How ecological economics emerges

In the words of sociologist Ruth Levitas (2013), "the economic shockwaves of 2008 and the ensuing global recessions laid bare the instability of global capitalism and its inability to provide sustainable livelihoods for the world's population"

Unfortunately, this understanding has not yet become clear to most political and business leaders. They are still unable to "connect the dots," to use a popular phrase.

Global economy has put ecosystems and societies into critical distress

dominating economy involves a great deal of violence against people and nature

- gap between rich and poor is increasing
- natural resources are ruthlessly exploited
- Loss of biodiversity and climate change
- As a result nature's rhythm and balance are dramatically disturbed

Fundamental changes in economic theory and practice are required

Need for a new transdisciplinary economics which unites opposites and creates basis for peace in ourselves, between people and between people and nature

Hence: **ECOLOGICAL ECONOMICS**

THE NATURAL CAPITAL CONCEPT

The term 'natural capital' was first used in 1973 by E.F. Schumacher in his book *Small Is Beautiful* and was developed further by Herman Daly, Robert Costanza, and other founders of the science of Ecological Economics, as part of a comprehensive critique of the shortcomings of conventional economics. Natural capital is a concept central to economic assessment ecosystem services valuation which revolves around the idea, that non-human life produces goods and services that are essential to life. Thus, natural capital is essential to the sustainability of the economy.

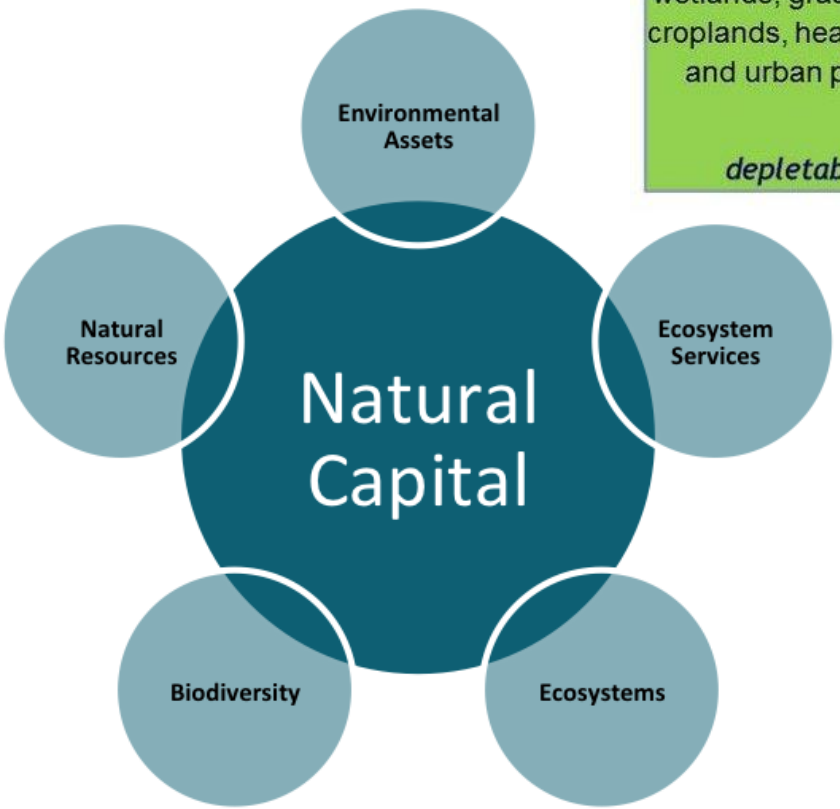
Natural capital is the world's stock of all available natural resources (geological, atmospheric, hydrological and biological resources) that generously provide people with free goods and services, often called ecosystem services.

Elaboration:

Two of these (clean water and fertile soil) underpin our economy and society, and thus make human life possible. It is an extension of the economic notion of capital (resources which enable the production of more resources).

For example, a well-maintained forest or river may provide an indefinitely sustainable flow of new trees or fish, whereas over-use of those resources may lead to a permanent decline in timber availability or fish stocks.

Natural capital also provides people with essential services, like water catchment, erosion control and crop pollination by insects, which in turn ensure the long-term viability of other natural resources. Since the continuous supply of services from the available natural capital assets is dependent upon a healthy, functioning environment, the structure and diversity of habitats and ecosystems are important components of natural capital.



Natural capital

Ecosystem capital:

Ecosystems as assets:

Extent, structure & condition of:

e.g. forests, woodlands, rivers, lakes, oceans, coasts, wetlands, grasslands, croplands, heathlands, and urban parks.

depletable

GENERATING

Ecosystem service flows:

- Provisioning services, e.g. food, fibre and energy
- Regulation & maintenance, e.g. of climate, river flow and pollination
- Cultural services, e.g. recreational and spiritual use of nature

depletable

Abiotic assets:	**Abiotic flows:**
Solar radiation *non-depletable*	Renewable energy, e.g. solar, wind, and hydro *non-depletable*
Minerals, fossil fuels, ozone layer, gravel, etc. *depletable*	Phosphate fertiliser, radiation protection, etc. *depletable*

PRINCIPLES OF ECOLOGICAL ECONOMICS

For a transition to an ecological economics four principles were considered for development of viable societies within resilient nature.

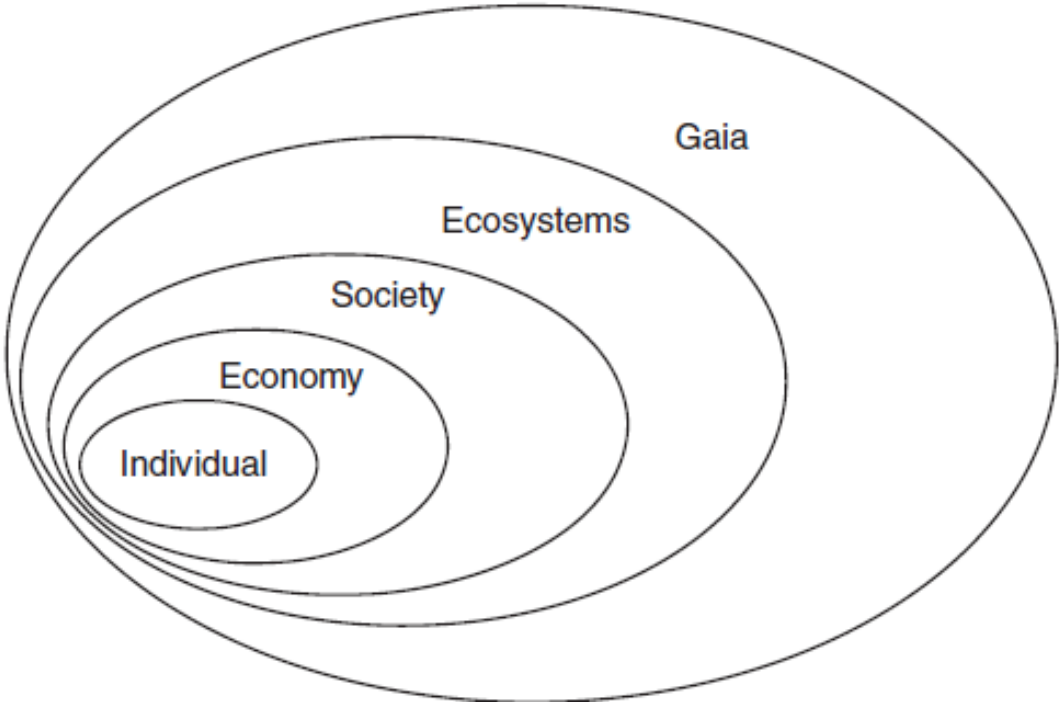
Principle 1: economy as a nested system
Principle 2: economy as networks
Principle 3: economy, as an open system
Principle 4: economy as cognitive interactions – a sense of ethics

Principle 1: economy as a nested system

It implies that nature is superior to the economy, not vice versa. In ecological economics, the economy becomes the servant of nature, not the master of nature. The economic system must be integrated into the organic network of reality – the web of life.

The economy is a living system nested in other living systems – society, culture, politics, nature, and ultimately Gaia, the living Earth. A healthy evolutionary process depends on the harmonious balance between the different systems; no-one dominates the others.

In ecological economics, the economy, interpreted as an integral part of society and nature.



Principle 2: economy as networks

basic pattern of organization of all living systems is the network; and since a network is a particular pattern of connections and relationships, they can meet the environmental and social challenges and addresses through building integrated local and regional networks where creative thinking is combined with practical experimentation.

Principle 3: economy, as an open system

Our systemic principles of life concern two main aspects of living systems: networks and flows. These two perspectives are unified in the concept of metabolism, the central characteristic of life.

Metabolism, as we have mentioned, is defined as the ceaseless flow of energy and matter through a network of chemical reactions, which enables a living organism to continually generate, repair, and perpetuate itself.

For a living economy this means that all economic processes need to be circular in three dimensions.

Referring to the Gaia theory by James Lovelock and Lynn Margulis, we argue that ecological economics recognizes that economy, nature, and culture are integrated parts within a “living” organism (Lovelock, 1988).

Aim of EE -

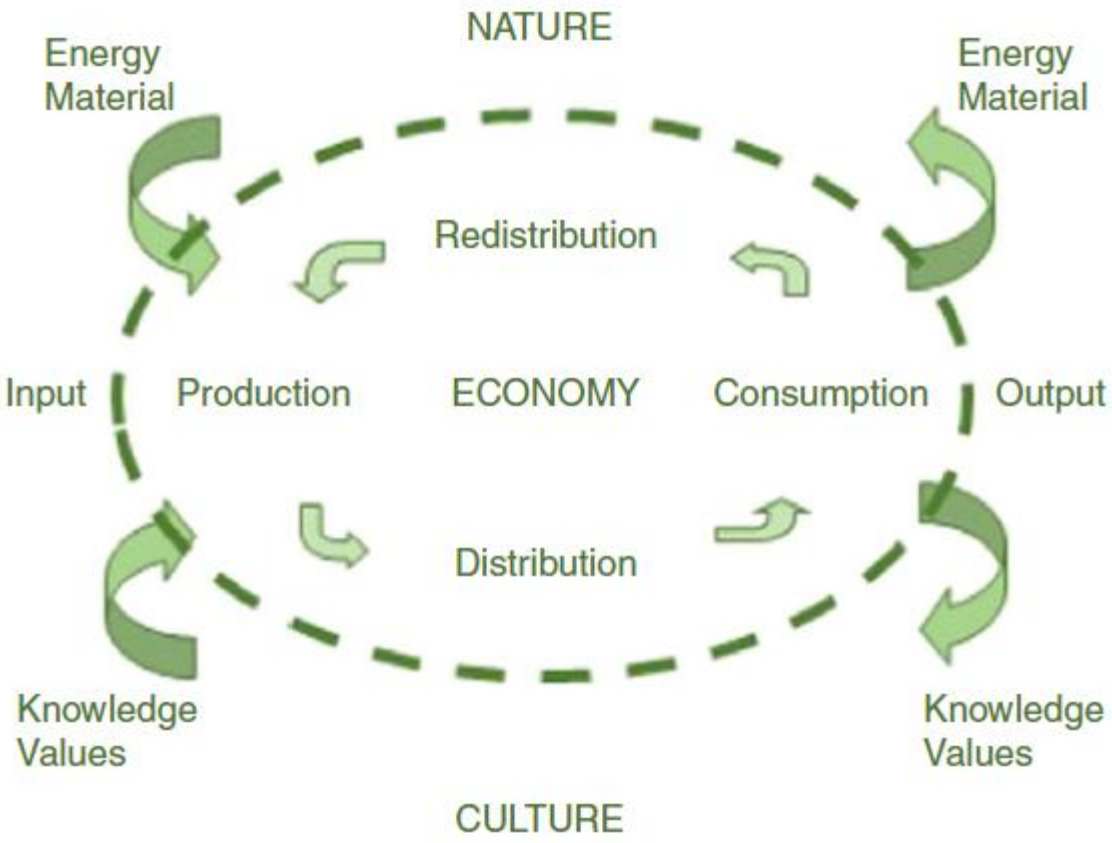
- Economic value chains must change from linearity to circularity. Circularity is the basis of the connection between economy and nature.
- **Maximized recycling of resource by a. Retro distribution, b. connecting consumption and c. production, consists of several sub-functions, including (i) collecting, (ii) sorting, and (iii) reprocessing of various materials.**
- Circular value chains make it possible to reduce both the consumption of virgin natural resources and the amount of waste that goes back to nature.
- To establish efficient material cycles in practice, collaboration between governments, manufactures, distributors, and consumers are required.

Principle 4: economy as cognitive interactions – a sense of ethics

According to the systems view of life, all living systems interact cognitively with their environment in ways that are determined by their own internal organization. This is our fourth systemic principle of life. In the human realm, these cognitive interactions involve consciousness and culture, and in particular a sense of ethics.

Our global economy, by contrast, is a network of financial flows that has been designed mechanically without any ethical framework.

In fact, social inequality and social exclusion are inherent features of economic globalization, widening the gap between the rich and the poor and increasing world poverty.



Source: Ingebrigtsen and Jakobsen (2007)

Questions

What us ecological economics?
What is Gaia hypothesis?
Define natural and human capital.
What are the four principles of Ecological economics
What is open system economics?