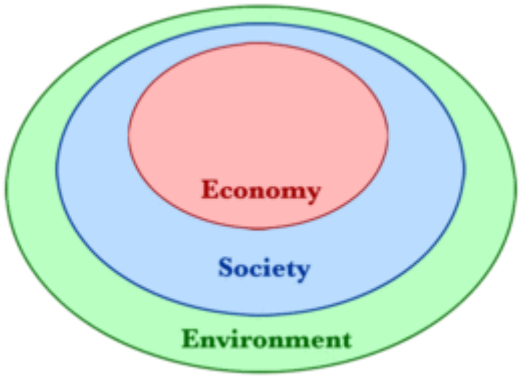
Ecological Economics

Taking ecology into the economy



The three nested systems of sustainability - the economy wholly contained by society, wholly contained by the biophysical environment.

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Ecological concepts applied to the Economy

***Assimilative capacity*:** the capacity of the natural environment to absorb wastes.

Regenerative capacity: the ability of the ecosystem to replace resources that we use in our production systems.

***Renewable resources*:** such as wood or wind energy, are in continuous supply, although the rate at which they can be replenished will vary from resource to resource.

Non-renewable resources: such as iron ore or fossil fuels, are in limited supply within the earth's crust, and thus once they are used up they cannot be replaced.

**Concept Founded by Herman Daly in the late 1980s

Environmental economics studies the relationship between the environment and the economy, while *ecological economics* considers the economy to be a subsystem of the wider ecosystem.

Problems Ecological Economists seek to resolve

i. First, establish the ecological limits of sustainable scale and establish policies that assure that the throughput of the economy stays within these limits.

ii. Second, establish a fair and just distribution of resources using systems of property rights and transfers.

iii. Third, once the scale and distribution problems are solved, market-based mechanisms can be used to allocate resources efficiently.

Most neoclassical economists assume that technological advance will outpace resource scarcity over the long run and that ecological services can also be replaced by new technologies. Ecological economists, on the other hand, assume that resource and *ecological limits are critically important* and are much less confident that technological advances will arise in response to higher prices generated by scarcities. This difference in worldview, however, does not prevent neoclassical and ecological economists from sharing the same pattern of reasoning. (Costanza et al., 1997: 69).

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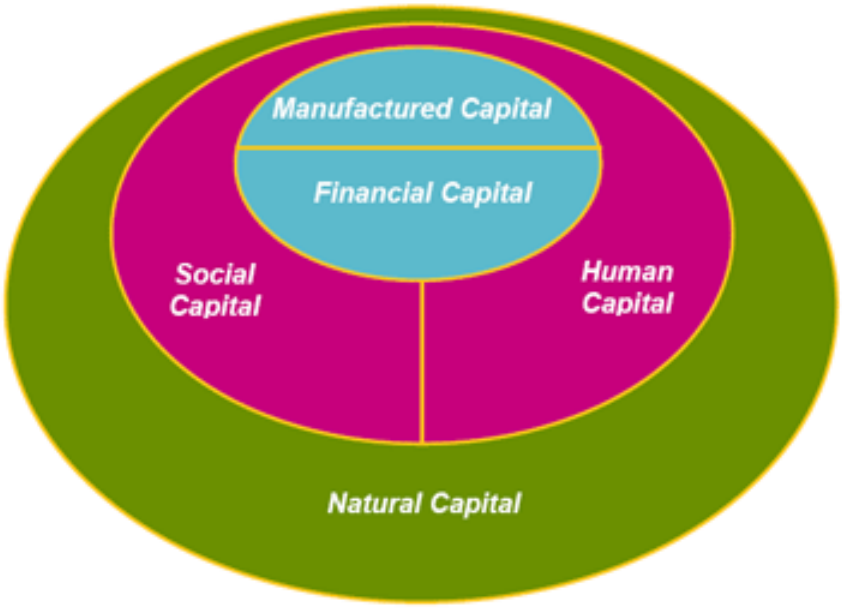
The Vision of Ecological Economics

- The earth as a closed system: limits to material and energy throughputs and wastes.
- A future of material well-being with ourselves and other species while respecting the first point.
- Systems are complex and causal pathways uncertain, hence the need for a precautionary approach.
- Institutions should be proactive and should respond in spite of scientific uncertainties.

Five Capitals Framework



We are facing a sustainability crisis because we're consuming our stocks of natural, human and social capital faster than they are being produced. Unless we control the rate of this consumption, we can't sustain these vital stocks in the long-term.

Behind the notion of capitalism lies the notion of capital – which economists use to describe a stock of anything (physical or virtual) from which anyone can extract a revenue or yield (as in any stock capable of generating a flow). **The Five Capitals Framework** requires a more holistic understanding of all the different stocks of capital on which our wealth depends. Sustainability can only be achieved if these stocks of capital are kept intact or increased over time (Porritt, 2009: 30-1).

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Natural capital

Any stock or flow of energy and material that produces goods and services. It includes:

- **Resources** - renewable and non-renewable materials.
- **Sinks** - that absorb, neutralise or recycle wastes.
- **Processes** - such as climate regulation.

Natural capital is the basis not only of production but of life itself!

Human and social capital

Human Capital consists of people's health, knowledge, skills and motivation. All these things are needed for productive work. Enhancing human capital through education and training is central to a flourishing economy.

Social Capital concerns the institutions that help us maintain and develop human capital in partnership with others; e.g. families, communities, businesses, trade unions, schools, and voluntary organisations.

Manufactured and financial capital

Manufactured Capital comprises material goods or fixed assets which contribute to the production process rather than being the output itself – e.g. tools, machines and buildings.

Financial Capital plays an important role in our economy, enabling the other types of Capital to be owned and traded. But unlike the other types, it has no real value itself but is representative of natural, human, social or manufactured capital; e.g. shares, bonds or banknotes.

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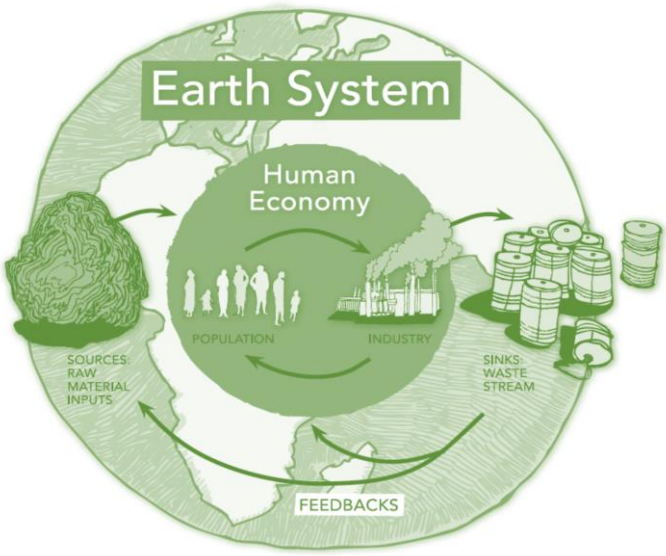

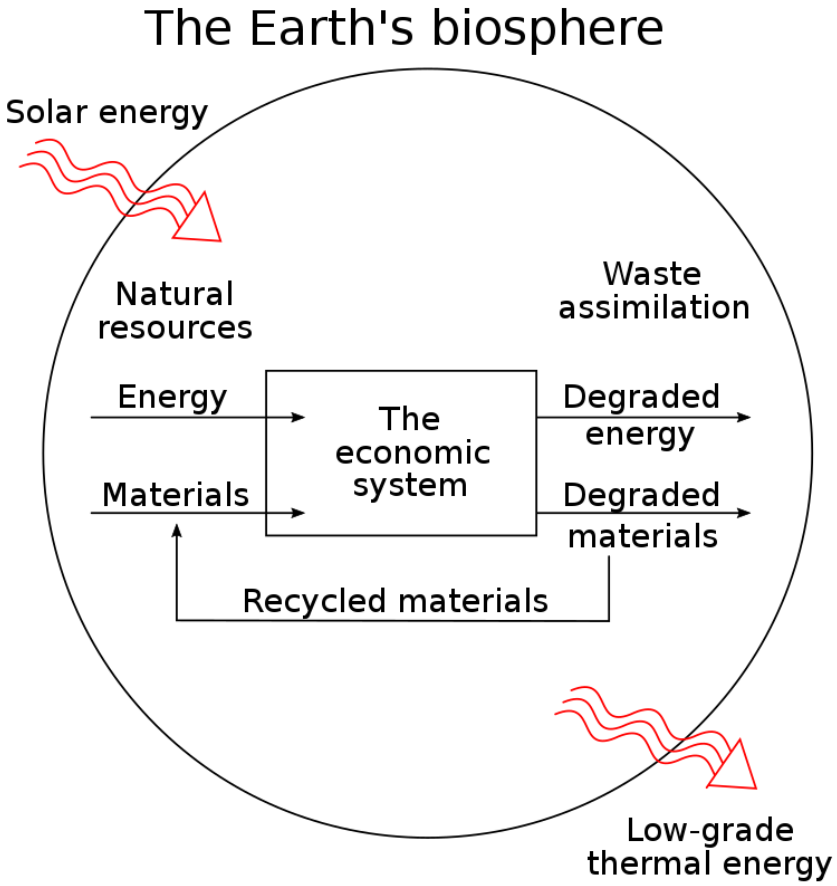

Diagram describing the flow of natural resources through the economy: Valuable resources are procured from nature by the input end of the economy; the resources flow through the economy, being transformed and manufactured into goods along the way; and invaluable waste and pollution eventually accumulate by the output end. Recycling of material resources is possible, but only by using up some energy resources as well as an additional amount of other material resources; and energy resources, in turn, cannot be recycled at all, but are dissipated as waste heat.

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Ecosystem services and their valuation [Wikipedia]

Ecological economists agree that ecosystems produce enormous flows of goods and services to human beings, playing a key role in producing well-being. At the same time, there is intense debate about how and when to place values on these benefits.[67][68]

A study was carried out by Costanza and colleagues[69] to determine the 'value' of the services provided by the environment. This was determined by averaging values obtained from a range of studies conducted in very specific context and then transferring these without regard to that context. Dollar figures were averaged to a per hectare number for different types of ecosystem e.g. wetlands, oceans. A total was then produced which came out at 33 trillion US dollars (1997 values), more than twice the total GDP of the world at the time of the study. This study was criticized by pre-ecological and even some environmental economists – for being inconsistent with assumptions of financial capital valuation – and ecological economists – for being inconsistent with an ecological economics focus on biological and physical indicators.[70]

The whole idea of treating ecosystems as goods and services to be valued in monetary terms remains controversial. A common objection[71][72][73] is that life is precious or priceless, but this demonstrably degrades to it being worthless within cost-benefit analysis and other standard economic methods. Reducing human bodies to financial values is a necessary part of mainstream economics and not always in the direct terms of insurance or wages. One example of this in practice is the value of a statistical life, which is a dollar value assigned to one life used to evaluate the costs of small changes in risk to life–such as exposure to one pollutant.[74] Economics, in principle, assumes that conflict is reduced by agreeing on voluntary contractual relations and prices instead of simply fighting or coercing or tricking others into providing goods or services. In doing so, a provider agrees to surrender time and take bodily risks and other (reputation, financial) risks. Ecosystems are no different from other bodies economically except insofar as they are far less replaceable than typical labour or commodities.

Despite these issues, many ecologists and conservation biologists are pursuing ecosystem valuation. Biodiversity measures in particular appear to be the most promising way to reconcile financial and ecological values, and there are many active efforts in this regard.[75] The growing field of biodiversity finance[76] began to emerge in 2008 in response to many specific proposals such as the Ecuadoran Yasuni proposal[77][78] or similar ones in the Congo. US news outlets treated the stories as a "threat"[79] to "drill a park"[80] reflecting a previously dominant view that NGOs and governments had the primary responsibility to protect ecosystems. However Peter Barnes and other commentators have recently argued that a guardianship/trustee/commons model is far more effective and takes the decisions out of the political realm.

Commodification of other ecological relations as in carbon credit and direct payments to farmers to preserve ecosystem services are likewise examples that enable private parties to play more direct roles protecting biodiversity, but is also controversial in ecological economics.[81] The United Nations Food and Agriculture Organization achieved near-universal agreement in 2008[82] that such payments directly valuing ecosystem preservation and encouraging permaculture were the only practical way out of a food crisis. The holdouts were all English-speaking countries that export GMOs and promote "free trade" agreements that facilitate their own control of the world transport network: The US, UK, Canada and Australia.[83]

https://en.wikipedia.org/wiki/Ecological_economics

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