

Chapter 10

The Environment and Development

■ Key Concepts

Section 10.1 discusses seven basic issues related to the environment and economic development. Environmental issues are closely connected with many of the topics discussed in previous chapters.

- Economics and the environment: The issues inherent in considering the environment while analyzing development are introduced. It is important to recognize that environmental costs affect development even if they are excluded from traditional indicators of economic development.
- Sustainable development and environmental accounting: The concept of sustainable development is introduced, and defined broadly as when the needs of the present generation are met without compromising the needs of future generations. Environmental accounting is a method of incorporating environmental decay into national income accounts.
- Population, resources, and the environment: The consequences for the environment of rapidly growing populations are mentioned, some of which were discussed in Chapter 6.
- Poverty and the environment: Environmental destruction is frequently a symptom of poverty.
- Growth versus the environment: It is possible that there may be a tradeoff between the two and the Environmental Kuznets Curve is introduced.
- Rural development and the environment: Sustainable methods of farming are mentioned.
- Urban development and the environment: Urban pollution problems are discussed.
- The global environment and economy: Many environmental problems are global in nature, and hence present special challenges.
- Nature and Pace of Greenhouse gas induced climate change: Both developed and developing countries will need to play an important role in limiting global warming particularly as its pace hastens.

The next section highlights the promises and the limitations of natural resource based livelihoods such as agriculture, fishing and forestry.

Persistent rural poverty is shown to be the root cause of many of the environmental problems in less developed countries, which include deforestation, soil erosion, and ground water contamination. The principal health and productivity consequences of environmental damage are summarized.

Two hypothetical examples of two villages, one in Africa and one in South America, are presented to clarify the relationship between rural poverty and environmental degradation.

Section 10.2 on Global warming and Climate change examines the scope of the problem of climate change on developing nations, particularly the poor, and identifies the most vulnerable zones across the world: Sub-Saharan Africa (drought), Asian megadeltas (flooding), small islands and the arctic. In addition, weather related problems in South Asia and Latin America are also discussed. The cost of these direct and indirect environmental catastrophes will be primarily borne by the poor as they directly depend on environmental resources for their livelihood and are impacted by adverse health conditions and poor/inadequate housing and sanitation that can be affected by climate change. Strategies to mitigate the progress of global warming and policy adaptations to help the “poor” are also discussed. Box 10.1 presents ways that African farmers have adapted to climate change in order to continue their way of living. Section 10.3 on economic models of the environment includes a definition of the optimal allocation of resources, and discusses different types of market failure that can lead to inefficient resource allocation. Topics include the characteristics of perfect property rights markets, externality and common property resource problems, and public good and free rider problems. Some limitations of each of these frameworks of analysis, particularly for specific developing country situations, are mentioned.

Section 10.4 on urban development and the environment contains some interesting descriptions of the severity of urban pollution in developing countries and its very severe health impacts. An analysis of some of the different types of pollution control policies is presented. The negative impact of severe environmental degradation on economic growth is described and it is suggested that in many cases pollution control can have a positive effect on growth and development.

Section 10.5 looks at the costs of rainforest destruction. Land cleared is relatively infertile and soon abandoned. It also presents concerns in that rainforests absorb carbon dioxide from the atmosphere.

Section 10.6 discusses options for policy reform. These are divided into what developing and developed countries can do. The developing countries can practice more efficient resource pricing, encourage community involvement, clarifying property rights and resource ownership, improving conditions for the poor, raising the economic status of women, and adopting policies that both lower current industrial pollution and adapt to future climate change. The developed countries can alter their trade practices, offer debt relief including debt-for-nature swaps, increase aid levels, assist with research and development on clean technologies appropriate for developing countries, curtail their own emissions, and reduce demand for environmentally harmful products.

The chapter concludes with a case study on Haiti and the Dominican Republic that examines their economic development efforts and indicators and their treatment of the environment.

■ Discussion Topics

- Select some specific environmental problems in one or two developing countries and discuss the pros and cons of possible solutions in class. You may choose to have students do some background reading and/or research first.

Discuss possible alternative measures of the quality of life. What indicators are important?

- Discuss the role and responsibilities of Developing and Developed countries with respect to climate change and its impact on the economy and the lives of people.

■ Sample Questions

Short Answer

1. Discuss the relationship between poverty, growth and the environment.
Answer: Discussed in the chapter.
2. Recurrent flooding in Bangladesh is causing the land area of the country to shrink. In what ways might environmental mismanagement play a role in explaining this phenomenon?
Answer: Depends on lecture coverage.
3. Why might it be in the direct economic interest of the United States to finance rain forest conservation programs in the Amazon?
Answer: Answers may include global warming effects, which may lower the productivity of the American Midwest, and loss of biodiversity for future medicines.
4. What is the relationship between debt, falling commodity prices and rainforest degradation?
Answer: Discussed in the chapter.
5. Provide a short definition of sustainable development.
Answer: Meeting the needs of the present generation without compromising the needs of future generations.
6. Describe the basic issues involved in setting up a system of national accounts that includes the value of environmental capital and its loss.
Answer: Detailed in the text.
7. In what way is better protection of the environment a possible result of successful development?
Answer: Successful development brings the poor above the poverty line; the poorest 1 billion people do a great deal of environmental damage, for example, cutting and clearing trees, using biomass fuels, etc., as detailed in the chapter.
8. Describe the effect of the loss of biodiversity on productivity and health.
Answer: Reduced adaptability of ecosystem; loss of new drugs.
9. Explain what developed countries can do to respond constructively to the environmental damage being done in developing countries.
Answer: Discussed at the end of the chapter; this may also depend on lecture coverage.
10. Describe the costs of deforestation.
Answer: Flooding, leading to disease and death; loss of sustainable logging potential, erosion potential, watershed stability, and carbon sequestration.
11. Describe the costs of water pollution.
Answer: Disease and death, poor household hygiene, declining fisheries, time and costs of providing safe water, aquifer depletion and compaction, water shortage, and increased costs of water for industrial use.

12. Compare and contrast the path of economic development for Haiti and the Dominican Republic? How did differences in earlier institutions and the policies pursued by the two nations play a role in determining the development related outcomes?

Answer: Detailed in the case study at the end of chapter. (You might also refer to the following:

<http://www.time.com/time/world/article/0,8599,1953959,00.html>)

13. How will global warming and climate change adversely impact the “poor,” particularly in developing nations?

Answer: The poor are heavily dependent on natural resources, particularly rain fed agriculture. The infrastructure they live in is also poorly constructed causing the impact of global warming and climate change on their lives and livelihoods to be more severe.

14. What are some of the strategies that have been proposed to mitigate global warming at a macro level?

Answer: These include, capping emissions, development of carbon markets, taxes on carbon, and subsidies for green technologies. See text.

■ Multiple Choice

1. A major cause of environmental degradation in developing countries is

- (a) population growth.
- (b) rural poverty.
- (c) rapid urbanization.
- (d) all of the above.

Answer: D

2. Sustainable development means

- (a) emphasizing the role of the market.
- (b) emphasizing the role of government.
- (c) meeting the present generation’s needs without compromising the needs of future generations.
- (d) maintaining output growth at a constant rate.

Answer: C

3. Which of the following environmental problems are largely caused by persistent poverty?

- (a) Deforestation.
- (b) Soil erosion.
- (c) Ground water contamination.
- (d) All of the above.

Answer: D

4. Which of the following conditions is violated if there is a free rider problem?

- (a) universality
- (b) exclusivity
- (c) transferability
- (d) enforceability

Answer: B

5. A major cause of environmental degradation in developing countries is

- (a) debt for nature swaps.
- (b) poverty.
- (c) a lack of public transportation.

(d) land reform.

Answer: B

6. The “cost of rainforest preservation” can be lowered for developing countries by

- (a) the development of alternative rainforest products.
- (b) research on agriculture in rainforest soils.
- (c) encouraging rainforest settlement of the poor.
- (d) subsidies for activities like cattle raising.

Answer: A

7. Debt-for-nature swaps are most generally

- (a) beneficial only to the developing country.
- (b) beneficial only to the developed country.
- (c) beneficial only to the bank which can write off the debt.
- (d) beneficial to all countries.

Answer: D

8. A resource that is publicly owned and allocated under a system of unrestricted access is known as

- (a) a socialist resource.
- (b) a collective resource.
- (c) a common property resource.
- (d) a transferable resource.

Answer: C

9. The portion of a country’s overall assets that is directly related to the environment, such as forests and soil quality, is known as

- (a) environmental capital.
- (b) debt for nature swaps.
- (c) protected areas.
- (d) common property assets.

Answer: A

10. The free rider problem is a situation in which

- (a) effluents such as CFCs combine with ozone and decrease concentrations of that protective chemical.
- (b) one agent secures benefits that others pay for.
- (c) there are excessive subsidies given to polluting buses or other forms of mass transit.
- (d) perfect property rights exist.

Answer: B

11. International resources shared by all countries such as oceans and air are known as
- (a) global commons.
 - (b) free rider problems.
 - (c) nonrenewable resources.
 - (d) cooperative resources.

Answer: A

12. The annual income that can be consumed without diminishing the total capital assets of a nation is
- (a) purchasing power parity income.
 - (b) sustainable national income.
 - (c) environmental capital stock.
 - (d) per capita income.

Answer: B

13. An example of a biomass fuel is
- (a) coal.
 - (b) nuclear fuel.
 - (c) manure.
 - (d) oil.

Answer: C

14. Which of the following conditions does not characterize perfect property rights markets?
- (a) universality
 - (b) exclusivity
 - (c) sustainability.
 - (d) enforceability.

Answer: C

15. In what way do developing countries make the largest contribution to the global concentrations of greenhouse gases?
- (a) vehicle emissions.
 - (b) deforestation.
 - (c) mining.
 - (d) irrigation.

Answer: B