and economic growth, political institutions, socio-economic factors, and international trade, on the other; (2) implications of depleting the environmental capital base for national welfare and its sustainability. At the *rural economy* level, it addresses (1) various linkages between poverty, high fertility, cultural norms of employment, and exhaustion/extinction/ degradation of environmental resource bases; (2) failures of both markets and public policy in protecting community environmental resources; and (3) implications for public policy and institution design to protect the communal resources and hence the welfare of the poor.

Course Requirements and Policy

The prerequisite for this course is 200A, or 275 (or equivalent), or my consent. The course will particularly benefit the graduate students who wish to identify a topic for Ph.D. research in the broad area of the Environment and Development Economics [for more specific potential research topics see the course outline below]. Subject to the requirements mentioned above, the course is open to graduate students from departments of Agricultural and Resource Economics and Economics.

Given the nature of the course, I conduct this course primarily in a seminar format rather than the traditional lecture format. Hence, as an integral part of it, *you are expected to have read the basic references assigned to each topic prior to coming to the class and be prepared to discuss the assigned readings*. There are about nine broad topics that the course aims to address;

that is, on average one topic per week, although some topics may be addressed at a greater depth and hence require more time. Depending on the number of students enrolled in the course, you are expected to present about **2-3 research seminars** presenting published research papers on the topics listed in the course outline. I hope that the market for the topics will clear by voluntary selection of topics of your interest. Alternatively, I will assign topics to you according to your previous preparation and main field of interest.

A second component of the course work consists of a short **term paper (not exceeding 15 pages)** on a research topic in the area of the environment/resource and economic development. You may, if you wish, choose the same topic for your term paper as the one you choose for your class presentation, thereby saving on time to be spent on literature review. For the economy of time, joint-authored term paper is strongly suggested. *You should discuss your choice of topic with me for approval.* I will be happy to help you to identify a topic, find relevant literature, and develop your idea. Given the one quarter time limitation, if you choose to do an empirical term paper, it is important that you make sure that the required dataset is already available and accessible. The deadline for the choice of topic is **April 22**, when I expect you to submit **one page outline** of your term paper. The first draft of the paper for my review and comments will be due on **May 22**. The final draft is due **No later than June 9**. The purpose of the term paper is to encourage you to further develop independent thinking and research skill, and hopefully to make a start for a publishable paper or a dissertation.

The final course grade will be an average of your class participation (**20%**), seminar presentation (**40%**) and term research paper (**40%**).

Course Outline

1. Preliminaries: Basic Concepts and Overview

- Resource Basis of Rural Production
- Ecosystems: Functions and Services
- Classification of Environmental Resources
- Institutional Failure and Poverty as Causes of Environmental Degradation (an overview)

*Suggested Readings: (Selections marked by * indicate required readings prior to class)*

Dasgupta and Maler (2000, vol.1, ch.1), Dasgupta (1993, ch.10), Ehrlich and Roughgarden (1987), Falconer (1990), Falconer and Arnold (1989), Holling (1987)(1992), Perrings, *et al* (1994).

2. Economic Growth and the Environmental Quality: Environmental Kuznets Curves

April 3, April 8, April 10

Is there any specific relationship between the process of economic growth and changes in environmental quality? Is economic growth a cause of environmental degradation or a necessary means for its improvement? Is there an “Environmental Kuznets Curve” and, if so, how relevant is it to developing countries? Do poor countries necessarily face a trade-off between economic growth and environmental quality? What are the likely effects of the type of political regime, policymaking process, and socio-economic factors on the relationship between economic development and environmental quality?

Suggested Readings:

Dasgupta-Maller (1995), Grossman (1993), ***Grossman and Krueger (1995)**, ***Selden and Song (1994)(*1995)**, Stern, et. al. (1996), McConnell (1997), ***Panayotou (1993)(*1997)** Shafiq and Bandyopadha (1992), ***Vincent (1997)**, * **Farzin and Bond (2006)**, World Bank (1992, ch.1). Other articles on this topic can be found in Special Issue: The Environmental Kuznets Curve, *Environment and Development Economics*, Volume 2, Part 4, October 1997, and in *Ecological Economics*, 25, 143–229, 1998.

3. Intergenerational Discounting, Environmental Assets, and the Cost-Benefit Analysis of Distant-Horizon Projects

April 15, April 17, April 22

Is the discounting of future generations’ well being ethically defensible? What are the appropriate discount rates for the far-distant future benefits and cost (hyperbolic discounting)? How should the exhaustibility of natural resources be reflected in their shadow prices? How should the value of environmental assets and social concerns about future generations’ well-being be reflected in shadow prices used in cost-benefit analysis?

Suggested Readings:

*Arrow (1999) (*1996), *Arrow et al (*2013) *Weitzman (*1999)(1998), Arrow and Kurz (1970), Chichilnisky, Heal and Beltratti (1995), Daly and Cobb (1991), *Heal (2000), *Heal and Millner (*2014), Dasgupta and Heal (1974)(1979), , Norgaard and Howarth (1991), Howarth and Norgaard (1993), Pearce, Barbier and Markandya (1988), *Schelling (*1999)(1994),), von Ambsberg (1993), WCED (1987). For a collection of more recent papers on Discounting and Intergenerational Equity see the book published under the same title, edited by Paul R. Portney and John P. Weyant, and published by Resources for the Future, 1999.

Topic 4. Sustainability, Optimality, and Economic Development Policy

April 24, April 29, May 1

What is a sustainable development? Are we consuming too much? Can optimal development paths be also intergenerationally fair or sustainable? Is discounting compatible with sustainability? Which development policy goal should be given priority in the poor developing countries: long-run growth of living standards or at intergenerational equality? What are the limitations of implementing sustainability rules in developing countries? Are there operationally useful policies that can promote both growth of economic welfare and intergenerational equity?

Suggested Readings:

*Arrow, et al. (2004), Arrow and Fisher (1974), Asheim (1994), Dasgupta-Maller (1995), Farzin (2004)(1999), Farzin (*2010)(*2006)(2007), Fisher and Hanemann (1986), *Hartwick (1990) (1994) (*1977), Maler (1991), Repetto, et al (1989), Soloranzo, et al (1991), *Solow (1974)(1986)(1991)(*1993), Spence (1974), *Weitzman (1976). *World Bank (2005).

For a collection of papers on green national accounting, welfare and sustainability see *Environment and Development Economics*, Special Issue: Advances in Green Accounting, Vol.5, February and May 2000.

5. International Trade and the Environment

May 6, May 8

Is growth of international trade a cause of environmental degradation? Can ill-defined property rights over the commons in developing countries be a source of North-South trade? What are the environmental consequences of such trade and how could they be avoided? Should trade in pollutants be encouraged between rich and poor nations? Should poor developing countries become sinks for industrial countries waste? Do the relatively low environmental standards in poor countries provide an argument for either protectionist trade policies or lowering of environmental standards in rich industrial countries? Has the differential in environmental standards between the rich and the poor nations been a significant source of competitive advantage? Are there environmentally friendly trade policies?

Suggested Readings:

***Anweiler, Copland, and Taylor (*2001), *Daly (*1993) (1994), *Chichilnisky (1994), Cropper and Oats (1992, pp. 697-99), Dasgupta-Maller (1995), *Economist (1992, p. 66), Lopez (1996), Low (1992), Srinivasian (1995), World Bank (1992).**

6. Market Failure and Erosion of Common Property Resources

May 13, May 15

What are the sources of market failures in allocation of common property environmental resources? How acute or distinct are the market failures in developing countries? Is the assignment of property rights sufficient for achieving resource allocation efficiency (Coase's theorem)? Do voluntary private negotiations necessarily lead to efficient solutions? Does the Coase theorem make institutions unnecessary? Do private decisions to enforce property rights lead to social efficiency? Does the Coasian solution to environmental externalities prevail when the affected community's welfare is non-convex in pollution (Baumol-Bradford-Starrett non-convexities)? Does the Pigouvian (pollution) tax provide a solution to the problem? Given imperfect information, how does the private negotiation approach to solving the externality problems compare with the centralized approach? What is the significance of property rights for investment in natural resources.

Suggested Readings:

Baumol and Bradford (1972), Coase (1960), Cornes and Sandler (1983), Dasgupta and Heal (1979, ch.3), Dasgupta (1980)(1982), ***de Meza and Gould (1992)**, Farrell (1987), Gordon (1954), Hardin (1968), Repetto (1988), Scott (1955), Starrett (1972)(1973), ***Besley (1995 a).**

7. Public Failure and Erosion of Local Commons in Developing Countries

May 20, May 22

How dependent are the rural poor communities of developing countries on common property resources? How have these resources been traditionally managed? What are the underlying causes of the erosion of common property resources in these countries? What are the interactions between rural poverty and the erosion of local commons? Can public policies cause or aggravate the vicious circle of poverty and the erosion of commons?

Suggested Readings:

Binswanger (1991), Chopra, Kadekodi and Murti (1989), Ensminger (1990), Falconer (1990), ***Feeny, et al (1990)**, Feder (1977, 1979), ***Jodha (1986)(*1992)**, Mahar (1988), Repetto (1988), ***World Bank (*2007)(1992, ch. 7).**

8. Poverty, Population Growth, and Environmental Degradation

May 27, May 29

What are the dynamic linkages between poverty, erosion of common resources, and the high fertility in the rural communities of developing countries? What are the underlying

incentives for high fertility among rural poor households in poor countries, poverty or increasing-returns-to scale in population size? Can environmental degradation be a cause of high fertility, thus reinforcing the links between poverty and population growth? What is the nature of work allocation within the households in the rural communities of poor countries and what does it imply for management of communal resources? Can social norm of work and employment preferences in poor resource-based communities render resource exhaustion/extinction socially optimal? What are the potential policies to mitigate the effect of population growth on the environment?

Suggested Readings:

Cain (1977) (1982)(1983), Caldwell and Caldwell (1987) (1990), Cropper and Griffith (1994), C.S.E. (1990), Dasgupta (1992)(1993, ch.13), Dasgupta and Maller (1991)(1995), *Farzin and Akao (2014), *Filmer and Pritchett (1996), Jodha (1986) (1990), Kumar and Hotchkiss (1988),

*Mink (1993), Mueller (1976), Nerlove and Meyer (1991), Willis (1982), World Bank (1991).

9. Managing Local Commons: Nonmarket Institutions and Incentive Design

June 3, June 5

What are the nonmarket institutions for management of local commons? What informal incentives have traditionally fostered collective management through cooperative behavior? How fragile are such informal contracts under pressure from economic, technological, demographic, social, and political changes? Can insights from economic theory (especially theories of games and contracting) explain the traditional cooperative behavior in collective management of commons? What policy lessons may be drawn from such informal contracts for management of rural commons?

Suggested Readings:

Agarwal and Narain (1989), *Besley (1995b), Binmore and Dasgupta (1986), Cohen and Weitzman (1975), Dasgupta (1988), Dasgupta (1993, ch. 8), Dasgupta and Maller (1995), Friedman (1971), Milgrom, North and Weingast (1990), Noronha (1994), *Ostrom (1990)(2001), Sabourian (1990), *Seabright (1993), Wade (1987) (1988),*World Bank (1992, chs. 4 and 7).