Abstract. The Brundtland Commission report, *Our Common Future*, defined sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Although the idea of sustainable development has been widely accepted, it has proved difficult to identify and implement policies and practices that promote sustainable economic growth. Some economists, environmental scientists and policy analysts believe that they can transform the consensus about sustainability into manageable practices. They propose to accomplish this feat with a set of new ideas about the relationships between the economy and the environment offered under the banner of ‘natural capital’. An ideal account of natural capital would be one or more standard measures or models that would allow the direct comparison of environmental goods, like forests, fresh water and clean air, with economic goods, like money, capital and productivity. By bringing economic science and environmental science to an objective common ground, a natural capital model has the potential to provide a concrete means of comparing the economic and ecological costs and benefits of particular policies and programmes. This paper offers a survey and analysis of several new contributions to the formation of the natural capital concept from economists, ecologists, policy analysts, biometricians, foresters and a philosopher. The paper concludes that existing microeconomic theory may be ‘ungreenable’, if it is not reformulated. While macroeconomic approaches to natural capital have been more successful, they share the limitation that ecosystems and species are valued solely in monetary terms. These problems are taken to suggest that the development of a successful natural capital model may require economic theory to be recast to include non-monetary social preferences and values.

Keywords: ecology, economics, environment, natural capital, survey and overview, sustainable development, valuation, value

1. From Sustainable Development to Natural Capital

In 1987, the U.N. sponsored Brundtland Commission on Environment and Development published the report entitled *Our Common Future*. The report argued that ‘environmental issues’ – like overpopulation, deforestation, resource depletion and increasing rates of species extinction – were inextricably entwined with long-standing ‘economic issues’ of poverty and underdevelopment. The causes of continuing poverty and underdevelopment in ‘less developed countries’ of ‘the South’ were the same as always: lack of capital, lack of access to technological
know-how and systemic inequalities in national and international institutions and legal frameworks. The new solution proposed by the Brundtland Commission was to reorient international and national economic development policy and programs towards ‘sustainable development’, which was defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The essential belief underwriting sustainable development was that technology and social organization can both be managed and improved to allow ongoing economic growth that was within the planet’s ecological means (WCED, 1997). The term was sufficiently vague to allow for broad endorsement and adoption, if only because no one could seriously advocate ‘unsustainable non-development’.

The Brundtland report helped bring global environmental issues to the front of national and international discussion and enshrined ‘sustainable development’ as the newest mantra of political discourse. By the mid-1990s, in Canada and elsewhere, almost all environmental issues and concerns had become couched in the new language of sustainable development. In international policy, a further but less manifest result of the report was a growing awareness of the ‘mutual vulnerability’ of the industrialized ‘North’ with the considerably less industrialized ‘South’ (for example: Head, 1991). But, as early as 1992, it was evident that the idea of sustainable development was more effective as a slogan than as a practical blueprint for global political change. In that year, the U.N. Conference on Environment and Development (UNCED) was held in Rio de Janeiro, and the World Bank published the World Development Report entitled Development and the Environment. The experience of the decade since 1992 suggests that achieving progress on sustainable development remains a significant challenge in the face of vested interests, poor governance, and weak institutions.

The ongoing practical difficulties in reaching international consensus about environmental policy has been underscored by the difficulties in negotiating the ratification of the Kyoto Protocol framed in December 1997 under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC). Between the Conference of Parties to the UNFCCC meeting at The Hague in December 2000 and the Johannesburg meeting in August 2002, both Canada and the United States were re-thinking their commitment to the ratification of the Kyoto Protocol*. The U.S. has declared its intention not to ratify, and at time of writing, whether Canada would ratify was still unclear. Groups in both countries expressed concern that as written the Kyoto Protocol did not give fair credit for national contributions to the development of ‘carbon sinks’ to reduce greenhouse gases. But, the principal stated concern, in both Canada and the United States, was that the adoption of the Protocol would have sweeping economic repercussions that were difficult to assess.

* The Kyoto Protocol called for industrialized countries to reduce emissions of greenhouse gases by an average of 5.2% from 1990 levels between 2008 and 2012. The Protocol only becomes legally binding after it has been ratified by 55 parties of the convention, including industrialized countries representing 55% of carbon dioxide emissions in 1990.