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The challenge of greening technologies—Environmental policy integration in Finnish technology policies

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Abstract

The integration of environmental principles into other policies is perceived as essential in order to combat environmental problems as efficiently as possible. Environmental policy integration in Finnish technology policies is assessed empirically by focusing on technological R&D support at all levels, from policy strategies to project funding decisions. The actors making and implementing technology policies have grasped the idea of environmental protection and environmental issues have been identified especially at the strategy level and in some technology programmes. However, the integration is not overarching and no assessment of environmental impacts is required in funding applications.

Keywords: Technology policy; Environmental policy integration; Evaluation; Environmental technology; R&D funding

1. Introduction

The increased focus on innovation policy instead of research and technology policy implies that the scope has increasingly widened to include societal concerns, such as environmental issues. Harmful environmental effects are often caused by activities, such as transport, agriculture and energy production, which are extensively influenced by public policies. It has therefore been argued that environmental damage could be reduced if environmental aims were taken into account when designing and implementing these public policies (e.g. Weale, 2002, p. 203). Technological innovations and their diffusion have caused most environmental problems but have also resolved many. Technological development is also an example of an activity largely affected by public policy. If environmental aims could be integrated into innovation and technology policies, the negative effects of new technologies could be anticipated and reduced while simultaneously enhancing environmentally sustainable economic development.

The use of science and technology policies to achieve environmental goals constitutes a new focus for technology policy (Freeman and Soete, 1997, p. 414). This has been highlighted, for example, in the Environmental Technologies Action Plan (ETAP) of the European Union based on the Lisbon Strategy (EC, 2004). Environment-oriented technology policy did not exist in many European countries until the 1990s (Sedlacek and Schrama, 2003, p. 231). During the 1990s the focus on environmental issues increased in technology policy, but there has been little discussion on how and in what form they have appeared and affected actual decision-making.

Environmental policy integration is the term used for including environmental aims into other policies.

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Originating from the United Nations Environment Programme in 1972 and strengthened in the Brundtland Report "Our Common Future" in 1987, environmental policy integration or the need to consider environmental issues in all decision-making has developed as part of the wider discussion on sustainable development. The necessity to integrate environmental policies into other policy fields has also been acknowledged in the European Union. Starting with the Third Environmental Action Programme (1983) and strengthened in the Fourth (1987) and Fifth Action Programmes (1993) the need to integrate environmental considerations into the formulation and implementation of all sectoral policies has become a guiding policy principle in the EU (Liberatore, 1997, p. 108). The role of environmental policy integration in EU legislation was strengthened in 1997, when the Treaty of Amsterdam stated in article 6: "Environmental protection requirements must be integrated into the definition and implementation of the Community policies . . .". Despite the recognition of environmental policy integration in policy-making, the decisions have mainly been disappointing (Jacob and Volkery, 2003). The Cardiff process initiated in 1998, aiming to integrate environmental objectives, first, to transport, energy and agricultural policies and, later, to other sectoral policies, has proven burdensome (e.g. Schrama and Sedlacek, 2003) and the actual application of environmental policy integration in sectoral policy-making does not look promising (Lenschow, 2002, p. 220).

Empirical evaluations of policy integration are needed to find out what kind of policy coordination problems are present and to examine the existing examples of policy coherence in order to learn from them and develop the practices of policy integration. Evaluations are also needed to examine the genuineness of the efforts to integrate policies. While policy integration can be an effective way to overcome policy coordination problems, it is also an old way to divert attention and to obliquely resist the political goals supported through integration.

This paper examines to what extent environmental policy integration has been adopted in Finnish technology policy and whether the principle is reflected in different levels of policy-making, focusing on R&D funding. Although the integration of innovation concerns into environmental policies can be seen as equally important and is something we have examined in some detail previously (see Mickwitz and Kivimaa, in press), we focus here on the evaluation of environmental policy integration into technology policy strategies, programmes and R&D funding. However, we also stretch beyond this and explore more tentatively the outcomes of a small sample of technology programmes in terms of generated innovations and their environmental impacts. Since Finland has at the same time been assessed as one of the most technologically advanced countries (UNDP, 2001) and has received top ratings in sustainability (Environmental Sustainability Index, 2005), it is an interesting case to study.

The concept of environmental policy integration and the relationship between environmental and technology policies are first discussed in Section 2. Section 3 describes the framework and criteria used for evaluating environmental policy integration. An empirical assessment of environmental policy integration in Finnish technology policy with respect to R&D funding is reported in Sections 4–7. Section 4 looks at environmental issues in technology policy strategies. Section 5 examines environmental issues at the policy instrument level in specific technology programmes designed to fund and coordinate R&D projects. In Section 6 the policy outputs of the technology programmes, the project funding decisions, are assessed. Section 7 explores a subset of those policy outcomes of technology programmes that fall under environmental innovations. Finally, a discussion of the results and the conclusions are presented in Sections 8 and 9.

2. The relationship between environmental and technology policies

Policy integration, that is integrating specific policy objectives such as environmental protection or gender equality into other policy sectors, is one way to address the problems of goal conflict and inefficiency of policies. Underdal (1980, p. 162) defines a perfectly integrated policy as:

> "one where all significant consequences of policy decisions are recognised as decision premises, where policy options are evaluated on the basis of their effects on some aggregate measure of utility, and where the different policy elements are consistent with each other. In other words, a policy is integrated to the extent that it recognises its consequences as decision premises, aggregates them into an overall evaluation, and penetrates all policy levels and all government agencies involved in its execution".

Environmental policy integration means the implementation of environmental objectives into policy-making horizontally across policy sectors and vertically extending to different levels of policy-making. According to Lafferty (2004, p. 203), the basic notion of envi-