OECD Programme on Technology and Sustainable Development

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Keywords. technology cooperation, innovation systems, technology policies, public/private partnerships.

1 Introduction

Technology is one of the topics being treated in the OECD Horizontal Programme on Sustainable Development, which involves most Directorates of the OECD (e.g. Economics, Environment, Agriculture, Science and Technology), the International Energy Agency (IEA) and the Nuclear Energy Agency (NEA) in a three-year effort to develop policy recommendations for Member governments for achieving sustainable development goals. The underlying objective of the horizontal effort is to achieve policy coherence in addressing sustainable development issues. There will be a series of interdisciplinary workshops and conferences as well as analytical reports. A policy report will be delivered to the OECD Ministerial Council Meeting in 2001.

The following are among the technology areas to be studied as part of the OECD horizontal programme on sustainable development: 1) the concepts of eco-efficiency and resource efficiency and their relationship to sustainable development, including the development of indicators that can be applied to countries, sectors and technologies; 2) how innovation systems and the design of environmental policies and regulations can best provide the conditions and incentives needed to promote environment-related innovation; 3) specific technologies and their contributions to sustainable development, including nuclear power and biotechnology; 4) case studies of how enterprises incorporate environmental objectives into their management strategies, including investments in clean technologies; and 5) means for facilitating international collaboration in research and development on environmental problems and technologies. The following text re-

J. Hemmelskamp et al. (eds.), Innovation-Oriented Environmental Regulation
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reflects OECD views on the role of technology and innovation in sustainable development as contained in the 1999 Interim Report to OECD Ministers.

2 The Role of Technology

Technology is critical to securing sustainable development goals, in particular in de-linking economic growth, as measured by GDP, from environmental degradation and unsustainable resource use. Significant reductions in energy and materials intensity and polluting emissions will require technological advances in products and processes, as well as organisational and behavioural changes. These technologies can contribute to the improved performance and competitiveness of industry. Global environmental concerns – including loss of biodiversity, climate change, ozone layer depletion and desertification – will also require the best scientific and technical insights for assessment and solution.

But appropriate technological change is not automatic. In traditional growth theories, new technology is an *exogenous variable* appearing from outside at the right time and right price. In reality, market failures in terms of information deficiencies and inappropriate pricing risk suffocating rather than stimulating technologies capable of enhancing sustainable development. Producers and consumers may lack knowledge about the environmental impacts of different products and activities. The prices of many goods and services often do not reflect resource use or environmental externalities. As a result, new substitutes tend to be more expensive than conventional technologies. The costs of developing new, clean technologies and integrated approaches are often high and the timeframes long. Where the benefits are more public than private, the result is insufficient industrial investment and inadequate technological innovation. Providing proper price signals would increase investment in clean technologies.

*Endogenous growth theories* acknowledge that technological change occurs as a result of identifiable processes including corporate investment and public policies. Governments have an important role to play in getting the prices right and in providing a climate for environment-related innovation. The economic, legal and physical infrastructure is an important determinant of levels and patterns of research and development, institutional interactions, education and training, investment and finance, communications, etc. Market factors, such as consumption trends, and government regulation are important influences on the innovation climate. In general, the design of framework conditions for sustainable development should be set from the perspective of balancing increases in material welfare with long-term environmental and social challenges and the actions needed to address them.