

IR/GE 304
Environmentally Sustainable Development
Fall 2013

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Overview:

For the 2 billion people who live on less than two dollars a day, economic growth is imperative. Yet growth in poor countries is often cast as a threat to the global environment because it uses scarce resources and generates pollution. Are there strategies to support development while protecting the environment?

This course explores the relationship between development and the environment with a focus on policy analysis. We begin by trying to define ‘sustainability’ and ‘development,’ and consider recent Malthusian worries about the Earth’s capacity to sustain growing populations and affluent lifestyles. We then focus on specific resources. In general, our approach moves from natural resources that are allocated by markets, such as food, water, fish and forest products, to public good externalities like air pollution and climate change. Throughout, we will discuss economic incentives, the allocation of rights, the sovereignty of nations and opportunities for international cooperation.

Readings:

Most readings will be posted on Blackboard. The following book by J. Sachs will serve as a core text. It is available at the university bookstore:

Sachs, Jeffrey D., *Common Wealth*, New York: Penguin Press, 2008.

Grading:

Grades will be based on two in-term exams (25% each), a final exam (25%), problem sets (8%) and projects (12%) and overall class participation (5%).

Projects will be assigned and implemented during the discussion section. This year, we will begin with a project about dams on the Mekong River; students will also work on projects related to biofuels, mining, and deforestation.

Problem sets are graded on a pass/fail basis, but failure to submit a problem set will result in a deduction of one point from your average. You may work on problem sets with other students, provided the work you submit reflects your own understanding. Expect to do one or two problem sets per week.

A policy-oriented class like this is ideal for discussion of conflicting social values, paradigms and empirical evidence. To succeed, you must be here and engaged. Three absences will lower your grade by one mark and six absences will result in failure. Absence from an exam will be excused only in extreme circumstances. If you require accommodation in exams, let me know soon so that we can make appropriate arrangements. The University’s policy on academic honesty is posted at www.bu.edu/cas/academics/programs/conductcode.html. I take the integrity of your work seriously and assume that you do, too. Please let me know promptly if you are ill or struggling to keep up.

Welcome to the class.

Course Outline

Starred (*) readings are required.

1. What is Sustainable Development?

- a. How are principles and paradigms reflected in the discourse on ‘sustainable development’?
- b. Do developed and developing countries have different priorities in the pursuit of sustainability?

Readings:

*Sachs, Chapter 1, “Common Challenges.”

Further Resources:

- UN, “The Rio Declaration on Environment and Development,” 1992.
- World Commission on Environment and Development, “From One Earth to One World,” *The Brundtland Report: Our Common Future*, 1987.
- S. Haque, “The Limits of Sustainable Development as a Concept,” in G. Mudacumara (ed.), *Sustainable Development Policy and Administration*, Taylor and Francis, 2006.
- E. Ostrom, “A Diagnostic Approach for Going Beyond Panaceas,” *PNAS*, September 25, 2007.

Reading for Discussion Section Week 2:

*E. Grumbine, “Mekong Hydropower: Drivers of Change and Governance Challenges,” *Frontiers of Ecology*, January 2012.

2. Governance

- a. What drives environmental policymaking in developing countries?
- b. What power do local, national and international institutions wield?
- c. Why is multilateral environmental cooperation difficult to achieve?

Readings:

* “Metalclad vs. Mexico,” Forum on Democracy and Trade, 2009.

* N. Onishi, “Humans Intrude on an Indonesian Park,” *New York Times*, June 14, 2009.

* D. Mackey, “The Rights Clash,” *Guernica*, July 15, 2013. <http://www.guernicamag.com/features/the-rights-clash>

Further Resources:

- UNEP, “Multilateral Environmental Agreements: A Summary,” in *Green Planet Blues*, 2004, pp. 147-155.
- “As Coolant is Phased Out, Smugglers Reap Large Profits,” *New York Times*, Sept 6, 2012.

3. Setting Priorities: Valuing Sustainable Development

- a. How should we weigh the welfare of future generations? What about today’s generation?
- b. Does it matter what kind of resources are protected? Are there reasonable substitutes for natural resources?
- c. Are some environmental rights inviolable regardless of compensation?

Readings:

*R. Solow, “Sustainability: An Economist’s Perspective,” in R. Stavins (ed.), *Economics of the Environment: Selected Readings*, Norton, 2005.

* ILO, Indigenous and Tribal Peoples Convention, ILO 169, <http://www.ilo.org/indigenous/Conventions/no169/lang--en/index.htm>

Further Resources:

◦P. Karieva, “Dam Choices: Analyses for Multiple Needs,” *PNAS*, April 10, 2012.

◦N. Stern, Chapter 5, *The Global Deal*, Public Affairs Books, 2009.

4. Development: Models, Definitions, and Measurement

- a. How do we measure progress? Is GDP enough? Do sustainability indices do better?
- b. Who is poor? How would do we assess poverty? What causes it?
- c. What strategies work to reduce poverty? Must they be at odds with sustainability?

Readings:

* Sachs, Ch. 9, “The Strategy of Economic Development,” Ch. 10, “Ending Poverty Traps.”

Further Resources:

°R. Costanza, M. Hart, S. Posner, J. Talberth, “Beyond GDP: The Need for New Measures of Progress,” Pardee Center Paper, No. 4, January 2009.

°UN, “Millennium Development Goals Report 2013,” New York: United Nations.

°A. Sen, Ch. 1, “The Perspective of Freedom,” *Development as Freedom*, Anchor Books, 2001.

5. Is Development Compatible with Sustainability?

- a. Is there a limit to growth? Can the planet support rising incomes?
- b. How do population, affluence and technologies (IPAT) affect environmental quality?
- c. Is there a correlation between income and pollution, such as the environmental Kuznets curve?

Readings:

*Sachs, Chapter 2, “Our Crowded Planet” and Chapter 3, “The Anthropocene.”

*S. Dasgupta, B. Laplante, H. Wang and D. Wheeler, “Confronting the Environmental Kuznets Curve,” *Journal of Economic Perspectives*, 2002, Vol. 16, No. 1, pp. 147-168.

* “The East is Grey: China is the World’s Worst Polluter,” *The Economist*, August 10, 2013.

Further Resources:

°Y. Chen et al., “Evidence on the Impact of Sustained Exposure to Air Pollution on Life Expectancy from China’s Huai River Policy,” *Proceedings of the National Academy of Science*, PNAS, July 2013, and short summary in the *New York Times*, July 8, 2013.

°K.P. Gallagher, “Trade and Sustainable Development,” G. Atkinson et al. (eds.), *Handbook of Sustainable Development*, Edwin Elgar, 2007.

°K.S. Gallagher, “The Challenge for Environment, Development and Sustainability in China,” G. Wilson et al. (eds.), *Environment, Development and Sustainability*, Oxford, 2010, pp.13-23.

6. Affluence and Consumerism

- a. Consumer desires and cultural context: Why do we want so much stuff?
- b. As global incomes grow, what do people want?

Readings:

*J. Schor, “Introduction,” and “Communicating with Commodities,” *The Overspent American*, Harper, 1998.

Further Resources:

°A. Waldman, “In Today’s India, Status Comes with Four Wheels,” *New York Times*, December 5, 2005 and S. Philip, “Tata’s Nano, the World’s Cheapest Car, Is Sputtering,” *BloombergBusinessweek.com*, April 11, 2013 .

°H. Mattar, “Public Policies on More Sustainable Consumption,” *State of the World 2012*, p. 137-145. Also, *State of the World 2010* is entirely devoted to the culture of consumerism. <http://www.worldwatch.org/sow10>.

°FAO, “Livestock: Consumption Trends and Drivers,” in *State of Food and Agriculture 2009*, pp. 9-12.

7. Population

- a. How fast is the global population growing? What’s behind declining fertility rates in the developing world?
- b. Does population growth cause environmental degradation?

Readings:

*Sachs, Chapter 7, “Global Population Dynamics,” Chapter 8, “Completing the Demographic Transition.”

*Skim: S. Emmott, “Humans: The Real Threat to Life on Earth,” *The Guardian*, June 29, 2013 and A. Simms, “We Keep Moaning about Population but Ignore Consumption Habits,” July 3, 2013.

* Skim: C. Gorney, “Machisma,” *National Geographic Magazine*, September 2011.

Further Resources:

- °“Only and Lonely: China’s Population” *Economist* July 21, 2011
- °D. Bloom, “7 Billion and Counting,” *Science*, 2011, Vol. 333: 562-569.
- °UN, Population Division, “Executive Summary,” *World Population Prospects 2012 Revision*, UN 2013.

8. Agriculture and Food Security

- Can we end hunger and malnutrition? Is trade helpful or is agribusiness part of the problem?
- How does food (and fuel) cultivation threaten the environment? Can organic, non-GMO crops feed the world?

Readings:

- *H. Godfray et al., “Food Security: The Challenge of Feeding 9 Billion People,” *Science*, 327, 2010.
- * “The Miracle of the Cerrado,” *The Economist*, August 26, 2010.
- * Skim: H.W. Sinn, Chapter 3, “Table or Tank?” *The Green Paradox*, MIT Press, 2012, pp. 91-117.

Further Resources:

- ° The Guardian blog: “Biofuels: Fuelling a Balanced Debate,” July 29, 2013. <http://www.theguardian.com/global-development-professionals-network/2013/jul/29/biofuels-food-security-livelihoods?commentpage=1>
- ° FAO, *The State of Food Insecurity in the World 2012*, United Nations, 2012.
- ° FAO, *Biofuels and Food Security*, HLPE Report, June 2013.
- ° “Fertilized World,” *National Geographic*, June 2013.
- ° WASSAN, *SRI Newsletter*, March 2010, esp. pp. 2-8, <http://www.wassan.org/sri/default.htm>
- ° “Golden Rice: A Life Saver,” *New York Times*, August 24, 2013.
- ° Pesticide Action Network, “Pesticides 101” and “Myths about Pesticides” <http://www.pesticideinfo.org>
- ° I.A.T.P. blogs on agriculture and the environment, www.iatp.org
- ° C. Hrabir, “Understanding CAFOs and their Impact on Communities,” National Assoc. of Local Boards of Health, 2010.

9. Access to Water and Sanitation

- What are the public health implications of urban access to water and sanitation?
- Is there enough water to serve farmers, industry and cities? Is the problem overuse or lack of infrastructure?
- Does privatization and pricing ensure more rational allocations between users? Or make matters worse?

Readings:

- *Sachs, Chapter 5, “Securing Our Water Needs.”
- *N. Stauffer, “Large-Scale Irrigation: Understanding Energy-Water-Food Connections,” *Energy Futures*, MITEI, Spring 2013.

Further Resources:

- ° UNESCO, “Evolution of Water Use,” Ch. 7, *Water in a Changing World*, UN, pp. 96-126 and the 2012 report, *Managing Water Under Uncertainty and Risk*.
- ° S. Grant et al., “Taking the Waste out of Wastewater,” *Science*, Aug 10, 2012.
- ° UNICEF/WHO, *Progress on Drinking Water and Sanitation: 2012 Update*.
- ° UN WASH, “Diarrhea: Why Children Are Still Dying and What can Be Done,” 2009.
- ° Budds, J. & G. McGranahan (2003) “Are the debates on water privatization missing the point? Experiences from Africa, Asia and Latin America” *Environment and Urbanization* 15: 87-113.

10. Minerals and Non-renewable Resources

- Why don’t mineral-rich countries get rich? How do mineral revenues undermine development?
- Can mining be done in a manner that is environmentally benign?
- Why is small scale mining so devastating to local and global ecosystems?

Readings:

- *“The Paradox of Plenty,” *The Economist*, December 20, 2005.
- *B. Larmer, “The Real Cost of Gold,” *National Geographic*, January 2009

Further Resources:

- “The Cost of Gold,” *New York Times*, print and webcast, October 25, 2005.
- Earthworks, Dirty Metals tab, “Dirty Gold’s Impacts,” and “Troubled Waters,” www.nodirtygold.org.
- B. Reck and T. Graedel, “Challenges in Metal Recycling,” *Science*, Aug 10, 2012.
- “Does Mining Benefit Africa?” *BBC News* videos, 2011, and “Diamonds: Does the Kimberley Process Work?” June 28, 2010.
- S. Lynch, “Federal Judge Upholds SEC’s Conflict Minerals Rule,” Reuters, July 24, 2013.
- G. Harris, “Children Toil in India’s Mines Despite the Legal Ban,” *New York Times*, February 5, 2013.
- “Small Scale Mines,” link to various papers at <http://www.minesandcommunities.org/>.

11. Recycling, Municipal Waste and E-waste

- a. Who deals with our trash? With what consequences for health and the environment?
- b. Do recycling mandates solve the problem?
- c. Are international protocols effective in stopping illegal dumping of waste?

Readings:

- *J. Puckett, “Away is a Place,” and BAN, “Five Fundamental Flaws, A Concise Critique of the R2:2013 Standard,” Basel Action Network, www.ban.org, also see Photo Gallery and Toxic Trade News.

Further Resources:

- J. Caravanos et al., “Assessing Worker and Environmental Chemical Exposure Risks at an e-Waste recycling and Disposal Site in Accra, Ghana,” *Blacksmith Institute Journal of Health & Pollution*, February 2011
- D. Pellow, “Electronic Waste: The ‘Clean Industry’ Exports Its Trash,” *Resisting Global Toxics*, 2007.
- E. Rosenthal, “Lead From Old U.S. Batteries Sent to Mexico Raises Risks,” *New York Times*, Dec. 9, 2011.
- UN Habitat, *Solid Waste Management in the Worlds’ Cities*, 2010.
- A. Counter, “Village of the Black Teeth,” *Boston Globe*, July 30, 2007.
- R. Parishwad, “Manufacturers Targeted by India’s E-waste Laws,” *Chemistry World*, July 13, 2011.

12. Forests and Biodiversity

- a. What is a forest worth? Private and public good benefits
- b. Do conservation efforts and natural protected areas interfere with human rights?
- c. How can international efforts like CITES and REDD+ protect biodiversity?

Readings:

- *Sachs, Chapter 6, “A Home for All Species.”
- Three contrasting cases:*
- *“Indonesia’s Forests and REDD: Palming Off,” *The Economist*, December 6, 2012
- *“In Gabon, The Lure of Ivory is Hard for Many to Resist,” *New York Times*, December 26, 2012.
- *“To Save Wildlife, Kenyans Take Up Arms,” *New York Times*, December 29, 2012.

Further Resources:

- Chapter 10, “Sustainability: Externalities, Valuation, and Time Externalities,” in K. Rogers et al. (eds.), *An Introduction to Sustainable Development*, pp. 277-300.
- *The Economist*, “Special Report on Forests,” September 23, 2010.
- Mark Dowie, “Conservation Refugees,” in *Orion*, November/December 2005 even better, his book, *Conservation Refugees*, MIT Press, 2009.
- UN REDD+ website, FAQs, <http://www.un-redd.org/FAQs/tabid/586/Default.aspx> and “REDD+: Who’s Counting?,” www.Ecosystemmarketplace.com, July 2013.
- NASA, “Carbon Agreement that Would Rely on Landsat Data,” NASA newsletter, 2013.
- C. Woodcock, “Monitoring Large Areas for Forest Change Using Landsat,” *Remote Sensing*, April 2001.
- UN CITES website, www.cites.org
- USAID, “Tropical Forest Conservation Act Debt Treatment Options,” http://transition.usaid.gov/our_work/environment/forestry/debt_mechs.html
- F.A.O., Global Forest Resources Assessment,” 2010, <http://www.fao.org/forestry/fra/fra2010/en/>.

13. Fish and Ocean Governance

- a. How can developing countries prevent overfishing?
- b. Can community management and tradable quotas support sustainable harvest rates?
- c. Do international trade rules interfere with national efforts to protect marine resources?

Readings:

*E. Ostrom, "The Challenge of Common Pool Resources," *Environment*, July/August 2008.

Further Resources:

- WTO, "Mexico vs. US: Tuna-Dolphin" and "EU vs. US: Son-of Tuna - Dolphin," http://www.wto.org/english/tratop_e/envir_e/edis05_e.htm
- E. Kolbert, "The Scales Fall: Is There Hope for our Overfished Oceans?" *New Yorker*, Aug 2, 2010.
- P. Greenberg, "Tuna's End," *New York Times*, June 27, 2010 based on *Four Fish: the Future of the Last Wild Food*, Penguin Press, 2010.
- R. Bregazzi, "Mind the Gap: An Analysis of the Gap between Mediterranean Bluefin Quotas and International Trade Figures," Pew Environment Group, October 2011.

14. Air Pollution and Transportation

- a. How does indoor and outdoor air pollution undermine progress on health in developing countries?
- b. Can urban planning and public transit stave off the rise of automobiles?

Readings:

- * G. Timilsina and H. Dulal, "Urban Road Transportation Externalities: Costs and Choice of Policy Instruments," *World Bank Research Observer*, February 2011.
- *W.H.O., "Factsheets on Indoor and Outdoor Air Pollution," www.who.int/topics/air_pollution/en/

Further Resources:

- E. Duflo et al., "Cooking Stoves, Indoor Air Pollution and Respiratory Health in Rural Orissa," *Economic & Political Weekly*, Vol. 43, No. 32, pp. 71-76, 2008.
- Bus Rapid Transit websites: www.BRT.cl, www.brtdata.org and www.TheCityfix.com.
- E. Rosenthal, "Buses May Aid Climate Battle in Poor Cities," *New York Times*, July 10, 2009.
- R. Kaenzig et al., "Africa's First Bus Rapid Transit System," *Transportation Research Record*, Vol, 2193, 2010, pp. 1-8.
- A. Petherick, "Mexico City: The City Sized Lab in the Sky," *Nature Climate Change*, August 2013.

15. Energy and Climate Change

- a. Who loses, and how much, if climate predictions are realized?
- b. Can technical fixes avert a climate crisis? Are innovators willing to engage in technology transfer?
- c. What regulatory tools, such as emissions trading and carbon taxes, induce the right behavioral changes?

Readings:

*Sachs, Chapter 4, "Global Solutions to Climate Change."

Further Resources:

- N. Stern, Chapters 3 and 8, *The Global Deal*, Public Affairs Books, 2009.
- World Bank, "Energizing Development without Compromising the Climate," Chapter 4, *World Development Report 2010: Development and Climate Change*, pp. 48-55, 189-229.
- IPCC, "Summary for Policymakers: A Report of Working Group I of the IPCC," UN, 2007 and the new report, due out in September 2013, <http://www.ipcc.ch/>
- Cool fixes like transparent solar panels and flow batteries at <http://mitei.mit.edu/>

USEFUL WEBSITES

Acción (microfinance organization), <http://www.accion.org/Page.aspx?pid=191>

Bank Information Center (monitors projects and policies of World Bank, IMF, and other international organizations), <http://www.bicusa.org/en/index.aspx>

Basel Action Network, <http://www.ban.org>

Brookings Institute (for current news on global development), <http://www.brookings.edu/global.aspx>

Climate Change Collection, http://www.eoearth.org/article/Climate_Change_%28collection%29

Climate-l.org, <http://climate-l.org/>

C40 climate leadership, www.c40.org

Earth Portal, <http://www.earthportal.org/news/>

EarthTrends Environmental Information, put out by World Resources Institute, <http://earthtrends.wri.org/index.php>

Encyclopedia of the Earth, <http://www.eoearth.org> .

FAOSTAT (Food and Agriculture Organization of the United Nations Statistics), <http://faostat.fao.org/site/291/default.aspx>

Global Environmental Outlook, <http://www.unep.org/Geo2000/english/index.htm>

International Energy Association (IEA) Statistics, <http://www.iea.org/Textbase/stats/index.asp>

International Institute for Sustainable Development, <http://www.iisd.org>

Mongabay Rainforest, www.mongabay.com

Nature Conservancy, <http://www.nature.org>

Oxfam, <http://www.oxfam.org>

Pesticide Action Network, <http://www.panna.org>

Planet Ark, <http://www.planetark.com>

Resources for the Future, <http://www.rff.org>

World Bank, World Development Indicators Online, <http://devdata.worldbank.org/data-query/>

World Energy Outlook, IEA, <http://www.worldenergyoutlook.org/>

World Resource Institute, <http://www.wri.org>

Worldwatch Institute Reports, <http://www.worldwatch.org/taxonomy/term/40>

UN Indicators, <http://unstats.un.org/unsd/ENVIRONMENT/qindicators.htm>

UN Environment Program (UNEP), www.unep.org

UN Development Program (UNDP), www.undp.org

Yale Environment 360, <http://e360.yale.edu/>

TENTATIVE CALENDAR

N.B. Problem set due dates may change; this calendar is intended to provide a general sense of what's coming.

TUESDAY

THURSDAY

DISCUSSION SECTION

Sept 3 rd Defining Sustainable Development	Sept 5 th Governance	Movie: Where Have all the Fish Gone?
Sept 10 th Professor Les Kaufman on Mekong River Dams and begin Setting Priorities: Valuing Sustainable Development	Sept 12 th Setting Priorities: Valuing Sustainable Development PS PDV due 9/19	Mekong Background discussion and Group Project Assignments
Sept 17 th Development: Models, Definitions and Measurement PS GDP due 9/24	Sept 19 th Is Development Compatible with Sustainability? PS SS and DD due 9/26	Preliminary Reports on Mekong Projects
Sept 24 th Population PS Population IPAT due 10/ 1	Sept 26 th Affluence and Consumerism	Mekong Project Peer Discussion and Test Review
Oct 1 st EXAM	Oct 3 rd Agriculture: Hunger and Trade	Mekong Project Peer Discussion and Test Review
Oct 8 th Mekong project reports and time permitting, Agriculture	Oct 10 th Agriculture: Ecosystem Impacts PS Agriculture due 10/17	Mekong Projects Due October 8 Discussion of Biofuels and GMOs
Oct 15 th Follow a Monday Schedule.	Oct 17 th Water and sanitation PS Water due 10/24	Mining posters
Oct 22 nd Water and sanitation	Oct 24 th Minerals and Non-renewable Resources PS Mining due 10/31	Mining posters due (Wed, Fri sections)
Oct 29 th Minerals and Non-renewable Resources	Oct 31 st Minerals and Non-renewable Resources	Mining posters due (Tues)and Exam Review (Wed, Fri)
Nov 5 th EXAM	Nov 7 th Recycling and E-waste	Review (Tuesday) No section Wed, Fri
Nov 12 th Forests and Biodiversity	Nov 14 th Forests and Biodiversity PS Forests and fish due 12/3	REDD and Landsat introduction
Nov 19 th Fish and Ocean Governance	Nov 21 st Air Pollution	REDD and governance
Nov 26 th Air Pollution and Urban Transportation	Nov 28 th Thanksgiving Break	No Section meeting
Dec 3 rd Energy and Climate Change PS Air pollution and Energy due 12/10	Dec 5 th Energy and Climate Change	Climate Change game
Dec 10 th Climate Change and Review	FINAL EXAM: Check the Registrar's website in late September	Review