

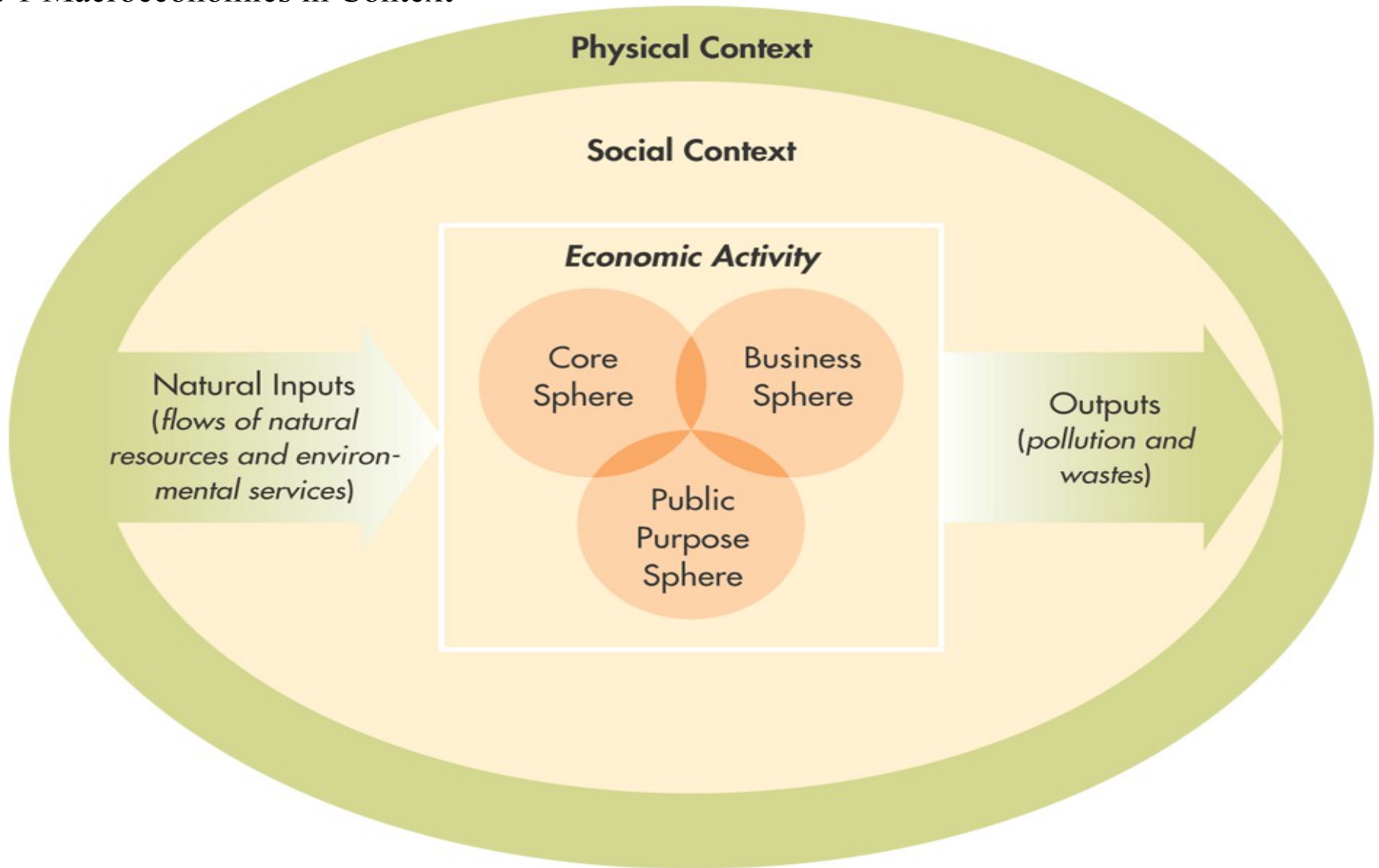
RESOURCE, ENVIRONMENTAL & ECOLOGICAL ECONOMICS





The amount of energy being produced globally from renewable sources, including solar, is on the rise. © Fernando Alonso Herrero/iStock

Figure 1 Macroeconomics in Context



An emerging understanding of macroeconomic performance notes that businesses (both foreign and domestic), households and communities (the core sphere) and public purpose institutions (governments and non-profit organizations) are all involved in the productive activities. Economies are, in turn, embedded in a context of larger social institutions and the natural (physical) environment.

Accounting for the Environment

The natural environment plays roles that are indispensable to economic life.

Environmental economists describe these under the headings of three functions:

1. Resource functions: the natural environment provides natural resources that are inputs into human production processes. These include such things as mineral ores, crude petroleum, fish, and forests. Some of these resources, such as fish and forests, are renewable while others, such as minerals and petroleum, are not.

2. Environmental service functions: the natural environment provides the basic habitat of clean air, drinkable water, and suitable climate that directly support all forms of life on the planet. Water filtration provided by wetlands and erosion control provided by tree-covered hillsides are other examples of services provided by ecosystems. People enjoy the services of the natural environment directly when they enjoy pleasant scenery or outdoor recreation.

3. Sink functions: the natural environment serves as a “sink” which absorbs (up to a point) the pollution and wastes generated by economic activity. Car exhaust dissipates into the atmosphere, for example, while used packaging goes into landfills and fluid industrial wastes end up in rivers and oceans. Some wastes break down relatively quickly into harmless substances. Others are toxic and/or accumulate over time, eventually compromising the quality of the environment.

In summary:

the three main ways in which the environment interacts with the economy are through resource functions, environmental service functions, and sink functions:

resource functions: the provision by the natural environment of inputs into human production processes,

environmental service functions: the provision by the natural environment of the ecosystem services that support and enhance life,

sink functions: the provision by the natural environment of places to put waste materials.

Measures of the natural capital stock of a country should also include the value of assets related to environmental service and sink functions. An old-growth forest, for example, not only provides timber resources, but also environmental services such as water retention, habitat provision, and carbon sequestering, as well as recreational and aesthetic value. Ideally, then, tables in the national accounts that look at a country's assets should be much expanded.

For the UK the headline indicators used in trying to quantify measurement of sustainable development are categorised according to the three pillars categories:

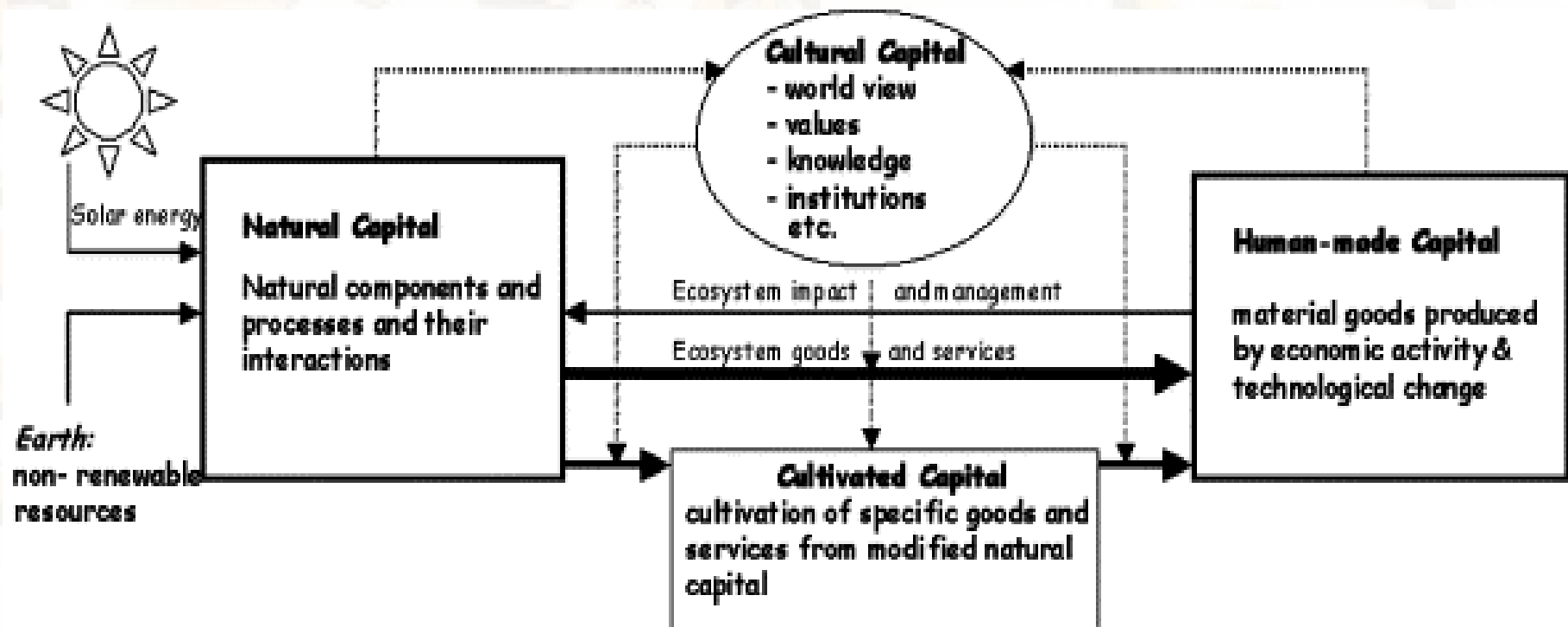
Economic	Social	Environmental
economic output	poverty and social exclusion	climate change
investment	education	air quality
employment	health	road traffic
	housing	river/water quality
	crime	wildlife
		land use
		waste

In the One Wales: One Planet Consultation on a new Sustainable Development Scheme for Wales, four measurements as headline indicators are given as:

- Economic output - Gross Value Added (GVA) and GVA per head
- Social justice – percentage of the population in low-income households
- Biodiversity conservation – percentage of Biodiversity Action Plan species and habitats recorded as stable or increasing
- Ecological Footprint - Wales Ecological Footprint.

with a fifth headline indicator, a measure of 'wellbeing' in Wales to be introduced.

Neumayer (2004) for example, argues that well-being is orientated towards the present whilst environmental and inter-generational sustainability looks towards the future. This in turn may imply a loss of wellbeing for the present generation in order to provide for future generations.



Types:	unique systems	semi-natural or modified systems	sustainable cultivated systems	intensive cultivated systems	urban green space	built environment
Examples:	prim. forests original wetlands coral reefs	sustainable forestry extensive rangelands bufferzones	agroforestry organic farming shifting cultivation	tree plantations agriculture aquaculture	parks, greenbelts greenhouses zoo's, botanical gardens	infrastructure housing industrial areas
Characteristics:	Increasing: ecological footprint, domestication, inputs of energy, labour etc. (more entropy) Decreasing: uniqueness, self-renewability, multi-functionality, ecological space					