

Environmental Economics

Review:

- Terminology (ES 1 packet)
- What is an economic system?
- What are **economic goods** and **services** and how are they provided?
- What type of economic system in the U.S.?
- How do we measure economic growth?



Environmental Economics

Economics, Environment & Sustainability Chapter 26 (Miller text pg. 690)



- Natural resources or **natural capital** (air, water, soil, wildlife, energy, waste disposal, pest control, recycling services, water purification, etc.)
- Economic systems change natural resources (capital) into “**goods**” (buildings, food, computers, highways) and “**services**” (education, health care, transit systems)

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Conventional economists - acknowledge that our current economic system is dependent on natural resources (capital)

- They believe there is **infinite potential** for developing new technologies and ideas for providing goods & services by using less energy and matter, finding substitutes for scarce resources & reducing pollution by pollution control
- Page 694

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- **Ecological economists** - question validity of finding unlimited substitutes for scarce resources and the ability of the Earth's natural systems to support continued significant increases in certain forms of economic growth
 - They argue that there are no substitutes for many natural resources. . . Such as air, water, fertile soil, species, wetlands, old growth forests, riparian corridors. . . .
 - And some forms of economic growth deplete and degrade the quantity and quality of this irreplaceable natural capital

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- Conventional view of economic activity (Figure 26-6) - pg. 694
- Ecological view of economic activity (Figure 26-7)
- Comparison of unsustainable economic growth & environmentally sustainable economic development - Figure 26-8
- Internal & external costs - Pgs. 697-698



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Discussion - (Journal #8)

- Should the primary goal of our current economic system be to maximize economic growth by producing and consuming more and more economic goods?
 - Do you agree with that goal? Explain.
 - What are the limitations or scarcity?
 - Is our current system working?



Environmental Economics

- What are the impacts of our current economic system on natural resources?
 - Make a list of the environmental “costs” or impacts of our current economic system! 2 minutes!
- What are some alternatives to our current economic system?
 - Make a list of at least one alternative approach to our current economic system (in other words. . . How do we internalize those “external” costs of doing business into our current economic system?)
 - Also, what is the “value”, if any, of doing so?

Environmental Economics

- What are our “ecological services”? Make a list of at least 4 services provided by nature!
 - In other words. . . how does nature work?
 - Can we utilize examples from natural systems within our economic systems?
- What is Natural Capital?
 - Necessary and valuable resources & ecological processes that we rely on to produce food, products & services (pg. 690 - text)

Environmental Economics

- **Discussion:** Let's start with a particular manufacturing process. . . production of computers



- Make a list of the manufacturing processes possibly used in the production of a computer! Any experts in our group?
- How could we modify or “change” at least one manufacturing process in the production of a computer to “mimic” natural processes? Give one example.

Economics & Ecology

- Now let's bring these two concepts together, if possible, economics & ecology!
- **Discussion:** Production of computers - how can we utilize a natural "systems" approach?
 - Make a list of some "advantages" to rethinking our current manufacturing processes with computers?
 - How will this affect our current populace?
 - How will this affect future generations?
 - How could this affect wildlife? Ecosystems?

Economics & Ecology

- Let's explore these "alternatives" to our current system: (Miller's text pg. 710):
 - Producing less waste and pollution?
 - Decreasing consumption?
 - Redesigning manufacturing processes to use less material and energy? Produce less waste/pollution?
 - Develop products that are easy to repair, reuse, remanufacture, compost or recycle?
 - Design products to last longer?
- How about cleaner production & selling services instead of producing things?

Economics & Ecology

- Cleaner production or "industrial ecology":
 - Redesign ALL industrial products and processes to "mimic" nature's processes to:
 - Closed system of cyclical material flow
 - Network in which wastes from one manufacturer become raw materials for another
 - Companies "take back" packaging & used products from consumers for reuse, recycling, repair or remanufacturing
 - Sunset businesses vs Eco-friendly businesses (pg. 711)
 - Mimic natural biogeochemical cycles. . .and interact in complex "resource exchange webs"
 - Industrial ecosystem in Denmark (mimics a food web by having wastes of one business become raw materials for another business - pg 532)

Real examples of leadership in industry!

- Miller text - pgs 531-540
- Minnesota Mining & Manufacturing Company (3M)
 - Pollution Prevention Pays (3P) Program (pg 532)
- Xerox
 - Mission: to provide document services instead of selling photocopiers (pg 533)
- Interface (Ray Anderson, CEO) (pg 533-534)
 - Leases rather than sells carpet - provides "*warmth services*"
- Carrier (pg 533)
 - World's leading maker of air-conditioning equipment - now sells leases to provide customers with "cooling services"

A few concluding thoughts on Economics

- Is it possible to bring economic & ecological principles together?
 - Yes
 - No
- If so, what will be the challenges ahead?
- Do we have a choice?
- What is our timeline to make this happen?

Ethics -> Politics -> Economics

- We have completed our exploration of ethics, politics and economics
- We have explored "alternatives" to our current ways of thinking
- Three more things to consider in this discussion:
 1. Human population
 2. Consumption
 3. Worldview



Environmental Issues

- Current State of our Planet or how do we measure up?
- Formula for Sustainability? Or Scarcity?
 - Ethics + Politics+ Economics + Ecological Integrity = ?
- **Discussion:** Compare and contrast the Environmental Movement & the Anti-Environmental (Wise Use) Movement. List 3 objectives of each group. List 3 differences of each group.
 - Whom Should We Believe?

It will take some leadership!

“A new industrial pattern, and thus a new environmentalism, is emerging. Human survival and life quality depend on our willingness to make and pay for the changes needed to shift to this cleaner form of industrial production”

Peter Montague

Director, Environmental Research Foundation in Washington, D.C.

Time to review!

- What is an economy?
- List examples of natural capital?
- What do conventional economists believe?
- What do ecological economists believe?
- Is the GDP a good measure of the “health” of people and the environment? Why or why not?
- How can we internalize “external” costs?
- How can we make working with the Earth profitable?
- Compare the Sunset businesses with Eco-friendly businesses

Conclusion

When it is asked how much it will cost to protect the environment, one more question should be asked: How much will it cost our civilization if we do not?

Gaylord Nelson


