Outline

- Economics defined
- Why economics is key to sustainable development
- Weak and strong sustainability
- Moving to sustainable macroeconomics
- Moving to sustainable microeconomics
- Public and private approaches to implement economics for sustainable development
- A Columbia River illustration
- Key lessons for sustainability economics
Economics defined

“(Social) science which studies human behaviour as a relationship between ends and scarce means which have alternative uses (Robbins).”

Microeconomics – how people spend and invest their time, money, and other resources to gain satisfaction; how firms decide which products to make and how much, the inputs and production methods to use, and their marketing strategies.

Macroeconomics – study of the national economy as a whole, e.g., growth, inflation, unemployment, and national policies relating to these issues.

As with ecology, sustainability requires micro and macro scales because we must understand economic behavior at both levels.
Clarifying ‘free markets’

Markets are manmade institutions to achieve social objectives, governed by a nation’s political and legal systems.

That is, the economic system lies within (i.e., depends on) our social system.

So a ‘free market’ really means a market ‘free’ of ‘excessive’ government intervention.

Moreover, our social and economic systems depend fundamentally on the condition of our natural environment, e.g., climate change.
Why economics is key to SD

- Most people display strong economic motivations, e.g., they like more than less.
- Most developed countries use a ‘mixed capitalism’ system that relies on markets with government intervention for social and environmental objectives.
- Well functioning markets cost-effectively provide valuable information to consumers, investors, suppliers, and producers.
Why economics is key to SD

- So, we must find ways that our economic system will achieve progress on SD, rather than work against it.
- Unless firms are profitable, people will not have jobs and pay taxes to government for performing essential nonmarket functions, e.g., environmental protection.
- Long run economic growth is integral to resolving many equity problems, especially in developing countries, such as low standards of living, e.g., China.
Essential features of an economic system that promotes SD

- Competitive markets to minimize waste
- ?
- ?
- ?
- ?
- ?
- ?
Economic theories of SD

Economists view the challenge of sustainable development as building stocks of natural, manmade, human and other (social) capital to give future generations the opportunity to have at least the same standard of living (opportunity) as we do today – This is an investment problem!

Western economists split into two camps on sustainability – ‘weak’ and ‘strong’ versions that depend on differing assumptions about the substitutability or ‘replaceability’ of natural capital with man-made, human, and social capital.
Economic theories of SD

- **Weak sustainability** assumes there is essentially no difference between natural capital and the other forms. Thus, the same use/depletion rules should apply to both. Maintaining and enhancing the total stock of capital alone is sufficient to attain sustainability.
Environmental Kuznets Curve or ‘Growing our way to SD’

As per capita income grows, total pollution first increases at an increasing rate, then at a decreasing rate, then levels off, and then decreases at some turning point.

Reasons
– Gradual changes in economic structure, e.g., less manufacturing and more service industries
Environmental Kuznets Curve

Reasons
- Economies of scale
- As income increases, the demand for environmental quality also increases

Limitations
- Lacks total system approach
- Applies to local but not global pollution
- Implies lower income countries must experience higher pollution stages first.
Economic theories of SD cont’d

- Strong sustainability argues that man-made/physical and human capital cannot substitute for all forms of natural capital. Maintaining or increasing the total capital stock over time also requires keeping certain non-substitutable natural capital at or above critical levels over time. Can you give an example of ‘critical’ natural capital?
Conventional macroeconomics

Gross Domestic Product (GDP) = Consumption + Investment + Govt Expenditures + Net Exports

- counts ‘nonmarket’ social and environmental costs, e.g., crime avoidance and pollution control expenses, as benefits
- omits ‘nonmarket’ social & environmental benefits, e.g., family childcare & forest pollution filtering
- omits depreciation of all forms of natural capital, e.g., ozone layer
- omits human/social capital
- omits value of technology discoveries
Reforming GDP

Net National Welfare (NNW*) = GDP
- depreciation on manmade capital
- depreciation on using natural capital
- externality (pollution) costs of growth
+ non-market environmental benefits
+ non-market social benefits
+ change in social/human capital
+ future value of technology improvements
Toward sustainable macroeconomics

- ‘Critical’ natural capital stocks, e.g., gene pools for ecosystem resilience, for which manmade and social capital cannot readily substitute are identified and preserved.
- Precautionary principle of ‘no depletion’ invoked to protect critical natural capital stocks, unless acceptable substitutes are discovered.
- Critical ecosystem cycles, e.g., carbon, are maintained.
- Same actions are applied to ‘critical’ social capital.
Sustainable macroeconomics

F Intragenerational and intergenerational inequities are addressed through open democratic processes.

F The interest (discount) rate for evaluating investments that provide future goods and services, e.g., natural capital, should be the growth rate of NNW*, approximately 2-3%, not the market interest rate.

F For example, if the discount rate is 3 % instead of 10%, investments that provide longer term net benefits will be more attractive.
Current microeconomics

- Government policies subsidize resource extraction.
- Firm, consumer and investor decisions neglect ‘nonmarket’ environmental and social effects, unless public policies, e.g., pollution regulations, or other pressures, e.g., NGOs force them in.
- As a society, we underinvest in these social and natural capital assets, such as forests and wetlands for air and water pollution control.
- Individuals and firms address intragenerational and intergenerational inequities based on their personal values and external pressures.
Sustainable microeconomics

- Firms & individuals make decisions based on prices that reflect full social accounting and interest rates that reflect NNW, while critical capital stocks are protected and adjustments for equity have been made.
- Government policy failures are corrected, e.g., eliminate fossil fuel power subsidies.
- Public and private investment decisions are based on the social discount rate, i.e., growth rate of NNW.
Public approaches to foster a more sustainable economy

- Common law remedies
- Regulations
- Incentive (subsidy) programs
- Emissions trading schemes, ‘cap & trade’
- University education and research programs
- Public-private collaborations to address ‘missing markets,’ e.g., ecosystem services
- Etc?
Motivations for firms to adopt more sustainable models

- Reduce cost (waste) and improve productivity
- Mitigate/preempt govt. environmental programs
- Receive financial and/or technical assistance
- Serve emerging green markets more effectively
- Control risks (financial or other)
- Achieve positive relationships with stakeholders
- Manage competitors
- Meet CEO personal or business objectives
Roles for NGO’s

- Educational assistance, e.g., Natural Step
- Certification systems, e.g., Food Alliance, LEED for green buildings, EPEAT for electronic product stewardship, Forest Stewardship Council, Marine Stewardship Council, carbon trading, etc.
- Other?
Columbia River habitat: conventional economics

- Evaluates the economic effects project by project, not as an integrated system.
- Uses market prices that reflect the current income distribution and policy failures.
- Includes some nonmarket values, e.g., boating recreation, but not all.
- Uses market-based discount rate to evaluate power/transport/habitat tradeoffs
- Complies with social and court regulations, e.g., Native American claims
Columbia River habitat: sustainability economics

- Develops systems model of upper and lower Columbia River reaches to evaluate habitat options and linkages
- Determines ‘critical’ habitats that cannot be traded off to maintain system resilience
- Fulfills social (democratic) process requirements
- Satisfies equity constraints
- Includes all market and nonmarket values to max net benefits within ecological and social constraints.
- Uses social discount rate
Economics for Sustainability: Key Lessons

1. Environmental, social and economic systems must work in complementary ways, not at odds.

2. Assure that all stakeholders have a voice in deciding targets for natural, social and other ‘critical’ capital stocks.

3. Reduce or eliminate government policy failures, such as subsidies that promote unsustainable agricultural production methods.
Economics for Sustainability: Key Lessons (cont’d)

4. Assure that prices and costs include non-market environmental and social effects, e.g., global warming pollutants and family child care, to the extent technically and economically feasible.

5. Pursuing sustainability is a continuing process, not an end state.

6. Uncertainty in science and politics pervades the process.

7. ‘Learning by doing’ and adaptive management are necessary.
References


www.rff.org/documents/RFF-DP-02-03.pdf