CHAPTER 2

What is eco-innovation?

2.1 INTRODUCTION

The scale of environmental problems, coupled with social inequalities and competitiveness challenges within the global economy, have raised increasing awareness of the need to change and renew existing technological production and social behavioural patterns. At best, such awareness may produce innovative responses that gradually move society along a more sustainable path. Analytical tools for such transformation have been developed in the field of environmental management, namely within frameworks such as eco-efficiency,\(^1\) industrial ecology\(^2\) and design for environment\(^3\) and more recently within the concept of eco-effectiveness,\(^4\) natural capital and biomimicry.\(^5\) Furthermore, the urgency for change has led to increasing application of the term ‘innovation’ in environmental management and policy. Despite the promise of eco-innovations, the term is also used in diverse contexts with different underlying connotations that may eventually diminish its practical value. Most commonly eco-innovation refers to new technologies that improve economic and environmental performance but also some definitions include organizational and social changes for improving competitiveness and sustainability and its social, economic and environmental pillars (see Box 2.1).

The definitions of eco-innovation seem to be quite general meaning that many kinds of innovation can be defined as eco-innovations. This raises the important issue of further classifying eco-innovations in order to better understand their specific characteristics.

Towards this, for instance, Andersen\(^6\) has recently drafted a classification that entails key types of eco-innovations reflecting their different roles on a (greening) market: Add-on eco-innovations, Integrated eco-innovations, Alternative product eco-innovations, Macro-organizational eco-innovations, and General purpose eco-innovations. Still, although several classifications of eco-innovations have been proposed (Box 2.1), there exist only a few attempts to
Box 2.1 Definitions of eco-innovation and sustainable innovation

- ‘Eco-innovation is any form of innovation aiming at significant and demonstrable progress towards the goal of sustainable development, through reducing impacts on the environment or achieving a more efficient and responsible use of natural resources, including energy.’ Competitiveness and Innovation Framework Programme (2007 to 2013), European Commission.

- ‘Eco-innovation is the creation of novel and competitively priced goods, processes, systems, services, and procedures designed to satisfy human needs and provide a better quality of life for all, with a life-cycle minimal use of natural resources (materials including energy, and surface area) per unit output, and a minimal release of toxic substances.’ Europa INNOVA Thematic Workshop, Lead Markets and Innovation, 29–30th June 2006, Munich, Germany.

- ‘Eco-innovation is the process of developing new products, processes or services which provide customer and business value but significantly decrease environmental impact.’ Fussler, C. and James, P. (1996) Eco-innovation: A Breakthrough Discipline for Innovation and Sustainability (Pitman Publishing).


- ‘ “Sustainability-driven” innovation is “the creation of new market space, products and services or processes driven by social, environmental or sustainability issues.” ’ Arthur D. Little (2005) ‘How Leading Companies are Using Sustainability-Driven Innovation to Win Tomorrow’s Customers’.

- ‘Sustainable innovation as a process where sustainability considerations (environmental, social, financial) are integrated into company systems from idea generation through to research and development (R&D) and commercialisation. This applies to products, services and technologies, as well as new business and organisation models.’ Charter, M. and Clark, T. (2007) Sustainable Innovation (The Centre for Sustainable Design).