Sustaining development through protecting 'critical capital'

The Little River, west of Melbourne. Water catchments' environmental services could be considered critical capital.
CSIRO Land and Water

Stocks of different sorts of 'capital' are integral to society's capacity for sustainable development. **Steve Hatfield Dodds** – senior CSIRO researcher and President of the Australia New Zealand Society for Ecological Economics – explains why.

Achieving sustainable development – rather than just talking about it – requires a framework for understanding threats to sustainability, and identifying practical options for addressing these.

Most measures of 'development' or 'progress' focus on flows, such as annual income or consumption. Concern for sustainable development requires us to look deeper, however, to see if these flows – and thus well-being – can be sustained in perpetuity. This draws attention to the assets or capital stocks that underpin well-being and environmental integrity.

These stocks are often classified into four main groups:

Produced capital (sometimes split into physical and financial capital) includes tools and equipment, buildings, books, vehicles, and physical infrastructure such as roads, bridges, pipes and powerlines. This group also includes financial assets and access to credit and insurance, which are essential components of household livelihood strategies and regional or national development success.

Human capital includes the health, skills and knowledge embodied in people, as well as the physical ability to do work. Human capital can be enhanced through education and training, and through improved nutrition and health.

Natural capital includes all environmental resources and processes that provide value to people, such as food, fibre, clean air and water, energy and waste processing. It also includes non-renewable resources, such as minerals, oil and coal. Modified environmental systems, such as plantations or the reservoir created by a dam, have attributes of both produced and natural capital.

Social and institutional capital includes networks of relationships between people, rules and governance arrangements, and shared norms and culture. Social capital contributes to well-being directly, such as through relationships and sense of identity. It also has an important role in facilitating the coordination and use of other forms of capital to promote human well-being.

One approach to sustainable development, described as *weak sustainability*, assumes that it is possible to compensate for a reduction in one type of capital (typically reduced natural capital) with an increase in another type of capital (typically produced capital). This approach defines sustainability in terms of an increase in the total value of the aggregate capital stock.

Strong sustainability, by contrast, argues that substitution is not always possible between different types of capital. It is widely accepted, for example, that natural capital is special, as the loss of specific natural assets – such as a species – is usually irreversible, and that other types of capital cannot provide perfect substitutes or compensation for the reduced or lost functions or ecosystem services. Similar arguments apply to social capital, which is difficult to repair if lost.

This draws attention to protecting and enhancing specific *critical capital* – whether natural, social or cultural – which is important for future well-being and ecosystem integrity.

A comprehensive view of the different types of capital required to sustain human well-being changes how we think about development. Work by the World Bank,[1] for example, points out that human capital and institutions (not stocks and bonds) account for the lion's share of wealth in virtually all countries, and highlights the dangers of low income nations 'mining' their natural resources without investing in their people.

Similarly, the Stern Review's findings[2] that early action to prevent excessive climate change is cheaper than trying to repair the damage later can also be interpreted as suggesting that climate regulation is an important type of natural capital with few effective substitutes.

John Ruskin said all this well in 1865: 'There is no wealth but life.'

More information:

Pearce DW and Warford J (1993). *World without End: Economics, Environment and Sustainable Development*. Oxford University Press for the World Bank: New York.

Hargroves KC and MH Smith (Eds) (2005). *The Natural Advantage of Nations*. Earthscan: London.

Hatfield Dodds S and Pearson L (2005). The role of social capital in sustainable development assessment frameworks. *International Journal of Environment, Workplace and Employment* **1**(3/4): 383–399.

1 Hamilton K *et al.* (2006). *Where Is the Wealth of Nations? Measuring Capital for the 21st Century*. World Bank, Washington DC. http://siteresources.worldbank.org/INTEEI/214578-1110886258964/20748034/All.pdf
2 Stern N (2006). *The Economics of Climate Change: The Stern Review.* Cambridge University Press: Cambridge, UK.