Environmental Incentives and Nordic SMEs

Impact on Performance and Competitiveness

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Nordic Council of Ministers

Store Strandstræde 18
DK-1255 Copenhagen K
Phone (+45) 3396 0200
Fax (+45) 3396 0202

Nordic Council

Store Strandstræde 18
DK-1255 Copenhagen K
Phone (+45) 3396 0400
Fax (+45) 3311 1870

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The Nordic co-operation on industrial policy

The Nordic co-operation on industrial policy covers the issues of industrial development, improvement of the Nordic countries' industrial competitiveness, industrial research and development, technical norms and control mechanisms. The Nordic ministers for industry are in charge of this co-operation. A committee of senior civil servants on industrial co-operation prepares and organises the co-operation.

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Nordic co-operation, one of the oldest and most wide-ranging regional partnerships in the world, involves Denmark, Finland, Iceland, Norway, Sweden, the Faroe Islands, Greenland and Åland. Co-operation reinforces the sense of Nordic community while respecting national differences and similarities, makes it possible to uphold Nordic interests in the world at large and promotes positive relations between neighbouring peoples.

Co-operation was formalised in 1952 when *the Nordic Council* was set up as a forum for parliamentarians and governments. The Helsinki Treaty of 1962 has formed the framework for Nordic partnership ever since. The *Nordic Council of Ministers* was set up in 1971 as the formal forum for co-operation between the governments of the Nordic countries and the political leadership of the autonomous areas, i.e. the Faroe Islands, Greenland and Åland.

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Preface

Small and medium-sized enterprises (SMEs) play a significant role in Nordic economic development through creating employment, stimulating competition and developing new technologies and products. Nevertheless, these companies are often disadvantaged by internal and external constraints that prevent them from realising their full potential. Nordic governments acknowledge that environmental management forms one of these constraints, and accordingly its integration into working practices is supported by a range of public sector financial assistance schemes. However, to date there has been no exploration of the extent of this provision, nor is there any comparative knowledge of the impact that these “environmental incentives” have on the environmental performance or the economic competitiveness of Nordic SMEs.

This report presents the first cross-national overview and appraisal of the main environmental incentives available for SMEs in the Nordic countries. Specifically, it includes detailed descriptions of fifteen environmental grants and loans currently or recently offered in Denmark, Finland, Norway and Sweden. Each scheme is presented in accordance with a common structure, which facilitates a comparative analysis of selected themes and the identification of issues of research significance. Thereafter, the focus is restricted to seven schemes, using an extensive programme of interviews to determine their impact on a sample of companies drawn from each of the four countries. The data gathered then forms the basis for a comparative appraisal of environmental impacts, economic impacts and associated outcomes.

This research was commissioned by the Senior Officials Committee for Industrial Policy within the Nordic Council of Ministers. The work was carried out by a team at Nordregio, the Nordic Centre for Spatial Development in Stockholm, comprising Keith Clement, Senior Research Associate, and Moa Tunström and Karin Bradley, Research Fellows.

The content of the report is based substantially on information derived through analysis of materials provided by a range of environmental finance administrators and meetings with environmental co-ordinators or directors within SMEs. We would like to express our appreciation of all those who made documentation available, who participated in the interviews, and who assisted in the verification process.

Summary

This report presents the results of the research project into the availability and impact of environmental incentives for Nordic small and medium-sized enterprises (SMEs). The tasks were divided into two phases with inter-related objectives:

- To identify the main environmental incentives available for SMEs in the Nordic countries and to prepare a comparative review of this provision; and
- To evaluate the impact of selected incentives on company environmental performance and economic competitiveness.

In the first phase, fifteen incentives were selected for inclusion in the survey. The choice was based on their clear operational identity, the availability of documentation, ready co-operation from the incentive administrators and organisations, and their potential to yield the most useful insights. In Denmark, the instruments comprised grants relating to environmental competence, green jobs, energy efficiency and renewable energy. In Finland, the survey included grants for environmental protection and energy conservation, and a loan for environmental protection. In Norway, the incentives comprised grants for sustainable production and consumption, environmental technology and renewable energy, and a loan for environmental technology. In Sweden, three grants were reviewed, related to environmental management, environmental design, environment-driven business development and renewable energy.

Within the report, these incentives are examined with regard to their objectives, instruments, timeframes, core criteria, award rates, and evaluation. The findings of the first phase can be summarised as follows. Denmark, Finland, Norway and Sweden each actively supports environmental improvement in SMEs, with wide-ranging thematic coverage and objectives. Grants are identified as the most favoured instrument for supporting environmental improvement in SMEs. Project selection utilises closely targeted criteria, with successful applicants generally receiving support for up to half of eligible costs. Monitoring and evaluation represent the weakest aspect of incentive administration, providing very limited information on incentive impact.

Accordingly, three issues of research significance informed the second phase of research:

- There is a lack of clarity regarding company perceptions, appreciation and use of Nordic environmental incentives;
- Very little information is available concerning the impact of incentives on SME environmental performance; and
- No information is available on whether environmental incentives have an impact on SME economic competitiveness.

To pursue these issues, structured interviews were held with a sample of 32 companies to investigate the impacts of seven different environmental incentives. In Denmark, these incentives comprised the Environmental Competence Grant and the Green Job Grant, in Finland the Environmental Loan, in Norway the Environmental Technology Loan and the Sustainable Production and Consumption Grant, and in Sweden the Environmental Design Grant and the Environment-Driven Business Development Grant.

The beneficiary companies identified a range of environmental impacts. In order of significance, these comprised impacts on resource usage, company profile and marketing, production and process methods, waste management, corporate environmental strategy, supplier links, and environmental management systems. Economic impacts were more difficult to identify or quantify, precluding a ranking of significance, but impacts were considered from the perspectives of business opportunities and market share, employment levels, performance and operating efficiency. Associated outcomes included broader environmental learning within SMEs.

The findings of the project second phase can be categorised into five main points:

- Within Nordic public sector assistance for industry, environmental incentives are supporting a range of environmental investments which, in many cases, would not otherwise be realised.
- In addition to primary impacts such as positive change in company practices, environmental incentives have contributed to raising environmental awareness amongst SMEs and engendered a greater sense of environmental responsibility.
- Nordic environmental incentives have had identifiable economic impacts on company performance. Although in some cases economic gains have been modest, SMEs receiving these incentives have improved their performance and become more competitive and sustainable.
- The administration and management of environmental incentives appears well conducted by agencies and intermediaries, even though

beneficiaries are not satisfied with all aspects of intervention. Furthermore, outcomes do not always match expectations, discouraging some companies from making further environmental investments.

- SMEs are aware of growing uncertainty in public policy regarding the future form and scale of environmental incentives. Nevertheless, they consider that these schemes should be continued and receive a higher public profile.

1. Introduction

1.1 Industry and Environment

Since the publication of the Brundtland Report,¹ the international corporate response has contributed significantly to the operationalisation of sustainable development. Over the past ten years in particular, events such as the World Industry Conferences on Environmental Management have progressively explored and developed this theme, and the Business Charter for Sustainable Development, launched by the International Chamber of Commerce in 1992, has been a very influential part of this initiative. The Charter commits enterprises to improving environmental performance and demonstrates to governments and society that business takes its environmental responsibilities seriously. Since its launch, the ICC Charter has gained considerable support world-wide, having been signed by more than 2,300 companies and associations in over 50 countries, with virtually all economic sectors represented.

This broad expansion of environmental awareness within industry means that the momentum launched by European governments has seen a parallel response - mostly by large companies - to improve environmental performance.² The corporate interest in environmental practice has occurred partly as a result of the tightening controls on emissions and waste disposal, but also because of changing consumer attitudes to the environment and the enhanced standards required by international clients and investors. As this degree of environmental awareness heightens, so does its potential as a source of enhanced competition between countries and between companies.

1.2 The Ubiquitous SME

Within the European Union, the competitiveness of small and medium-sized enterprises (SMEs) is a theme that receives special attention.³ These companies play a significant and vital role in economic development through stimulating competition, developing new technologies and products, and by creating jobs. However, there are often internal as well as external constraints that prevent them from realising their potential,

¹ World Commission on Environment and Development, 1987.

² Vaughan, Scott and Mickle, 1997.

³ Greenan, Humphreys and McIvor, 1997.

and national industrial policies support a range of initiatives and programmes to assist their growth and development.

In 1996, a degree of convergence was established in Europe with the introduction of a specific EU definition for SMEs. It identifies these enterprises according to employee numbers, turnover or balance sheet total and ownership. Accordingly, companies in this category should have: fewer than 250 employees; either an annual turnover not exceeding EUR 40 million, or an annual balance sheet total not exceeding EUR 27 million; and independent status, i.e. capital or voting rights owned by a larger enterprise cannot exceed the threshold of 25%.⁴

Applying these criteria, surveys indicate that within the EU economy, SMEs account for nearly all enterprises (99.8%), two-thirds (66.2%) of jobs, and over 50% of the turnover in the non-agricultural market sector.⁵ Representing such an important proportion of national economies, SMEs act as a source of entrepreneurial spirit, competition and innovation, and they are fundamental to future business growth.

Amongst the Nordic countries, statistics available for SMEs during the years 1996-97 show that Sweden has by far the largest number of such enterprises, and correspondingly the greatest employment and turnover totals for this sector (see Table 1). However, when viewed against EU totals, the differences appear less dramatic, as Denmark, Finland and Sweden respectively have 0.8%, 1.1% and 1.3% of the SMEs, 1.4%, 0.9% and 1.8% of the employment, and 1.6%, 1.3% and 2.3% of the turnover.

Table 1: SMES in the Nordic Countries, 1996-97⁶

	Enterprises	Total employment	Turnover (EUR millions)
Denmark	159,930	1,057,640	151,173
Finland	203,290	681,270	117,613
Norway	n.a.	n.a.	n.a.
Sweden	241,970	1,306,790	213,215
EU	18,390,550	74,034,000	9,408,333

SMEs are acknowledged as globally innovative, but they remain at a disadvantage in terms of access to finance.⁷ In certain activities SMEs face fewer constraints than large enterprises, but once a project has been launched, the high cost of innovation and lack of finance are frequently-quoted problems. Consequently, even though the main objectives of innovation are to capture new markets or market share and to improve products and services, SMEs actively seek to reduce the cost of labour on account of their high staff-costs ratios. In addition, they are generally

⁴ Commission of the European Communities, 1996.

⁵ Commission of the European Communities, 2001, p15.

⁶ Commission of the European Communities, 2001.

⁷ OECD, 2001.

more dependent than large enterprises on short-term debt, and consequently interest charges tend to form a greater proportion of their turnover.

The problem of SMEs accessing finance is the subject of attention in the EU multi-annual programmes for SMEs and for Enterprise and Entrepreneurship (2001-2005). Nevertheless, given these existing financial constraints, this is clearly a factor that would discourage or even prevent companies from investing in environmental change.

With regard to their environmental characteristics, the total impact of SMEs is still unknown. A figure of 70% has been offered as an estimate of the SME contribution to pollution levels, but without hard data, a precise figure cannot be calculated.⁸ Nevertheless, such a high estimate - even though provisional - indicates that this dimension of SME impact is expected to be significant.

Companies of all sizes experience impacts from environmental regulation, but SMEs have fewer resources, fewer staff and less time to become familiar either with legislative obligations or with the assistance available. Similarly, whereas larger companies can afford their own environmental units or environmental managers, for SMEs this is often not possible. In consequence, SMEs continue to miss opportunities firstly because of a basic lack of information, failing to see the benefits of undertaking environmental or sustainable development activities, and secondly through risk aversion, as a consequence of a company's perception of likely poor rates of return from undertaking environmental projects.

Whereas SMEs may appreciate the importance of good environmental practice, they are frequently unaware of how this can best be achieved. For example, research by the Business Environmental Barometer (Helsinki School of Economics) has indicated that large companies in Finland have substantially incorporated environmental thinking, building up internal systems for environmental affairs, but SMEs have not integrated environmental factors nearly as effectively. At the same time, SMEs seem eager to use environmental arguments in their marketing efforts, and they acknowledge that eco-competitiveness is an important success factor alongside the price-quality ratio applicable to a company's goods or services.⁹

1.3 Linking Environmental and Economic Performance

The relationship between the environmental and economic performance of firms has been studied for some time, generally focusing on regulation as the catalyst. However, no conclusive results have emerged, ascribed to

⁸ Hillary, 2000, p11.

⁹ Virtanen, 1997.

the following reasons: early studies used only small samples, they frequently lacked objective measures of environmental performance - using pollution control expenditure to proxy for environmental performance - and they used data that is now very old;¹⁰ and empirical studies have often made no distinctions between different approaches to improving environmental performance, such as end-of-pipe treatment or reduction of pollution at source, and they have not accounted for moderating factors such as firm size, processes used, market structure of the industry, and the regulatory characteristics of the country of location.¹¹

In more recent studies, these shortcomings have been reduced, but problems are still encountered with different questions being asked in different studies, incompatible methodologies being used, or different problems being examined.

Nevertheless, the 'Porter hypothesis' presents a positive view of regulatory impact:

The relationship between environmental goals and industrial competitiveness has normally been thought of as involving a trade-off between social benefits and private costs...Framed this way, environmental improvement becomes a kind of arm-wrestling match. One side pushes for tougher standards; the other tries to beat the standards back. Our central message is that the environment-competitiveness debate has been framed incorrectly.¹²

In the new paradigm, it is argued that properly designed environmental standards can trigger innovation that may partially or more than fully offset the costs of regulatory compliance. This win-win scenario has been supported in published studies. In an example from the US chemicals sector, the response by Du Pont to regulatory change is considered to have brought enhanced profits, pre-empted further and potentially stricter controls by the regulators, and given the company a 'first mover' advantage.¹³ In other cases, environmental management responses encompassing minor changes in technologies and organisational practices as well as major innovations in products and process have generated substantial cost savings in companies.¹⁴

However, the positive perspective has also been widely challenged:

If the Porter hypothesis were true, then why do we see firms lobbying against environmental protection programs instead of lobbying for tighter environmental regulation? Porter and van der Linde cite dozens of examples that allegedly buttress their case. But 'exemplarism' is no substitute for systematic empirical evidence.¹⁵

¹⁰ Cohen, Fenn and Naimon, 1995; Konar and Cohen, 1997.

¹¹ Wagner and Wehrmeyer, 2001 & 2002.

¹² Porter and Van der Linde, 1995, p97.

¹³ Howes, Skea and Whelan, 1997, p34.

¹⁴ Gouldson and Murphy, 1998, p23.

¹⁵ Neumayer, 1998, p39.

In a third category of studies, much less significance is attached to the potential impact of environmental regulation. For example, the relative stringency or laxity of environmental standards has been described as having little or no influence on the general competitiveness of countries or on their trade balances. This conclusion was based on examinations of the relationship between the costs of compliance, environmental regulations and international trade patterns. Basically, environmental compliance does not represent a large share of overall costs to industry, and in most sectors it accounts for only between one and two per cent of total costs or turnover.¹⁶

Evidently, research into regulatory impact appears to be both contradictory and inconclusive, suggesting that it would be more advantageous to pursue an alternative and more transparent means of promoting environmental competitiveness. In practice, this role may be partly fulfilled by the public sector provision of environmental subsidies.

1.4 Environmental Incentives for Business and Industry

In previous years, governments relied on regulation to push SMEs towards environmental compliance, aiming for win-win scenarios.¹⁷ However, rather than positively impacting on companies, the experience was often characterised by increased costs and reduced profits, and in some cases companies were even pushed into bankruptcy.¹⁸ In the Nordic context, a survey established to test the win-win hypothesis showed clearly that strict regulation had disadvantaged those firms.¹⁹

More recently, there has been a change in approach, moving away from legislating firms to change their practices, and instead seeking to persuade them to do so. In Denmark, for example, there has been a move from regulation to co-operation and 'gentle coercion', and in Finland, levying charges and imposing fines on companies is no longer seen as the most effective way to tackle environmental threats.²⁰ Governments now seek to help enterprises develop a longer-term approach to business management, improving their business prospects while encouraging them to invest in new technology, better R&D, product development and activities that are sustainable in economic, social and environmental terms. Part of this initiative includes the provision of financial incentives for environmental improvement.

Offering subsidies to industry can be a controversial policy measure, generally raising objections on the grounds of unfair competition, distor-

¹⁶ Stevens, 1993.

¹⁷ Porter and van der Linde, 1995.

¹⁸ Palmer, Oates and Portney, 1995; Jaffe, Peterson and Stavins, 1995.

¹⁹ Brännlund, Hetemäki, Kriström and Romstad, 1996.

²⁰ Georg, 1994; Kylä-Harakka-Ruonala quoted in Virtanen, 1997.

tions to international trade and inefficiency.²¹ Furthermore, in the environmental arena, pressures on government and industry have increased with the introduction of the Polluter Pays Principle (PPP). This assertion that polluting companies should bear the cost of measures to reduce pollution has meant that the legitimacy of environmental subsidies has again been questioned. Nevertheless, Environment Ministers from OECD countries have accepted that various forms of economic instruments must be used in working towards environmental policy goals. In practice, most European countries have made exceptions to the PPP, and a range of incentive schemes now supports the transition to sustainability.

Research studies that favour environmental finance maintain that these policy instruments are perfectly compatible with market competitiveness. On the basis of econometric analysis, it is argued that supporting environmental R&D, technological innovation and diffusion provides firms with very appropriate incentives to avoid damaging the environment, and it ultimately has a positive effect on economic growth.²² In addition, OECD research has concluded that financially assisting the transfer to cleaner technologies is considered economically justifiable if the costs are offset by cumulative environmental and social gains.²³

Of the environmental finance offered directly to industry in Europe, the themes range from general environmental protection and investment to specific research and development applications. These incentives typically support cleaner technology, environmental auditing, implementing environmental management systems, skills training, sustainable transport and sector-specific development. For technology alone, a comparative survey published in 1997 identified 34 incentives operational in the EU Member States, and one-fifth of these contained an SME clause, i.e. that small and medium-sized firms should receive preference, higher rates of award or exclusive access.²⁴ This is sometimes linked to location, for example with all firms being eligible in enterprise zones, but only SMEs outside these zones.

Broader aims of environmental incentives include raising awareness of global issues surrounding sustainable development and encouraging companies to develop strategic responses through sustainable business planning. This could encompass improvements in operating costs, resource efficiency and the management or recycling of waste, and perhaps even identify business opportunities emerging from forthcoming environmental legislation.

Three main forms of environmental incentive are available in Europe. These comprise grants, soft loans (offered at below-market rates of interest or with repayment holidays) and tax concessions through accelerated

²¹ OECD, 1997.

²² Carraro and Galeotti, 1997.

²³ OECD, 1994.

²⁴ Clement, 1997.

depreciation allowances. Grants tend to dominate, particularly amongst environmental technology schemes, accounting for 60 percent of the assistance available; soft loans comprise 30 percent of the total; and special depreciation allowances account for the remaining 10 percent.

Within the Nordic countries, survey research has generally not focused on the incidence of environmental incentives, but rather on environmental disincentives in the form of market-based instruments such as charges or taxes²⁵ or on broad-based thematic evaluations.²⁶ Although certain major schemes such as the former Swedish Ecocycle Billion have been critically appraised and the results made public, the availability, uptake and effect of differentiated environmental finance has been neither categorised nor evaluated at national or Nordic level. Although a number of such schemes are currently operational in Denmark, Finland, Norway and Sweden, information on the impact of these incentives on the performance and competitiveness of individual SMEs - of considerable importance for policymakers and companies alike - currently does not exist.

Lack of knowledge of existing environmental incentives means that companies are distanced from taking steps towards technical and managerial progress. Furthermore, without overview data from different sectors or countries, practical comparisons cannot be made, either to support investment decisions or to appraise whether other national administrations use more effective methods. Of the more accessible incentives, there is no knowledge of the uptake and response from industry regarding the themes and forms of assistance that are most popular or the motives for participation. For example, if these companies are already environmentally knowledgeable, the message may be missing the most vulnerable SMEs that need to be steered towards sustainable working practices.

1.5 Project Aim, Objectives and Methodology

The aim of the research project was to determine the availability, uptake and impact of environmental incentives for Nordic SMEs. In fulfilment of this aim, the fieldwork was divided into two phases with inter-related objectives:

- i) to identify the main environmental incentives available for SMEs in the Nordic countries and to prepare a comparative review of this provision; and
- ii) to evaluate the impact of selected incentives on company environmental performance and economic competitiveness.

²⁵ Brännlund and Kriström, 1999a and 1999b; Swedish Environmental Protection Agency, 1997.

²⁶ The Finnish Ministry of Trade and Industry established a Working Group to review aspects of its Energy Conservation Programme relating to the efficiency of energy consumption.

The methodology for the first phase of research comprised an extended period of data gathering, supplemented by consultation with incentive administrators, to establish an overview of financial instruments in each national context. Fifteen incentives were selected for inclusion in the survey. The choice was based on their clear operational identity, the availability of documentation, ready co-operation from the incentive administrators and organisations, and their potential to yield the most useful insights.

The second phase included face-to-face interviews with companies to investigate the implementation of different environmental incentives, and the preparation of analyses and a thematic comparison of project experience and impacts. Several officials from industry and environment ministries acted as an informal Advisory Panel (see Appendix 1). They verified the selection of individual schemes for deeper investigation and advised on the choice of companies for the interview programme. Structured interviews were held with a sample of 32 companies to investigate the impacts of 7 different environmental incentives.²⁷

In terms of their characteristics, the incentives met the following criteria:

- The thematic coverage and associated objectives were broad, ranging from conventional environmental management to supporting technology innovation and strengthening the competitive ability of beneficiary companies;²⁸
- grants and loans were included, ensuring that both forms of instrument are surveyed;
- most of the schemes were operational and had been available for at least 3-4 years, so allowing sufficient time to elapse for a sample of successful applicants to be easily identifiable; and
- the project selection criteria used within the schemes were varied and wide-ranging, ensuring a cross-section of project types in terms of specific content.

For each scheme, five beneficiary companies were identified with the assistance of the Advisory Panel. The selection criteria included:

- expectation of full co-operation with the survey process, making time available for interview and supplying relevant quantitative information;

²⁷ This number was originally set at eight schemes, but in the second nominated Finnish scheme, it was not possible to identify a sufficient number of appropriate SMEs that had received the award.

²⁸ Whereas schemes dedicated specifically to energy were common to each country, these incentives had a restricted remit, oriented more towards efficiency rather than environmental performance, and so they were less advantageous for fulfilling this project's inter-related research objectives.

- recent receipt of the award, but with sufficient time elapsed to see beneficial impacts;
- that the individual who orchestrated the incentive application should still be with the company; and
- a likelihood of finding positive impacts i.e. the project purpose was to reveal direct evidence of environmental and economic impact, so there should be output material and performance results to review.

1.6 Report Structure

Following this Introduction, the report is divided into a further ten chapters.

Chapter 2 reviews the survey materials gathered during the first phase, presenting a comparative overview of fifteen environmental incentives available for SMEs in the Nordic countries.

Chapters 3-9 work through each of the seven selected incentives, drawing together the information from meetings with companies. A common structure is used for data presentation, with the following components: incentive characteristics, beneficiaries, project design, incentive impact, and administration.

Chapter 10 presents a thematic comparison of company experiences and incentive impacts. Chapter 11 presents brief conclusions.

2. Environmental Incentives for SMEs in the Nordic Countries

2.1 Introduction

Within the Nordic countries, a range of environmental incentives is available for SMEs either directly or indirectly through intermediaries. In the first stage of this project, fifteen incentives were identified as meriting attention. Two points of clarification are necessary regarding the choice of schemes. Firstly, a number of the incentives are available to companies of all sizes, and so they are not exclusive to SMEs. However, they were included because they form part of the overall selection open to small and medium-sized firms. Secondly, the coverage includes existing and recently completed incentives in an approach designed to maximise the insights into different scheme types and experiences.

In Denmark, the survey focused on four grants relating to environmental competence, green jobs, energy efficiency and renewable energy. In Finland, the survey included two grants for environmental protection and energy conservation, and a loan for environmental protection. In Norway, three grants were included, relating to sustainable production and consumption, environmental technology and renewable energy, and a loan for environmental technology. Lastly, in Sweden, four grants were surveyed, covering environmental management, environmental design, environment-driven business development and renewable energy (see Table 1).

In the approach to data gathering, a common structure was used for each incentive, as follows:

- background and funding base, outlining any relevant history, legal developments or scheme evolution, and identifying, where available, the scale of funding that supports incentive implementation;
- eligible activity and spatial coverage, describing the themes and actions for which the incentive can be received, and the territorial boundaries within which it is available;
- project selection, following the application process from formal submission to project assessment criteria and re-submission procedures, where applicable;
- award characteristics, identifying typical rates or scales of award, upper limits, levels of approvals and any conditions that may accompany award decisions;

- company characteristics, assessing the degree of environmental knowledge within applicant companies as well as their sectoral origin; and
- scheme evaluation, noting the frequency and orientation of evaluations performed within recent years.

Table 1: Environmental Incentives for SMEs in the Nordic Countries (surveyed 2002)

Denmark
<ul style="list-style-type: none"> • Environmental Competence Grant, Danish Environmental Protection Agency • Green Jobs Grant, Danish Environmental Protection Agency • Energy Efficiency Grant, Danish Energy Agency • Renewable Energy Grant, Danish Energy Agency
Finland
<ul style="list-style-type: none"> • Environmental Protection Grant, Ministry of Environment • Environmental Protection Loan, Finerva • Energy Conservation Grant, Motiva
Norway
<ul style="list-style-type: none"> • Sustainable Production and Consumption Grant, GRIP • Environmental Technology Grant, Norwegian Pollution Control Authority • Environmental Technology Loan, SND • Renewable Energy Grant, Norwegian Water Resources and Energy Directorate
Sweden
<ul style="list-style-type: none"> • Environmental Management Grant, NUTEK • Environmental Design Grant, NUTEK • Environment-Driven Business Development Grant, NUTEK • Renewable Energy Grant, Swedish Energy Authority

Upon completion, this baseline survey was published as a first-stage report.²⁹ For reference within this report, the key characteristics for all fifteen incentives are summarised in Appendix 2.

Drawing upon the information presented for Denmark, Finland, Norway and Sweden, this section conducts a comparative analysis of factors fundamental to Nordic environmental incentives. The issues addressed in the following sub-sections comprise incentive objectives, instruments, timeframes, core criteria, award rates, evaluation, key findings and issues of research significance.

2.2 Incentive Objectives

Four broad themes were identified in incentive coverage, those of environmental management, environmental technology, environmental employment and sectoral competitiveness, and energy efficiency and renewables. Within these themes, the range of objectives specified in the incentive guidelines indicates the associated priorities, form of change and

²⁹ Clement and Hansen, 2002.

end-states that each administration seeks to realise. An overview of the content of objectives, organised by theme, is presented in Table 2.

From a practical perspective, these objectives show a very wide coverage from launching research and development through to implementing feasible solutions with environmental technology and energy investments. From an enterprise perspective, the missions include raising awareness and skills levels, creating new jobs and equipping companies to compete in the specialist environmental sector.

Considered on a country basis, Denmark covers a wide spectrum of the comprehensive range of activities supported. The Danish grants aim to develop new skills in companies, to encourage and support the purchase of new technology and the promotion of R&D in energy technology, while creating jobs that are environmentally friendly.

In Finland, the overarching theme of environmental protection is used to stimulate a range of activities such as new technology development, co-operation and good practice, as well as informing SMEs about environmental responsibilities and environmental opportunities in technology, new products and competitiveness. The energy objectives encompass a host of related activities including efficiency surveys, audits, action plans and linked investments.

In Norway, environmental technology is the major theme. Initially, support was focused on cleaner production assessments, pilot projects and the pursuit of technical solutions. This was subsequently augmented by the purchase or development of environment-friendly technology that would reduce harmful emissions. In addition to energy efficiency, there is also direct support for eco-efficiency, environmental management systems and knowledge transfer.

Lastly, in Sweden, the incentive objectives have been very focused on SME development, with a series of schemes sequentially covering environmental management, design and environment-driven business. These initially related to securing high environmental awareness and increasing activity on improving product design, both of which are now combined in an incentive addressing operations, products and environmental management systems. The renewable energy support has the objective of increasing capacity in wave and wind power.

Table 2: Incentive Objectives by Theme

Environmental Management
<ul style="list-style-type: none"> • Increase environmental awareness and working practices • Develop skills in new areas, including product design
Environmental Technology
<ul style="list-style-type: none"> • Promote research and development • Reduce emissions through introducing new technology and cleaner production
Environmental Employment & Sectoral Competitiveness
<ul style="list-style-type: none"> • Promote growth and new and existing specialisms in the environmental sector • Create environment-friendly jobs
Energy Efficiency & Renewables
<ul style="list-style-type: none"> • Support research and investment to increase capacity in renewables • Promote energy efficiency through surveys, audits, action plans and associated investment

2.3 Instruments

Of the fifteen incentives surveyed, thirteen are grants and two are loans. In comparison with the European overview of environmental instruments quoted in the Introduction, the Nordic countries have utilised a greater proportion of grants recently, registering 87% as opposed to 60% in the European survey.³⁰ With regard to loans, the corresponding figures are 13% usage in the Nordic countries, compared with a European figure of 30% (see Figure 1).

Clearly, the European survey was carried out some years before the Nordic research, and in contrast to the present study it focused exclusively on environmental technology incentives.³¹ Nevertheless, a broad comparison of the relative popularity of different types of instrument conveys a certain sense of perspective.

With the recent closure of the Norwegian Environmental Protection Loan, three of the four Nordic countries surveyed now offer only grants. Of these three, the Swedish administration is unusual in that the grants do not reach individual companies directly, but instead they are disseminated through regional networks in activities designed to benefit SMEs overall.

³⁰ The European survey covered the twelve member states prior to Nordic EU accession. Denmark was the only Nordic country included, and at that time it had two environmental incentives, namely a grant for the promotion of environmental technology and a loan for environmental projects.

³¹ Clement, 1997.

Figure 1: Incentive Type

2.4 Timeframes

The incentives chosen for the survey are all current or recent initiatives. This means that the picture presented is selective rather than comprehensive with regard to time-series. However, the overview allows distinctions between longer-running and relatively new incentives, as well as identifying schemes with a short lifespan that operated for a few years only (see Figure 2).

In Finland, all the incentives were operational at the survey date of 2002, and they remain active. In Denmark, government policy revisions determined that the grants for green jobs and environmental competence were discontinued in 2001 and 2003 respectively. The energy incentives are the longest standing in both countries, with the Danish schemes having been operational for 11 and 14 years and the Finnish scheme for 12 years. The remaining environmental incentives appeared in the second half of the 1990s, within the last 5-8 years.

In Norway, environmental technology incentives were operational over a ten-year period, with the loan succeeding the grant when its projects were completed. However, the sustainable production incentive has been in existence for the longest consecutive period, now totalling 12 years of operation. The renewable energy grant is more recent, having been launched seven years ago.

In Sweden, the timeframes are quite different than in the other countries. The surveyed incentives were all launched within the last seven years, but only two remain, and one of these was launched very recently, in 2001.

Figure 2: Incentive Timeframes

2.5 Core Criteria

Selection criteria form an essential component of the project appraisal process. They support the basic standards that must be met, while refining the method by which projects are assessed, and they can also introduce additional dimensions when projects compete for the available funding.

Some core criteria are clear and straightforward to meet, following which a grant, loan or tax concession may be automatically awarded. In other cases, the systems are discretionary, allowing decision-makers the opportunity to select and support the best projects. In such scenarios, scoring systems may be developed and weighted, especially if there are limited funds and an excess of project applications.

The application process can also affect how the criteria are used. For example, with fixed deadlines for applications to be submitted, the choice between projects is simplified, and they compete on an equal basis. By contrast, if applications are accepted on an on-going basis, administrators cannot be certain whether better project ideas that exceed the criteria will arrive later in the year. In such cases, departments sometimes retain a proportion of funds as a reserve to support exceptional projects.

Combining the criteria in accordance with the themes identified in Section 2.2, a wide range of applied factors is addressed in assessing project eligibility (see Table 3). Some factors are more measurable than others, but overall they can be drawn together to present a rigorous appraisal of a project's quality.

Viewed by country, environmental technology in Denmark should apply a new theory or product, demonstrate growth potential, and have demonstration value; whereas energy technology should indicate CO² reduction and compatibility with national energy technology programmes. In comparison, the company-oriented criteria focus on skills development, knowledge levels, staff commitment, means to achieve results, and anticipated impacts on company development.

In Finland, the environmental protection schemes have wide-ranging criteria, encompassing environmental analysis, expected environmental benefits, innovative character, job-creation potential, technical feasibility, risk assessment and the company financial base. The energy scheme employs conventional quality criteria as well as a requirement to participate in energy agreements.

The two Norwegian environmental technology schemes relied on similar criteria, even though separated in time, namely emissions reduction, eco-efficiency, resource efficiency, innovative content, and knowledge transfer capacity. Renewable energy core criteria currently include energy savings and innovative content. The sustainable production incentive incorporates a range of standard criteria, but it also asks for evidence of demand and competitive attributes.

Table 3: Core Criteria by Theme

Environmental Management
Previous knowledge and skill levels, staff commitment, how results will be achieved, impact on company development, sectoral base, local significance, value-added, accessibility of documentation, product design.
Environmental Technology
Growth potential, innovative character, technical feasibility, demonstration value for other projects, scope for knowledge transfer, positive environmental impact on problem addressed, evidence of demand, emissions reduction, eco-efficiency and resource efficiency.
Environmental Employment & Sectoral Competitiveness
Sustainability of employment, environmental improvement contribution, environmental management and quality systems experience, environmental products, local significance.
Energy Efficiency & Renewables
Impact on CO² reduction, compatibility with national energy programmes, participation in energy conservation agreements, scale of generation, amount of energy to be saved, innovative content.

In Sweden, the previous SME environmental incentives shared common criteria on project feasibility, sectoral base, local establishment, value added and the accessibility of documentation. With the current SME incentive, the accumulated experience was used to suggest additional crite-

ria on environmental management systems, quality systems experience, and a focus on environmental products. The energy scheme addresses the scale of electricity generation and cost efficiency.

2.6 Award Rates

Published rates of award highlight the full range of percentage capacity upon which decision-makers can draw. However, average awards are generally lower than advertised maxima, with agencies seeking to agree the lowest amount of subsidy that will ensure a project commitment. Accordingly, the upper award limits quoted in Appendix 2 indicate the power or range available, but in practice they are rarely used. Nevertheless, for exceptional or interesting projects, the option to award this level of subsidy exists.

Viewed across countries, approximately half of the grants peak around a 50% award level, three of them extend as far as 100%, depending on circumstances, and the three others fall within the 10-30% range, varying with the project theme. Of the two loans, neither has an upper limit financially, but the Norwegian interest rate was fixed at 4.6%, and the Finnish one sets its interest level below market rates.

In Denmark, the grant awards range from 26-100% of project costs, the two extremes being occupied by the energy grants. Upper limits were imposed on the grants at DKK 300,000 for environmental competence, DKK 600,000 for environmental technology, and DKK 10 million for energy efficiency.

In Finland, environmental protection is supported at between 50-100%, with a minimum financial threshold of EUR 17,000. The energy grant has an upper limit of EUR 83,000, with different rates for energy audits and advanced technology (reflecting the greater expense associated with technology).

In Norway, the three grants have similar award ranges, collectively between 40% and 60%. The sustainable production grant is unusual in specifying that no financial upper limit is observed on awards.

In Sweden, the only direct grant (awarded to companies) is for renewable energy, and it has a low maximum award rate of 10% of costs, but no upper limit financially. In comparison, the three indirect grants all observe 50% as the upper award limit, the only exception being for environment-driven business development, which allows up to 100% for pilot studies. The business development grant has an upper limit of SEK 100,000, a considerable reduction from the previous financial maximum of SEK 500,000.

2.7 Evaluation

Periodic evaluation of the impact of incentives on companies is useful in identifying strengths, weaknesses, and lessons for future practice or incentive administration. The insights derived can also direct research towards systemic variables that appear especially effective or conversely that appear to undermine an incentive's operation.

At the point of survey in 2002, the formal evaluation of environmental incentives within the Nordic countries generally appeared insubstantial, with little investment placed into scheme monitoring or evaluation.

Denmark was the only exception, where a number of evaluations had been conducted for each incentive, ranging from 1999 to 2001 in implementation. For example, within the environmental competence scheme, the beneficiary companies had prepared self-evaluation reports, and the green jobs initiative has been evaluated both at mid-term and the end of phase one. The energy incentives were evaluated in 1999 and 2001.

In Finland, less evaluation has been carried out. For the environmental protection grant, an evaluation was planned, going beyond previous work that focused on a single region only. No evaluations had been performed for the environmental loan, other than material relating to the EU level of engagement. With regard to the energy grant, selected energy conservation agreements had been evaluated, examining CO² emissions and energy costs.

In Norway, evaluations of impacts on companies had not been carried out. However, for the sustainable production grant, internal evaluations had led to project selection criteria being modified, and a full evaluation was expected. For the technology schemes, the grant was last evaluated in 1995, and the loan had been subjected to an internal evaluation that looked at cumulative impacts. In comparison, the renewable energy grant had been evaluated, not for environmental benefits, but only for the amount of energy saved.

Lastly, in Sweden the survey recorded the lowest level of evaluation. Although the two earlier SME schemes incorporated evaluations focusing on company experiences, these studies considered neither environmental nor economic impacts. The currently operational business development incentive had not been evaluated. For renewable energy, the only available data appeared within annual reports published by beneficiary companies.

2.8 Key Points

- Each of the Nordic countries surveyed actively supports environmental improvement in SMEs

Acknowledging the financial challenges faced by small and medium-sized enterprises, the practice of supporting companies through public-sector subsidy is recognised as an important element in securing an environmental transition. This principle extends to each of Denmark, Finland, Norway and Sweden.

Common attributes can be identified in the sophisticated procedures used in approving projects for funding, a current preference for grants as the main instrument, and the broadly similar financial parameters within which incentive awards are made. Distinctions between the national contexts include factors such as the level of annual budgets committed for individual incentives, the means by which funds are distributed, the time-scale of incentive operation, the choice of environmental themes to pursue, and the conduct of monitoring and evaluation.

- The thematic coverage of incentives and the specific objectives addressed are very wide-ranging in content

For each of the four environmental themes of management, employment, technology and energy, financial support schemes are operational within the Nordic countries. Thereafter, within this framework, each country has identified an area for concerted action. For Denmark and Sweden, this would primarily relate to environmental management, whereas for Finland and Norway greater attention has been given to environmental technology.

As a long-standing issue, energy receives support in all four countries. However, although the outcomes are usually beneficial from an environmental perspective, this theme is often driven more by concerns of energy efficiency rather than ecological improvement.

Collectively, the incentive objectives relate to a spectrum of environmental activity including increasing awareness generally, developing skills and employment in the environmental sector, supporting purchases that reduce emissions and facilitate the transition to renewable energy, changing working practices, and promoting research and development to bring forward technological advances.

- In recent years, grants have been favoured as the most appropriate instrument for supporting environmental improvement in SMEs.

In contrast to European trends, the Nordic countries have utilised grants more widely, but with national differences in the way that the finance is

distributed. In particular, rather than giving funds directly to companies, the Swedish approach is to distribute the grants via an intermediary, so constituting indirect support considered to bring broader benefits.

Overall, there is an expectation that environmental funding will be reduced over time, as will the number of schemes supporting environmental activity. Within this scenario, rather than turning towards loans as the next step, it is anticipated that tax concessions will succeed grants as a means of assisting the financial requirements of SMEs.

However, this aspect of public sector subsidy has proved to be very dynamic recently. Two-thirds of the surveyed incentives appeared within the last seven years, and a number of those new schemes appeared and disappeared or became integrated during that period. This suggests that experimentation will continue as administrators seek the most effective instrument.

- The project selection process is characterised by closely targeted criteria, following which successful applicants generally receive support for up to half of eligible costs.

With competition for funding, project selection is linked to different criteria in each country, varying with the sectoral priorities and specific problems tackled. In some cases, systems of project scoring and weighting have evolved to enable prioritisation, though in practice some criteria prove to be more difficult to measure than others, requiring a degree of subjective assessment.

In addition to the technical requirements and themes such as innovation, the expectations placed on company profiles include an active interest in skills development, knowledge accumulation, staff commitment, product demand and other competitive attributes.

For those companies that receive incentives, the most common award limit is around 50 percent of costs, best exemplified by the surveyed Norwegian schemes, which would represent an equal contribution from public and private sector sources. Several incentives have upper limits financially, a precautionary measure against large projects draining these resources.

- Monitoring and evaluation are weak in incentive administration, being generally insubstantial and providing very limited information on incentive impact.

With the exception of Denmark, where a number of evaluations have recently been completed, the impact of incentives has not been closely examined. The monitoring activity that does exist is frequently not in depth, with little insight into elements such as incentive uptake and usage. In some cases, these problems originate in application forms designed

without questions of subsequent evaluation in mind; in other instances, competing administrative pressures have not allowed adequate time for structuring and analysing data returned from completed projects.

To appreciate the hidden and longer-term impacts, there is a need to investigate at company level to ascertain the relative influence and effectiveness of particular forms and levels of funding. Evaluations have not been directed at appraising outcomes from such a perspective, meaning that decision-makers have inadequate qualitative and quantitative information either to target new policy initiatives or to justify existing or recent interventions.

2.9 Issues of Research Significance

The first-stage survey highlighted administrative systems and documented the incentive instruments that exist, but it also revealed that detailed knowledge regarding the impact and effectiveness of incentives is not accessible. Consequently, the following three issues guided the second phase of this research project.

- There is a lack of clarity regarding company perceptions, appreciation and use of Nordic environmental incentives

Fundamentally, it is important for incentive administrators to understand how these beneficiaries experience the system. For example, are incentives marketed effectively, is the form of incentive appropriate, and how much significance is attached to the receipt of a subsidy? With regard to usage, why was the funding pursued initially, and how was it used within the company? What activities did it support (e.g. training, product development, resource management etc), and did the commitment correspond with expectations?

- Very little information is available concerning the impact of incentives on SME environmental performance

For companies that have accepted incentives, it is important to have a broad appreciation of the impact that it has made on the environmental performance of the enterprise. Rather than restricting the coverage of reporting to factors such as emissions reduction, a wider range of impacts could be appraised. For example, this might encompass specific actions such as the development of corporate environmental strategies, certification with environmental management standards such as EMAS or ISO 14001, resource usage, production or process methods, and changes in business attitudes towards the environment and sustainable development.

Multiplier effects may also be identified. These could include engaging new suppliers for raw materials or energy provision, developing plans for new forms of waste disposal or waste recycling, or perhaps gaining new business partners through participation in networking initiatives such as an environment-business forum.

- No information is available on whether environmental incentives have an impact on SME economic competitiveness

It is significant to ascertain whether environmental performance improvements have resulted in improved and tangible business competitiveness. It is acknowledged that it may be difficult for businesses to attribute economic performance improvements directly to the receipt of environmental funding, and in cases where the assistance has been very recent, insufficient time may have elapsed for benefits to emerge or be measurable. Nevertheless, useful indicators of economic impact may range from reduced costs and operating efficiency to increased employment levels, returns on new capital investments, and improved sales performance and market share.

3. Environmental Competence Grant, Denmark

3.1 Incentive Characteristics

3.1.1 Background and Funding Base

Within Danish Law, the Environmental Protection Agency administers integrated environmental initiatives – such as the Programme for Cleaner Products – in which new individual priority plans are devised each year. Formerly, there were 4 main parts to this programme:

- the Development Programme, with various R&D subdivisions, open to companies, institutions and research institutes;
- the Environmental Competence Scheme, within which SMEs formed the main users;
- the Environmental Label Enforcement Scheme, to assist companies in attaining environmental labels in new areas; and
- the Perspective Grant Scheme for projects that did not fit easily into the above categories, but which were considered interesting and worthy of support.

A substantial part of the programme budget was drawn from CO² tax revenues – forming part of the repayment to companies – with the remainder drawn from central government funds. In practice, there was a degree of cross-financing and positive interaction between the work of the different schemes. SMEs could apply for funding through the Development Programme, but their scale of operation meant that they lacked necessary knowledge, and the periodic calls for project applications were mostly too specialised. A new programme element launched in 2001 contained opportunities for smaller enterprises, including preferential award rates, for substituting certain materials and chemicals in production processes. However, from the SME research perspective, the Environmental Competence Scheme, which was operational from 1999 until 2003, is of greatest interest, and it forms the focus of this section.

3.1.2 Eligible Activity

Each year, the themes eligible for support varied with perceived priorities, but they remained mostly directed at internal competence building. Eligible environmental competence activity could range from a com-

pany's purchases through to its products (reflecting the importance of communication across the supply chain to the consumers), including the product development process and company aspirations to gain environmental labelling certification. The most advanced companies were able to address the final step in the sequence, namely the incorporation of lifecycle assessment (LCA) into their working practices.

3.1.3 Project Selection

Applications were made on a standard form, submitted to the Environmental Protection Agency. From the outset, companies were expected to display some knowledge of environmental management, either at the time of application or through designing a project directly to attain this knowledge. A further requirement was that companies had to be prepared to commit half of a man-year of their own staff to the project implementation.

These criteria were incorporated within a list of general requirements for all projects and applications considered by the Agency. They included that a company must:

- have environmental organisations and routines in place;
- involve its staff in the project;
- identify a specific problem for attention or a targeted impact;
- justify how the budget was tailored to meet the project goals;
- demonstrate how environmental results would be achieved;
- specify how the results would be used in company development; and
- operate in accordance with environmental law.

Thereafter, different and more specific criteria would be applied, depending upon the particular industrial or management sector of the application. For large projects or grant sums, the economic health of the company would also be assessed. Other factors influential in the selection process included establishing lasting systems of environmental management, especially through certification, and the creation of new jobs associated with a new environmental competence. For projects meeting the appropriate criteria, awards were made automatically i.e. there was no competitive bidding between projects.

3.1.4 Award Characteristics

The maximum rates of award were 50% for SMEs and 40% for larger companies. With regard to financial limits, the maximum amount for SMEs was DKK 300,000, whereas for large companies the corresponding upper limits were DKK 100,000 for projects such as the development of

environmental management systems (EMS) and DKK 300,000 for more advanced projects such as lifecycle assessment.

3.2 Beneficiaries

3.2.1 Participant SMEs

Five companies from different sectors, but mostly from the Copenhagen region, were interviewed about their use and experience of the Danish Environmental Competence Grant.

Glostrup Produkthandel, a recycling company, works with sorting and selling scrap metal and iron. The material is sold to larger firms that export the refined material to destinations such as Germany where it is sold to industry. During the last fifteen years, the company has reduced its activities in terms of the range of materials covered. There are 16 employees in total, and several of them have been in the company since its launch in 1965.

Omø Verkstaede specialises in surface treatments such as lacquering, corrosion treatment, sandblasting and façade cleaning. Its main market is Sjælland, but it has also worked in southern Sweden. The company has been in business for 54 years, and it has 26 employees, all but one on a full-time basis. In the near future, the level of employees, sales and net profits is expected to increase.

Allerød Autoophug dismantles old cars, saves the functioning spare parts, and sells these to private individuals. It started in business in 1986. In 2001/02, the turnover doubled, and the workforce was increased from a one-person business to reach three staff. Possible expansion in future may mean that one more person will be employed.

Specielbrød is a bakery, with customers including other companies and public authority institutions, such as local schools and Kastrup airport. It supplies bread to large conferences or events, and it owns a store and café in Copenhagen inner city. The company's current market is Denmark, but there is interest in exporting to Sweden. Although the market for bread is decreasing, *Specielbrød* is performing well. Launched in 1996, it now has nine employees.

Respekt Danmark produces cleaning products, floor treatment products and de-icing products. It sells mainly in Denmark. The company was started in 1964 as a family business, and today it has twelve employees.

3.2.2 Projects Supported

All of the supported projects related to aspects of environmental management systems. Two of the cases were working towards International Standards Organisation (ISO) certifications, partly as a result of Danish

legislation affecting sectoral requirements. They variously involved workshops, training sessions, preparation of a handbook, all of which worked towards an EMS, as well as documenting work procedures, resource use and waste procedures, concerning both internal company procedures and product and production methods. Another case was devising a computer-based EMS, pursuing a certificate developed especially for that sector, again urged on by the need to meet legislative requirements.

In the other cases, one company was already actively working towards ISO certification, and the grant supported a parallel project investigating the substitution of certain compounds in their products for more environment-friendly ones. Another company already had an ISO certificate, and it was seeking an EMAS certification to enhance its environmental profile.

3.2.3 Scale and Timing of Awards

The scale of awards made to the five companies ranged from DKK 70,000 to DKK 300,000. The grants were generally paid in two instalments.

3.3 Project Design

3.3.1 Environmental Capacity

Each of the companies had some degree of familiarity with environmental issues prior to applying for the grant. In a few cases, this was limited to practical experiences gained in the everyday work environment, where they were aware of the dangers inherent in particular substances, and they attempted to contain the risks or decrease contact with those materials. Two companies, while having no environmental expertise, were clearly very conscious of the damage posed both by their products and production processes. In one case, the environmental debate during the 1990s had increased its sensitivity to these issues, and prompted the engagement of environmental consultants to improve performance.

In the one company that had already qualified for ISO certification, there was a particularly high knowledge of environmental management, as this previous work had provided knowledge, documentation and a computerised system. Having attained this certificate, it became apparent that the company's clients were increasingly concerned to see such credentials.

3.3.2 Incentive Discovery

The means of grant discovery differed between companies. Two companies were introduced to the idea of participating in funded training by their sectoral organisation, promoting new knowledge and work towards certifications to match legal requirements. In these examples, the perception was that the procedure was being forced upon them though a legalistic process, and their expectations of a useful outcome were low.

In other separate cases, the municipality and environmental consultants drew attention to the existence of the grant. Only in one instance – the ISO-certified company – had the applicant found the grant independently, anticipating that it would enhance the company profile and status amongst clients.

3.3.3 Generation of Project Ideas

All the projects in these cases related to certifications and EMS processes, which had been sponsored by the public sector. Although sectoral and business organisations were directly approaching the companies, the ideas for the grant funding, the process and the structured methodology to design an EMS were all generated by the Environmental Protection Agency (EPA). Accordingly, when companies became willing participants in the process by accepting the grants, they looked to the EPA for guidance, and they had to satisfy the EPA that the systems met external requirements.

3.3.4 Project Targets

For all participating companies, the main target was to gain the certificate and to implement the EMS, for example reducing energy consumption, minimising waste, and reducing transportation requirements. One company had also set the target of involving the employees in the process. This illustrates that the targets at this stage were qualitative, and more quantitative goals were developed during the project as part of the project commitment, such as achieving a specific number of Swan-labelled products. Each year, the companies continue to formulate new goals to work towards, as specific targets were inherent in the certificate and are continually revised.

3.3.5 Scenarios without Incentive Support

If the EPA grant had not been available, three of the surveyed companies would not have proceeded with the certification project. Even though this step was seen as becoming essential for business, due to legal and supplier pressures, funding for this form of activity was considered difficult to obtain, especially for SMEs without specialist knowledge.

One company would have delayed the project until similar support was available from the municipality, but that would have meant working alone, whereas the EPA programme allowed a number of companies from that sector to move forwards together. Lastly, one company would have achieved certification through a parallel project that was already underway, initiated by its sectoral organisation. However, this route would have generated less employee involvement.

3.4 Incentive Impact

3.4.1 Environmental Working Practices

Corporate environmental strategy

All the supported companies either produced a corporate environmental strategy or improved an existing strategy. This work was undertaken as part of the (required) process for EMS certification.

Environmental management system (EMS)

All five companies implemented an accredited EMS. In one case, where the company already had an EMS, it was improved to meet ISO criteria, and in another case the work was carried out principally through a parallel scheme, but with identifiable synergies with the Environmental Competence Grant.

Resource usage

Most companies experienced a more efficient use of energy, either in the production process specifically or in the use of energy generally. This was put forward as the most visible change. By exception, one company stated that its use of resources, waste disposal and recycling activities, were already very good prior to receiving the grant.

Waste management

Waste management impacts were cited in two cases, where improved care of waste and greater recycling had resulted. This is connected to the modifications in resource use, where improved resource efficiency has led to less waste in the production process or in the use of the product.

Production or process methods

Amongst the service-oriented companies, activities are now better organised as a result of the project, they have greater control over the entire process, and they consider their operation more environmentally efficient. For the three industrial-oriented companies, modified production processes, linked to the reduced consumption of resources, accompanied increased control. In one instance, the most significant impact came from

studies investigating the possibilities to change the compounds used in their products. This resulted in more environment-friendly products and improved production methods.

Company profile

One of the companies overtly uses the environmental certification in its marketing, and it now has a profile as an environment-friendly company. As it works in a sector where environmental certificates are uncommon, this is definitely considered to be a marketing advantage.

Of the other companies, the certificate has not meant a new image or marketing profile. Although in the beginning some clients brought business to the company based on its certification, that is no longer the case, mainly because most operators in the sector have become certified. Any claims to be unique or a frontrunner have now been superseded.

Two of the companies have difficulties establishing an environmental profile, due to their specific activities, which are environmentally harmful. Nevertheless, one of these companies regularly promotes itself as environment-friendly, in the belief that demonstrating an environmental awareness is even more important.

Supplier links

Changes to supplier relationships have not been substantial, but have occurred in a few companies. In one case, new and more appropriate suppliers have been engaged whenever possible, but difficulties arise when clients make demands regarding specific products that should be used. Of course, companies can then attempt to persuade the clients to change methods, but it is a delicate balancing act between influencing the clients and at the same time satisfying them. In another example, one company now uses a questionnaire when contacting new suppliers, to check whether they have appropriate certifications, as part of their preparations to be eligible for the Swan label.

3.4.2 Economic Performance

Employment levels

Only one company recorded an increase in employment levels as a result of project implementation. Once it had gained the certification, the company hired one more employee to work specifically with environmental aspects of the company activities.

Business opportunities

In one case, the company considers that it received a large commission from a public institution because of the environmental certification. Since the sector in this case is not certified in general, and public institu-

tions are obliged to use certified suppliers to a high degree, this appears to have been a direct benefit.

In the opposite scenario, one of the companies declines business that it considers inappropriate on environmental grounds. Consequently, its business strategy has been affected by the environmental certification. Another company has created business opportunities for other companies by employing them to sell its products, so reducing its own transportation.

Sales performance

The beneficiary companies had different perceptions of the impact of certification on sales and overall profitability. In two cases, sales appeared to have risen as a direct result of certification. However, in one of these examples, the increased activity diminished again as more companies within the sector received EMS certificates. In other cases, no such effects were observed as yet, and this was anticipated to require a longer timescale.

One company commented that, even though environmental issues are of increased importance today, the price level is still the decisive factor for the clients. This places even greater importance on a company's argumentation for its products.

3.4.3 Attitudes and perceptions

Environmental learning

There was a range of environmental learning outcomes from the supported projects.

Internally, environmental aspects are now more integrated in a number of ways. The certification process drew attention to environmentally inefficient activities such as oil spills, energy usage, waste generation and the associated economic implications for the companies. Now there is greater knowledge about what can be done to reduce these impacts.

Deriving greater control over production processes and working methods has resulted in more control over impacts. In one case, the company as a whole is now better at perceiving the environmental impacts of what they buy or do, and this is expected to change the attitudes of employees, as they better understand what sustainable development could mean for them.

In another case, environmental education of employees has been initiated once or twice a year, to supplement the day-to-day guidance, and environmental knowledge of employees is discussed in salary and career development appraisals. Interest in, and motivation to work with, environmental aspects of the company are encouraged.

Nevertheless, there are differences in the extent to which employees view their activities as a part of a wider societal development. In one

case, the certification process was viewed purely as a company management issue, and there appeared to be no connection to general attitudes towards sustainable development. However, in another case, the company clearly saw the initiation of the EMS within the context of the societal debate on sustainable development.

Meeting expectations

The companies experienced different degrees of satisfaction with regard to outcomes against expectations. The more positive results included improvements in efficiency and business management, better value for money and happier employees, and product marketing uses the labels and logos as a persuasive selling argument.

Less enthusiastic responses focused simply on observations that the EMS was operating adequately. The initial expectation had been that it would entail a great deal of work for a small business, and this impression had been confirmed.

Negative responses related to disappointment with the impact of the certificate and new perceptions of major companies in the sector. Stronger reactions and more visible effects had been anticipated from clients, with companies attaining a higher status with the new qualification, but this has not always happened to the level expected. Furthermore, for one company the project had resulted in more distrust and doubts regarding large corporations and their environmental management credentials, particularly their statements expressing preference for certified subcontractors. In practice, this appears not to be a priority.

3.5 Administration

3.5.1 Interaction

During the project implementation phase, the companies had only limited contact with the EPA, restricted to administrative matters. This made it difficult for the companies to gauge the EPA's response to the work they were carrying out, and there was a general preference expressed for greater contact.

Most of the interaction was with the environmental consultants, the business organisations or the advisers active in the certification process. However, it was understood that the EPA, the environmental consultants and the sectoral organisations were in regular contact, which collectively ensured a good knowledge of the specific demands on the sector.

3.5.2 Organisation

The companies that worked through the certification process found networking with business colleagues, contact with business organisations, and use of consultants as advisors to be very valuable. It was observed that EPA staff seemed to have good sectoral knowledge.

General comments on the grant and the work carried out within its framework were mostly very positive, including that the Environmental Competence Grant converted the certification process into an activity that involved the whole company from directors down to all levels of employee.

4. Green Job Grant, Denmark

4.1 Incentive Characteristics

4.1.1 Background and Funding Base

In a period of high unemployment in Denmark, the Green Job Grant was an initiative designed to create new environment-friendly jobs and contribute to a cleaner environment. The scheme was operational from 1997 until 2001. Initially very broad in scope, the grant was administered by a Green Secretariat in the Danish Environmental Protection Agency (EPA). In the first four years, support of DKK 350 million were made available, from which DKK 280 million were given out as grants, essentially divided in half between job-creation and environmental technology. In 2001, DKK 28.2 million was made available, and DKK 20 million was given out.

4.1.2 Eligible Activity

During the first phase, a wide range of activity was eligible for funding. Adopting an Agenda 21 bottom-up approach, the scheme favoured concrete local projects that created jobs (preferably permanent jobs) and improved the environment. This encompassed themes such as environmental management, new (green) firms and (green) products, knowledge and network projects, and pilot projects designed to solve environmental problems in a manner that allowed the direct transfer of experience.

For the second phase, an agreement in Parliament in 2000 narrowed the scope of the grant. This reflected the considerable decrease in Danish unemployment – to the lowest in 20 years – and represented a move away from the wide-ranging remit to tie this instrument more closely to existing government policies. The grant then concentrated on two main activities:

- creating jobs for those on the periphery of the labour market; and
- marketing innovative environmental technologies.

As there was already large-scale activity in retraining or re-skilling the unemployed, the Green Job Grant focused on practical environmental considerations such as how to save water or energy. The people receiving this training often subsequently found employment as environmental advisers or managers.

4.1.3 Project Selection

A three-member Board appointed by the Minister for Environment and Energy prepared guidelines for applicants. Other supporting materials included a programme description that identified project types, goals, success criteria and an evaluation plan. To be considered, project applications had to satisfy three basic core criteria:

- the project must contribute to environmental improvement;
- a sustainable job must result; and
- the company should have a good basis economically and organisationally.

Thereafter, applications related to innovative technologies had to be at the cutting edge in their field and address a new theory, idea or product, contain demonstration value for other projects; and have obvious growth potential. In comparison, projects designed to create jobs for the unemployed had to be cutting-edge in the first phase, but in the last year or second phase this was relaxed in favour of good demonstration value for other projects.

Once received, applications were mostly assessed in-house, with only a limited number of technology-based projects being sent to experts for comment. Each application was assessed for its prospects in relation to market size, contacts to the market, the company's business accounts, and the likely success of the project. Following the assessment, a recommendation was made to the Board for a decision.

4.1.4 Award Characteristics

For job-creation projects, grant awards were made on the basis of a 50 percent contribution to costs, usually on a scale between DKK 350,000 and DKK 750,000. The lower level corresponded to one-year support for a single employee, whereas the upper level could support projects for one-to-three years. Projects related to innovative environmental technology usually received grant awards over DKK 600,000. Following the EU *de minimis* rule, DKK 750,000 (EUR 100,000) was the maximum award that could be made to a company. There were also sectoral restrictions, precluding awards for activities related to farming, fishing and traffic. Approximately 10-15 percent of rejected applications returned as re-submissions, following advice from the Agency on how to improve the application.

Payments to applicants were made on a quarterly basis. The beneficiary companies provided quarterly reports, mostly economic in content, and a final report on project completion, which varied from three to twenty pages in length and specifically included a section on environment. For example, it addressed questions related to environmental stan-

dards, reducing dangerous substances and whether a green network had been created.

4.2 Beneficiaries

4.2.1 Participant SMEs

Four companies with quite different activities were interviewed for the Green Job Grant. Three of them were located in Copenhagen and one in Fredericia, Jutland.

A2SEA was founded in 2000, and its main activity is transporting and erecting wind turbines out at sea. Other companies build the turbines, but *A2SEA* transports them, as well as spare parts, repairmen and staff out to the sites. A secondary activity is sea transport, since they have two large ships with cranes that can transport objects other than wind turbines. *A2SEA* has 19 full-time and three part-time employees. The company currently rents two ships, but is planning to buy those vessels, which is expected to increase the staff and the company's turnover.

Bacess, launched in 2000, develops air treatment/cleaning devices that improve the indoor climate through soil and plants. The method is based on research from the last 20-30 years, and it represents a cheaper method for clean indoor air than ventilation systems. *Bacess* has developed the method further, and it now has an international patent for the product. Approximately 200 devices have been sold and placed out in work environments. The company presently has one full-time and two part-time employees, and future expansion may occur with a move into exporting, among other things.

Kokken & Køkkenhaven produces ready-made organic soups for sale in 200 food stores across Denmark. The company consists of two persons, and both were involved in production initially, but now a subcontractor in Jutland makes the soups, and the company concentrates on sales and marketing activities. The company was started in 2000, and sales have been steadily increasing, but financially it just breaks even. In the near future, both sales and staff are expected to grow as the company moves into the process of exporting.

Nihola Cykler builds, sells and markets bikes, primarily three-wheeled bikes with a small carriage for children or goods. The company has existed since 1998, and it currently has 20 percent of the Danish market for three-wheeled bikes. Now in an expansion phase, it is growing 100 percent each year, and staff numbers are expected to increase from two to three employees in the near future.

4.2.2 Projects Supported

All the projects within the Green Job Grant were oriented towards providing start-up finance for SMEs, and the grants were aimed at paying salaries. Each company was in the start-up phase, and the funding represented assistance during a period with a lot of costs but few gains. One company used the funding for renovation and reconstruction, the others for salaries for 1-2 persons and the general launch of the company.

The green aspect of the funding was that the companies were supposed to have a product with a green profile. In the selected examples, the content covered wind-power, air cleaning through plants, organic soups and bicycle production. There were no demands for environmental management certifications.

4.2.3 Scale and Timing of Awards

The scale of awards ranged from DKK 250,000 to DKK 750,000. The Environmental Protection Agency made the payments in four instalments each year, with each project lasting 1-2 years during 2000-2002.

4.3 Project Design

4.3.1 Environmental capacity

The degree of environmental awareness varied between the companies. Only one of the companies had a high amount of environmental knowledge prior to the application, gained through an Agricultural University education and previous experience working with guidance on water cleaning and sludge. Another company had a limited prior knowledge of environment and ecology, but a clear idea to focus on an ecological food product, and this was based on experience within the food industry.

The two other companies had no environmental links, but they found a good idea for a product that coincided with the criteria of the Green Job Grant. One of these companies had no interest or ambition regarding environmental sustainability, ecological production methods or products.

4.3.2 Incentive Discovery

Each company learned of the grant's existence in a different way. The diverse sources included an established professional network linked with the EPA, the company's accountant, a business journal and a friend.

4.3.3 Generation of Project Ideas

In all cases, the applications for Green Job Grants reflected existing ideas within the companies, and the EPA was not involved in the generation of ideas. Only in one case was the application modified to raise the environmental or sustainability profile to suit the criteria of the awarding body.

4.3.4 Project targets

Only one company had quantitative targets within the project implementation. These related to level of sales and market share, distinguishing between types of products. In this case, the sales targets were not achieved, but all other goals were met.

Most projects had targets focused on the hiring of staff, usually of the order of 1-2 additional personnel. However, for one company the main goal related to reconstruction and renovation of machinery, with other qualitative or quantitative goals assumed to be present, but not articulated.

In some cases, project goals and targets were revised and reformulated during the implementation process, responding to business opportunities or signals from the market.

4.3.5 Scenarios without incentive support

Only one company considered the grant to be decisive for the company's development, without which the company would have looked for private investors. That would have resulted in a different scenario, not only because an investor might have sought to influence the character of the project, but also because private investors can withdraw their financial backing if a company does not develop according to expectations.

Two companies stated that the without the grant, the project would have continued using alternative funding, but this would have delayed the project launch, and slowed down methodological development and the securing of an international patent. In another case, absence of the grant would have made no difference.

4.4 Incentive Impact

4.4.1 Environmental Working Practices

As the Green Job Grant is focused on job-creation and technology that assists environmental improvement, there is less concentration on themes such as environmental working practices within beneficiary companies. Instead, the grant is oriented towards generating growth in the environ-

mental sector and associated products. Nevertheless, some impacts are identifiable.

Corporate environmental strategy

One company introduced ecological aspects of its product and marketing strategy into its business information plan. Whereas this is not equivalent to a separate corporate environmental strategy, it represents a strategic approach incorporating environmental and ecological dimensions.

Company profile

In one case, the company promotes its product on the market with clear emphasis on its ecological credentials and profile.

Supplier links

In a case where the company has three subcontractors, the signing of new contracts is preceded by assurances that these companies do not use PVC plastics and that they do use ecological soils. In addition, the business idea in this case is to impact on other companies' environmental awareness, specifically regarding indoor air climate.

Other environmental impacts

In another instance, production methods have not been in focus, but a new ecological product has been introduced onto the Danish market, having gained the Danish ecological food marking. A similar status is being pursued for exporting to the Swedish context.

4.4.2 Economic Performance

With regard to economic performance, it should be borne in mind that the companies were new start-ups when they received the grant, that they are still relative new-comers, and that in some cases the grant was small in economic terms.

Employment levels

In most cases, the main purpose of the grant was to increase employment levels through hiring additional personnel, and this result occurred in all surveyed companies. Although the scale of the increase was small – between 1 and 2 persons – it was strategically important at that point to secure growth amongst new environmental sector SMEs. One company also created work for subcontractors.

Sales performance and profitability

As the grants represented start-up support, they were decisive for the development during the first phase, and they clearly impacted on the selling of products and services by the companies. However, it is difficult to

distinguish between the sales effect coming directly as a result of the grant and from other factors. The hiring of additional employees was assumed to have improved sales performance, overall profitability and market share.

4.4.3 Attitudes and Perceptions

Environmental learning

Little change in attitudes or perceptions resulted from receipt of this grant. With the exception of increased knowledge of markets, companies with considerable environmental knowledge or minimal environmental knowledge appear to have retained these relative positions.

An aspect of project implementation that would not have been anticipated was the disillusionment, in one company, with environmental credentials as a sales argument. Today, that company has expanded into non-ecological products as a concession to market demands.

Meeting expectations

In all cases, the expectations of the grant were fulfilled, and the support was used as planned. Of the four case studies, one company had grown less than expected, when compared with the estimated sales development, but all companies were operational and progressing in the direction originally foreseen.

4.5 Administration

4.5.1 Interaction

During project implementation, contact between the EPA and the companies was very different in each case. One company received regular visits from the EPA, perhaps 4-5 times during the project year, but contact with the other projects was mostly restricted to formal reporting in order to receive the grant payments.

Overall, three of the companies stated that the EPA showed positive interest in the company and the product, and in one case the company learned indirectly that the EPA had highlighted its project as a good example of what the Green Job Grant could achieve.

4.5.2 Organisation

Most beneficiaries found that the organisation and delivery of the grant functioned smoothly, and that the EPA understood the sectoral requirements very well. In general, the low degree of involvement and demands from the side of the EPA, and the importance of support for a company in

a start-up phase, were described as an effective combination that created an atmosphere of trust.

One suggestion was made that it would have been useful if the support had focused on different sectors each year and that the results were used to increase the learning and interaction within and between companies in the environmental sector.

5. Environmental Loan, Finland

5.1 Incentive Characteristics

5.1.1 Background and Funding Base

Finnvera, a public limited company specialising in risk capital, administers the Finnish Environmental Loan. One of Finnvera's main responsibilities is to provide new loan and guarantee products for Finnish SMEs, and it should assist these companies to improve their competitiveness and performance in international markets.

Work with the environmental loan commenced in 1996, prior to the institutional merger that established Finnvera. The first steps were the production of an environmental strategy, and this marked the onset of thinking about awakening environmental responsibility in SMEs. This especially involved ideas such as perceiving environmental factors as a means of competitiveness, developing new products and encouraging companies to specialise in environmental technology. Another objective was to involve Finnish SMEs with environmental programmes in the border regions with Russia and Estonia.

On obtaining approval from the European Commission, the Environmental Loan was launched in 1997. This was accompanied with a workbook for environment, similar to the workbooks for EMAS (eco-management and audit scheme). However, only a minority of SMEs has proved willing to pay the EUR 50-60 to obtain the workbook and start their environmental analyses. Nevertheless, most large Finnish companies now have the environmental management standard ISO 14001, and they have stated that in 3-4 years they will not accept suppliers without an environmental programme. These types of threats tend to initiate changes in SME practices, and Finnvera's on-going role is to offer products that help to finance this transition.

The European Investment Fund (EIF) provides Finnvera with a loan guarantee that has facilitated a lower interest rate for the Environmental Loan. However, the guarantee is currently under review, and it may be withdrawn if it is not appraised as essential. Each year, the funding base supporting new environmental loans is approximately EUR 25-30 million.

5.1.2 Eligible Activity and Spatial Coverage

Eligible activity for the Environmental Loan is not prescribed, but instead proposals are considered for a wide range of applications. By way of example, the loan can be used for the following purposes:

- energy saving and energy conservation;
- investing in recycling companies;
- investing in environmental technology companies, especially those launching new products;
- modifying treatment processes within the metal industry;
- installing production components that have a lower environmental impact; and
- assisting the transition to a closed system.

The loan does not support activity designed to meet legislative obligations.

5.1.3 Project Selection

Companies apply for the loan using a standard form that is available from Finnvera directly or alternatively from its website. Completed applications are then submitted to the nearest regional office. To qualify for consideration, SMEs must have no more than 250 employees, and either the company's turnover should not exceed EUR 40 million or the balance sheet should not exceed EUR 27 million. In addition, companies wanting to benefit from the EIF guarantee cannot have more than 100 employees, and they must be within risk groups A1-B2, the best within the investment grading system. These applicants will also be asked to complete a special form detailing the company's environmental characteristics.

An analyst from the appropriate regional office then visits each applicant company. His or her objective is to prepare a comprehensive analysis of the company, identifying any weaknesses in its financial base - for example in environmental systems or product development - that require assistance. In this context, Finnvera is generally acting as a "second wave" financier, supporting companies that banks consider too high a risk. Consequently, Finnvera takes substantial risks to stimulate activity in these companies, but experience has shown that the beneficiaries improve their performance when they assume responsibility on receipt of the Environmental Loan.

All the subsequent financial decisions are based on the company analysis, which usually comprises between 5-15 pages addressing internal and external factors affecting the company and its competitiveness, and environmental factors represent one component of this assessment. Although the environmental analysis is considered especially important,

SMEs have generally not carried out this work in advance. The decision on whether to approve a loan would generally be taken in the Finnvera regional offices, with the exceptions of when companies submit especially large loan requests or have substantial previous liabilities. In that case, the level of decision-making would be higher in the organisation.

5.1.4 Award Characteristics

A typical award for the Environmental Loan is about EUR 175,000. There is no formal upper limit financially. The loan is paid in two instalments each year. Thereafter, the first two years act as a grace period, and repayment takes place over the subsequent 3-4 years. The interest rate on the loan will vary in accordance with the risk rating, whether the project is based in a EU regional policy programme area, and collateral. In general, the Environmental Loan interest is set below the market rate.

During project implementation, Finnvera analysts visit each beneficiary company between 1-3 times in a year, when they will discuss recent developments and market now loans and guarantees. After project completion, monitoring options include further visits from Finnvera or EIF accountants to verify that the money had been spent on an environmental investment. There is no formal obligation on companies to report either on how the award was used or on its subsequent impact.

5.2 Beneficiaries

5.2.1 Participant SMEs

Five companies were interviewed in Finland, as follows.

EC-engineering was founded in 1995. Engaged in the industrial manufacturing and engineering sector, it produces composite products for trains and other vehicles, including panels, wall elements, stairs for double-decker coaches, ceiling and floor structures, and tram roofs. These are high-technology products in reinforced plastic. With 20 full-time employees in 2003, the company had taken on five additional staff in the previous two years, and a similar expansion was expected in the years ahead. Following a year of development, sales and profits are expected to double in the immediate future.

Eurocon was founded in 1969. It manufactures sandwich panels (insulated walls and roofs) for buses and trucks. Its customers are mainly in the Nordic countries and central Europe, mostly Germany. In 2002, the company had 40 full-time employees, and this was unchanged for three years. More full-time employees may be engaged in the years ahead. In the previous three years, sales have been rising, and an annual increase of

10 percent is expected in future. Profits have been less stable, but a positive net return is expected.

Kymppi-Eristys was launched in 1982. It produces industrial insulation for pipelines and tanks, which involves manufacturing and installing a fine metal sheet around pipes. In 2002, the company had 175 full-time employees and two part-time employees. This represents an increase of 65 full-time staff over the previous two years, but this is expected to diminish soon to stabilise at about 150 employees. Sales have more than doubled in recent years, and it is expected that this increase will be maintained, alongside net annual profits of about one percent.

Lamor Corporation was founded in 1982. Following its development of a technique for oil separation, the company is now engaged in the trade, distribution and management of oil spill equipment that is used in the event of accidents at sea. The products take the form of special boats (skimmers) that separate oil from water. Lamor formerly produced these machines, but it has now outsourced production and adopted the role of “solution provider”. As there is limited interest in buying oil skimmers prior to accidents, Lamor is developing a new type of system, whereby a pool of up-to-date machines can be hired when needed. The company has 38 full-time employees, representing an increase of 20 over the past two years. Sales have been increasing and are expected to increase further by 25 percent, with a corresponding increase in net profits of about 30 percent.

Värisävy was founded approximately 30 years ago. The company is engaged in the colouring of textiles used in hospitals and military clothing, and in producing a set of cloths for infants in Finland. The company has 36 employees, a slight decrease from previous years. Sales have increased recently, and it is anticipated that this level will be maintained in future, while net profits increase by around 10 percent.

5.2.2 Projects Supported

The projects supported had a range of themes. Most were related to making specific improvements to the production process. Two projects involved improvements to the working environment through investments to contain or reduce emissions during the manufacturing and treatment processes. Two others comprised recycling, firstly to reduce waste metal and secondly to reduce energy usage by redirecting hot wastewater back into the process. The other project had a broader objective to prepare a company development strategy that encompassed new tools and processes.

5.2.3 Scale and Timing of Award

The loans varied substantially in scale, ranging from EUR 50,000 to EUR 590,000, and meeting between 20 percent and 50 percent of project costs. In timescale, most of the loans were paid out in 2001/2002, issuing the full amount in one installment, and agreeing repayment periods of between five and ten years. The repayment conditions varied, incorporating features such as a 2-year repayment holiday and a comparatively low interest rate in the first year.

5.3 Project Design

5.3.1 Environmental Capacity

Each of the companies had some prior knowledge of environmental factors in their industry. In one exceptional case, this was due to the fact that it was engaged in the environmental sector, and the project was designed to progress this central focus. In the others, the knowledge came from different sources. These included working with materials such as solvents and chemicals considered environmentally dangerous, and serving a customer base that was already EMS certified and required suppliers to comply with in-house environmental policies and use recyclable materials. In one case, upgrading this existing knowledge meant working with specialist consultants identified through the Finnish Health Ministry.

5.3.2 Incentive discovery

All of the companies learned about the Environmental Loan through Finnvera. In most cases, they were already familiar with Finnvera through previous loans, and therefore they knew where to apply. However, it seems that none of the companies knew in advance about the Environmental Loan. It was only on initial contact to enquire about standard investment loans that Finnvera drew attention to the project eligibility for the Environmental Loan, which was available at a more competitive interest rate.

5.3.3 Generation of Project Ideas

The companies devised all of the project ideas. Rather than contacting Finnvera for inspiration, the companies had come up with their own ideas that suited their purposes, and then they sought available finance. In each case, the themes were considered viable and appropriate for the purposes of the Environmental Loan. Finnvera had no involvement in the project design process, and its actions related more to standard criteria verifying

that the companies had a proven business track record and financial credibility.

5.3.4 Project Targets

Finnvera did not request quantitative project targets, but a few companies included them in their loan applications. These comprised, for example, achieving energy savings of 30 percent, or reducing the use of materials by 20 percent (this target was exceeded to reach 30 percent).

5.3.5 Scenarios without Incentive Support

If the Environmental Loan had not been available, four of the five projects would still have proceeded, most suggesting that an ordinary loan from Finnvera would have been obtained. The Environmental Loan provided a lower interest rate, but this was not a decisive factor for project implementation. The consequences would have been a slower process in project realisation, and in one case accepting a smaller and cheaper building.

One company would not have launched its project without the Environmental Loan. The reasons related to the scale of the investment (the largest loan of EUR 589,000), which reflected a substantial process with associated risks of incurring even higher costs, should the development process be delayed. Alternative sources such as banks would not have been approached, as they require greater security and generally reject high-risk projects.

5.4 Incentive Impact

5.4.1 Environmental Working Practices

Corporate Environmental Strategy

Only one company cited an impact on company strategy. In this case, the loan had been acquired precisely to develop a new strategy and company direction in service and product development.

Resource Usage

Two companies identified lower resource usage since project implementation. These related to savings in materials that resulted in significantly less waste, improved energy efficiency, and lower water consumption through improved wastewater recycling.

Waste Management

Two companies recorded a reduction in waste. In one instance, the waste material formerly comprised almost 15 percent of the total raw materials. Now 80 percent of this material is recycled, including different metals such as zinc, aluminium, and steel. Painted metals, which were previously difficult to treat, are now partially recycled and then sent on to another company that can complete the process.

In the other case, the investment meant that less waste comes from the factory, as the new controlled process ensures that 99 percent of the products are perfect. Formerly, with a less controlled process, only 80-85 percent of the products was acceptable, meaning that 15-20 percent became waste. This company also has plans to work together with other companies to establish a recycling initiative where materials can be exchanged between participants, making the activity more effective and competitive.

Production or Process Methods

For most beneficiaries of the loan, improvements to the production or process method was the main focus of the project. From the environmental perspective, all of the improvements were environmentally beneficial, ranging from strategies to modify existing methods in broad terms to direct changes to processing techniques, materials application, recycling, and energy efficiency.

Company Profile

Two of the companies stated that implementation of the project had affected the company profile, in that their marketing now incorporated a more environment-friendly image. This was understood as a part of the business development process.

Supplier Links

Only one company identified an impact on supplier links as a result of the project. However, in this instance the network of suppliers extends to over 200 subcontractors involved in supplying the environmental sector, so the influence has been broad-based. Another company had already changed suppliers to favour enterprises certified as environment-friendly, but this had been a requirement expressed by the company's German customer base.

Other Environmental Impacts

Two companies highlighted how the projects had substantially improved the work environment. In particular, this related to the confinement or reduction of harmful substances used in production, so protecting the health of the workforce.

5.4.2 Economic Performance

Costs and Operating Efficiency

Four companies identified increases in operating efficiency and corresponding reductions in costs. In one case, the new process created a comparative advantage, at least temporarily, as it improved the quality of the product while lowering the prices, which enhanced competitiveness. In another case, the new recycling activity has removed the costs of transporting waste materials to disposal sites, and secondly it has generated income from recycling companies for the material, as it has value for them. This combination of saving and new income has directly influenced overall profitability. A third company indicated that costs had been lowered by around EUR 30,000-50,000, but this saving was not considered substantial enough to impact on competitiveness.

Employment Levels

Two companies identified project impacts on employment levels. These represented only modest increases of between one and three additional full-time employees.

Investment Intentions

All companies stated that the loan impacted on investment, because the majority of projects involved industrial investment.

New Business Opportunities and Market Share

Three companies stated that the project has impacted on market share and new business opportunities. In particular, the improvements to the work environment were considered to be significant for competing in the German market, where the companies perceive the customers to have greater concern for both the environment and the working environment.

Sales Performance and Overall Profitability

Three companies recorded an increase in overall profitability, but for one company this represented only a modest increase. In one case, it was clear that the new equipment and savings in raw materials meant the work could be done faster, resulting in improved sales performance and greater profit.

Other Economic Impacts

One company cited an improvement in quality resulting from the investment. The new enclosed heat treatment process, which subjects products to a high temperature for 20 hours, is good for the work environment but also gives the product better stability. Customers have already made this interpretation, recognising the better quality in comparison with competi-

tors. These factors are considered important in influencing customer decision-making on where to place orders.

5.4.3 Attitudes and Perceptions

Environmental Learning

Three companies stated that their projects had impacted on changes in attitudes and perceptions regarding environment. In one case, this represented a clear change in thinking, where an increased knowledge of the range of materials that could be recycled lead to a changed attitude amongst the workers towards recycling in general, and greater attention to use and recovery of materials used on the business premises.

In a similar case, the company learned a great deal about environmental issues through the project, which acted as a catalyst for launching a project on risk analysis for the work environment. The first risk analysis developed a certified quality system that contains a process for continuous analysis and improvement. Although this was initiated two years after the environmental loan investment, the loan represented an important step that expanded their knowledge and prompted interest in environmental factors. This attitude extends to both the management and the factory workforce, which are active in the work analysis system and consider it important.

In another company, where there was already some interest and knowledge regarding environmental issues, the Environmental Loan had a positive impact, generating increased interest in environmental issues.

Meeting Expectations

In terms of meeting expectations, all beneficiaries were satisfied that receipt of the loan had met their expectations with regard to savings, recycling goals and aspects of business development. In at least one case, the project has exceeded initial expectations.

5.5 Administration

5.5.1 Interaction

All companies described the interaction with Finnvera as positive, and they all considered that Finnvera understood their project very well. In terms of the form of interaction, each company in receipt of a loan was required to submit annual financial reports, and this material was used in some cases to rate companies in comparison to others in the sector. Beyond this formal reporting obligation, the beneficiaries varied in the methods adopted to maintain links. One company has sent a mid-term report and a final report, another sends informal updates to Finnvera

every six months, and a number have received visits from Finnvera officers to their factories. The majority maintains contact through frequent telephone communication.

5.5.2 Organisation

All of the companies were positive and complimentary regarding the organisation and effectiveness of Finnvera in administering the loan. The Finnvera loan officers are perceived as quick to make decisions, interested in the investments they support, flexible in comparison with other banks, and have a good dialogue with client companies. Bureaucracy is also kept to a minimum.

The loan is considered to be competitive through its lower interest rate, and the repayment conditions are favourable, especially the two-year repayment holiday. One company foresees returning to Finnvera for a second Environmental Loan to support investments to obtain ISO 14001 certification.

6. Environmental Technology Loan, Norway

6.1 Incentive Characteristics

6.1.1 Background and Funding Base

An environmental technology loan known as the Norwegian Environment Fund was administered by the Norwegian Industrial and Regional Development Fund (SND) for two years during 1998-2000. The former Minister for Foreign Affairs – who was also a former Prime Minister – originally proposed the loan, and it was perceived as a demonstration that government was taking action to meet the Kyoto target, supporting technology that reduced emissions. NOK 250 million was the total allocation for the two-year period. All of this money was marked for company use, and some loans have already been paid back and returned to the Ministry of Finance, which re-allocates it to other tasks of government. If projects are cancelled and the money is not claimed, SND may reallocate it to new projects.

6.1.2 Eligible Activity

The main purpose of the loan was to promote investment in – or development of – environment-friendly technology that reduces emissions of greenhouse gases, as well as other harmful substances. Waste was a common project theme, typically focusing on minimisation, re-use, incineration, recycling, bio-energy and compost degradation. Other eligible themes encompassed energy-efficient production processes, alternative energy sources, and energy recycling. It was targeted at projects that generally experienced difficulty in obtaining funding either because of their high-risk character or because the estimated profitability was too low. Investments aimed at meeting the demands of environmental legislation were not eligible for support. The loan was available in all parts of Norway, but with a preference for peripheral areas, as part of regional policy fulfilment. However, the majority of the population lives and works in central areas, and in consequence more than half of the projects were allocated to non-peripheral areas.

6.1.3 Project Selection

Project applications were sent to the 18 SND regional offices located in each of the Norwegian counties. As there were no submission deadlines, applications were received on an on-going basis. The county offices assessed the applications, but copies would also be sent to the main SND office in Oslo and to the Norwegian Pollution Control Authority (SFT), for parallel assessment and comment. In practice, only a few specialists in SFT were consulted, and the assessments were generally positive. The Fund operated in accordance with certain standard criteria:

- At least two-thirds of supported projects should reduce greenhouse gases, directly or indirectly;
- For a project to qualify, the investment's eco-efficiency and/or resource efficiency should be positive; and
- Projects implementing new technology or attempting new applications of existing technology would be especially encouraged.

There was no standard application form, but instead a brochure acted as a guide on how to apply. It emphasised straightforward information requests, such as identifying which problem the project would be attempting to solve or partly contribute towards, the extent to which it would reduce emissions, describing the resource and environmental efficiency of the technology, and assessing whether the project would be economically and financially viable. In accordance with normal SND procedures, a close dialogue was conducted with the client prior to the formal application. The technical aspects were addressed by SFT. The selection process was operated on a "first come, first served" basis. Accordingly, if a project seemed sound, it was approved and funded. Rejected applications were generally undermined by financial rather than technological factors.

6.1.4 Award Characteristics

At the time of survey, 62 companies had received a loan. The first 19 cases received a very low rate of interest between 1% and 4%, varying with each project's capacity to reduce greenhouse gas emissions. However, the Ministry of Finance intervened to state that this level of subsidy should not continue, and the interest rate was subsequently raised to 4.6% for new projects. There was no formal upper limit on the amount of the loan, but award decisions followed EU rules on the scale of eligible project costs. In practice, a maximum of 50% was generally observed. The corresponding aid intensities were calculated from an equation based on the interest rate and the length of the repayment period, while taking into account the share of the total financing borne by the Norwegian Environment Fund. In total, 28% of the overall project costs was financed by the Fund.

For the SND portfolio seen as a whole, the Environmental Technology Loan projects generally exhibit marginal profitability. Accordingly, supplementary government financing, mainly in the form of grants, has been necessary for the realisation of approximately 40 percent of the projects. This has required close co-operation with other government funding agencies, and it has relied heavily on the use of SND's other financial instruments. Certain companies take a long time to get their projects started. These delays might relate to government policy changes, for example lowering energy charges so that companies find it less urgent to take up the projects. The CO² tax and energy prices are important in this context. The companies wait until times are harder financially before committing their money to these investments.

Another reason for the long timescale is that, in many projects, new facilities/factories are being planned and built, and these processes are very time-consuming. Companies have the option to wait for up to three years before taking the loan, and in some cases the loans may never be claimed. Some companies might also regard it as a financial reserve. The payback time on the loans varies from 2-3 years up to 20 years.

Monitoring reports should be submitted once a year during the implementation of each project award. However, only a very limited number of reports have been submitted. Whereas companies do appear to be following the environmental requirements, they are reluctant to complete the periodic reports. This is now seen as a weakness in the initial agreements, where insufficient emphasis was placed by SND, and no standard format was prescribed. In practice, very brief reporting would be accepted, as a minimum estimating the reduction in emissions.

6.2 Beneficiaries

6.2.1 Participant SMEs

Four companies in the environment industry sector were interviewed about their use and experience of the SND Environmental Technology Loan.

Hurum Glass, based close to Sætre, specialises in removing PCBs from discarded window frames. Established in 1998, the company employed four people full-time by 2000, and it recorded its first year of profit in 2002. With patented processes, the company continues to have a monopoly in its field.

Norsk Metallfragmentering, located in Gjøvik, is the recycling arm of Oppland Metall, working with both ferrous and non-ferrous metals. The number of full-time staff has fluctuated, amounting to 7 persons in 2003, half the number of the previous year. Sales have been variable, and in

recent years the company has experienced an associated reduction in net profits.

Folldal Gjenvinning recycles plastics to produce re-granulates for sale to markets in Norway, Sweden, Lithuania and England. Its full-time staff has increased steadily to reach 32 in 2003, with one part-time employee. Sales have also increased substantially and almost trebled in 3 years.

Aaltwedt Betong, based in Porsgrunn, produces pre-cast concrete products and industrial brickettes made of recycled materials. Full-time staff in the company has increased steadily over past four years to reach 35 employees, while its part-time staff amounts to 12 persons, with further expansion expected. Sales and net profits have increased rapidly, with even higher percentage increases estimated.

6.2.2 Projects Supported

As the scheme title suggests, the projects comprised investments in new technology or adding to technology at existing facilities. In content, the loans supported activities related to materials recovery and recycling, specifically construction of a prototype machine to test PCB removal methods, purchase of a new shredder to facilitate waste metals recycling, and investment in new and expanded production lines in waste recycling plant for plastics and other residues.

6.2.3 Scale and Timing of Awards

The loans varied substantially in scale, ranging from NOK 1.5 million to NOK 10 million. Most represented support for one-third of project costs, but the largest award covered 22 percent of costs. With regard to timing, the awards were received from the year 2000 onwards, generally split into two or three annual instalments.

6.3 Project Design

6.3.1 Environmental Capacity

All of the companies already had environmental knowledge prior to applying for the loan. In two cases, this was because of their existing involvement in the environmental sector: one already had five years experience with a specialised production line; and the other was part of a major group of companies that had already attained EMAS and ISO environmental management certificates. In the other cases, the technical expertise had been gained as a prerequisite for entering the environmental sector in response to emerging business opportunities. In one instance, this was developed in considerable depth when preparing the application, with

specialist laboratories commissioned to carry out analyses to provide the necessary supporting documentation.

6.3.2 Incentive Discovery

Each of the companies discovered the loan by approaching SND. They were either in contact with SND at local or central offices, or they had worked with SND in the past, for example receiving financial assistance for a previous industrial project, or they were familiar with its remit and resources and so knew whom to approach.

6.3.3 Generation of Project Ideas

In each case, the companies shaped their own project ideas. All the applicants had come forward with existing project proposals, and they knew exactly what they wanted. SND worked with the applicants' knowledge of markets, estimate of competitors, and technical specifications (sometimes supplemented with reports from SFT, the Norwegian pollution control authority). In two cases, the administrators made suggestions for enhancing the economic dimension of the proposal to illustrate its viability.

6.3.4 Project Targets

Project applicants were encouraged by SND to set targets within their business plan documentation. In two of the projects, these targets were quickly exceeded, and in one case this represented 50 percent and 100 percent in consecutive years. One project failed to meet the targets due to over-estimating the scale of raw materials that could be acquired.

6.3.5 Scenarios without Incentive Support

If the SND loan had not been forthcoming, three of the four projects would not have proceeded, and the various facilities expansions and innovations would have been cancelled. In these cases, receipt of the loan was credited as an important catalyst through giving kudos to the project idea via the range of documentation provided, and by allowing diversification and expansion of facilities to meet immediate market demands. The combination of the Environmental Technology Loan with investment grants also provided business finance in a form that banks could not have duplicated, making new development feasible.

In one case only, the project would still have gone ahead and within the same timescale, as the technological investment was perceived as essential to enter new markets, which offered new opportunities for business expansion internationally.

6.4 Incentive Impact

6.4.1 *Environmental Working Practices*

Environmental Management Systems (EMS)

With a view to entering European markets, one company is considering applying for EMS accreditation. However, complying with ISO criteria would mean employing extra staff to complete the monitoring and measuring requirements – and this would cost more in salaries, which would detract from profits. Since this company operates alone in the Norwegian market, there is no threat from domestic competitors, and on that basis there is no incentive to pursue the standard. Furthermore, on international markets, it is presently unclear whether competitor companies have attained ISO accreditation. Without such pressure, no further action may be taken.

Resource Usage

The resource benefits from project implementation related principally to waste being utilised for energy production. In one case, this represents a goal for 50% of waste produced, in another case it comprises the fundamental economic rationale of the project.

Downstream benefits have included less energy consumed by end-users of products, and investment in more energy-efficient transportation to handle the increased volume of waste.

Waste Management

Improvements to the management of waste were effected by investment in new technology. One of these contained necessary innovation, because technology to this specification was not readily available for purchase. In another project, the technology was not innovative, but it incorporated features not available on older machines, such as changing the size of grids for sorting waste.

Increased monitoring of waste also resulted from the new investments. To meet SFT regulations regarding noise levels, airborne dust content, or heavy metals in the atmosphere, one company now engages twice a year in measuring and monitoring.

New Production or Process Methods

Two different types of process and production lines were supported by the loans. In one case, the new production plant was environmentally better than the one it replaced, so there was a direct environmental gain. In another case, the system that was developed created a new method for extracting environmentally dangerous materials.

Company Profile

As a direct effect, the Danish client of one of the supported projects was able to market its green credentials, based on how it recycled the wastes from its production process.

Supplier Links

Impacts on links with suppliers have meant an increased capacity to handle waste, for example expanding the territorial coverage of active suppliers from local to encompass major areas of Norway. Rather than imposing an environmental ethic on suppliers, activity has focused on drawing a greater turnover from existing environmental sector business. This is providing an outlet and productive use for greater quantities of waste, assisting in the solution of waste treatment.

Other Environmental Impacts

One of the companies used the occasion of the loan to move its operations to a new site adjacent to the waterfront. For the increased vehicle traffic with the project expansion, this allowed direct access for unloading and loading, containing the environmental impact more effectively than would have been possible in the previous inland location.

6.4.2 Economic Performance

Costs and Operating Efficiency

As all the companies have improved their profit in recent years, they all consider their performance as adequate. For example, the loan has allowed relocation to more efficient sites and investment in modern plant with quicker production methods, all of which improve profitability. Prices on international markets have increased, meaning that returns are lower than anticipated, but these costs are absorbed within the overall profits.

Employment Levels

For two of the companies, the impacts of the loan-related investment were employment increases of up to five persons on a full-time basis to operate the new production lines. Otherwise, there were impacts outside the companies, as new competences were bought in to complete various analyses and monitoring activities. However, these sources were not local, but were drawn principally from other regions of Norway and Denmark.

Investment Intentions

Three of the companies have chosen to invest further, purchasing new plant. On two of these occasions, the finance was obtained by selling shares in the company to bring in extra working capital.

Business Opportunities

All the companies have benefited by realising new business opportunities. Three of them now sell their products to, or accept commissions from, international clients. The range of countries involved focuses especially on Europe, including Eastern Europe, but also as far afield as China, and the list appears set to expand as new clients emerge.

The fourth company concentrated on business opportunities within Norway. It was invited by central government to participate in an environmental information programme promotional tour, and this became a substantial marketing drive for the company's technical services. It was paralleled by public sector activity to create a state sector budget reserve and subsequent voluntary agreements to establish a fund for pre-paid recycling or disposal of toxic waste products.

Market Share

Two of the companies have now moved into a position from which they dominate the market or even have a monopoly within Norway, in one case having increased from 80 percent to a 100 percent market share. In these examples, the competition was small and uncoordinated or significantly less competent. In the other cases, the technology and methods used afford greater scope to these companies and therefore a competitive advantage over others in their sector. However, market share can also increase or diminish with fluctuations in exchange rates, especially regarding Norwegian crowns and US dollars, and areas such as metal pricing are very susceptible to this influence.

6.4.3 Attitudes and Perceptions

Environmental Learning

In this sector, the companies either already had a specific and specialist knowledge of environment-related industrial processes or were involved in its development. This means in practice that there was not a substantial amount of new learning or impact on environmental attitudes or perceptions. The perspective was one of improved business operations, and exploiting or developing new markets. For example, even though the companies were aware of sustainable development principles, the factors determining the choice of raw materials were related to costs rather than environmental impacts.

Meeting Expectations

As the impacts were primarily focused on opening markets and increasing business turnover, there was no anticipation of attitudinal or behavioural change or regional environmental awareness raising. Instead, the technical and economic impacts that dominated the projects were fulfilled, sometimes to a much greater extent than foreseen.

6.5 Administration

6.5.1 Interaction

The companies had substantially less contact with SND during the implementation phase than the application phase. Most of the efforts had been directed at designing the application and securing approval for the loan. One year after receipt of the loan, the beneficiaries had to submit a report on how it had been used. Not all companies fulfilled this obligation, and there was no follow-up to pursue missing reports and no detailed monitoring of progress. Communication was limited.

6.5.2 Organisation

Different companies appear to have had very different experiences with SND. For one applicant, the process seems to have been very slow, and this pace was not perceived as matching business requirements. However, another applicant described the process as speedy and efficient, but that case was also delayed as the European Commission took 16 months to approve the combined loan and grant package.

Having personal contacts within SND was considered a distinct advantage, both for a smoother application process and for increasing the odds of securing loan finance. The local SND branches were described as key players in this context, conveying the sense that the applicant had support from within the organisation.

Some of the beneficiaries found the payment sequence created difficulties in the financial cycle. In essence, they were required to spend the money before they had received the money. All the receipts had to be provided to demonstrate that the funds had been invested in appropriate technology.

The companies were also divided on the theme of how much risk SND should accept. Currently, SND is perceived as discouraging projects entailing a high degree of risk. One of the companies agreed with this policy, stating that it was wise to play safe with taxpayers' money, and that projects should be capable of weathering difficulties and not easily liable to collapse. However, another view was that SND should take greater risks with capital, acting as a type of venture fund rather than another conventional bank. In such a scenario, greater attention should be given to expanding companies, and interest rates on the loan should not be raised to accommodate higher uncertainties. Without such revisions, some companies are unwilling to consult SND again for further investments, because they consider that the institution's cautious approach would preclude further support.

7. Sustainable Production and Consumption Grant, Norway

7.1 Incentive Characteristics

7.1.1 Background and Funding Base

Ten years ago, the Norwegian Ministry of Environment established the Foundation for Sustainable Production and Consumption (GRIP). Through the provision of grants, the Foundation acts as an agent for promoting environmental policy dedicated to the furtherance of sustainable production and consumption. GRIP works primarily with industries that are not conventionally considered to be polluting in a legal sense, but that do have an impact on the environment through the consumption of goods, chemicals and energy, transport and refuse. The operating strategy is to co-operate with private and public enterprises in developing and testing methods to improve eco-efficiency, communicating these methods to other enterprises so they can initiate measures to reduce their environmental impact, and working for changes in framework conditions that will benefit the environment.

In 2001, with a budget of NOK 55 million, GRIP funded 90 projects. Although the Ministry of Environment provides the basic financing for GRIP – amounting to NOK 16 million in 2002 – other ministries also make financial contributions, mostly linked to specific projects.

7.1.2 Eligible Activity

GRIP grants are available for a wide range of activities in different sectors. Over time, the programme themes have included eco-build (for the construction and real estate sector), chemicals, purchasing, retail/wholesale and travel and tourism. The thematic coverage is progressive, following the sectors promoted by the government and working in accordance with the deliberations of the GRIP Executive Committee (see below). During 2002, GRIP is also supporting companies aiming for EMAS and ISO certification. In terms of company size, larger enterprises were favoured in the early years, reflecting the priority to demonstrate how they could progress environmentally. However, that phase is now complete, and the focus is increasingly turning towards SMEs.

7.1.3 Project Selection

For a project to be considered, it must support some aspect of new technology or innovation, and it should be a pilot from which other companies can learn. Its environmental impact is of greatest interest (such as energy use, waste, recycling, materials use, and health impacts), but other factors include evidence of consumer/client company demand, the availability of co-financing, and whether projects have a competitive edge to help them succeed in the market. There is no specific date for submissions, and applications are accepted throughout the year. The application form is available on the Internet, and applicants must provide various accompanying materials.

On receipt, projects are scored on the basis of their impact on environment, energy, waste and other factors. This process seeks to identify those that correspond most with GRIP programme interests – for example relating to the use of materials, chemicals or recycling – and to estimate which projects will give the greatest positive impacts. Five criteria are used, and each category has a potential of 5 points, so allowing a maximum total of 25 points. Any project scoring under 10 at this stage would not be taken further; however, the majority falls into the 10-25 range. This information has been recorded in a database for the past three years. Thereafter, the route of the application depends on the scale of funding requested: applications over NOK 300,000 go to the Executive Committee; and applications between NOK 100,000 and 300,000 go to an appropriate sub-committee. Applications for less than NOK 100,000 are decided by GRIP.

The Executive Committee appoints sub-committees for 2-3 year periods to run in parallel with programmes. There are presently two sub-committees. One on real estate and building construction consists of twelve members and includes representation from the largest companies; another on paints comprises seven members representing producers and sellers (and including SFT, the Norwegian Pollution Control Authority). The projects chosen are ones that already show promise for success. With regard to high-risk investments, a limited number of projects in the area of experimental technology/methodology are supported.

7.1.4 Award Characteristics

A maximum of 50% grant is available as co-financing. Projects invariably received this maximum rate-of-award in the early years, but now the average awards are within 30-40%. No SME differentiation is made in the award rate. As there is no upper limit on an individual award, larger companies can receive larger grants. These more substantial projects are sometimes allocated 10% grants, to help spread the available funds over a wide range of companies.

The grant is paid out in three instalments, typically over a timescale of nine months. Money is only given for one year, but the option exists to extend the project, and in a few cases this has stretched to three years. Of the 400-500 applications received in 2001, approximately 350 (30%) were rejected. This usually meant they did not meet the standard criteria, most importantly regarding environmental impact. Appeals against rejection can be made either to the Executive Committee or to the Ministry of Environment, but no company has yet taken this option. In some cases, GRIP has advised on how a rejected application could be improved.

In 2001, between 30-40 applications were resubmitted, and some were put on a waiting list for available finance. Companies usually must provide two progress reports, one during project implementation and another when it is completed. However, in certain projects, up to four reports per year are required. Although these reports should follow a prescribed standard format, this has not always been complied with. This information is being integrated into the GRIP database, so that companies can refer to it as a benchmarking tool, both within a sector and across sectors for comparison.

7.2 Beneficiaries

7.2.1 Participant SMEs

Five companies or agencies within the tourism sector were consulted on their use and experience of the GRIP grant.

Gålå Høgfjellshotell og Hytter, which rents out cabins and hotel rooms in the Gudbrandsdalen valley, north of Lillehammer, is part of the international travel industry. Most of its customers are from outside Norway, fulfilling the industry objective of attracting imports into the country. In recent years, full-time employment in the company has increased from 17 to 19, while part-time employment has remained stable at 14 persons. In terms of economic performance, sales have been increasing, but this sector is also encountering higher costs each year.

Rauland Turist is a public limited company in Telemark County that is one-third owned by the local municipality. It is responsible for tourism marketing, an information office, maintenance of cross-country slopes and destination development projects. Its full-time staffing has remained constant in recent years at three persons, with part-time staff recently reduced from 9 to 7 persons. Turnover has been incrementally increasing, but net profits have been marginal.

Destination Lofoten is an organisation created specifically to promote tourism in Lofoten, principally for German and Swedish tourists. A staff of 4-5 persons works to promote the short season from July to August, outside of which the islands are often covered in snow. Tourism has been

decreasing in recent years, perceived as a consequence of the organisation's reduced budget for conducting marketing abroad.

Nordnes Camping, a one-person company based in Røklund, close to the city of Fauske, comprises a restaurant, cabins and tents, and the management of a caravan park. In addition to the full-time owner-manager, there are 12 part-time employees, most of which are students. In recent years, turnover and net profits have increased only marginally.

Geilo Tourism Service, in Hol Municipality, acted as co-ordinator of an SME initiative lead by the director of a local hotel. Two staff worked full-time on the project for three years, and several companies were closely involved in the project implementation. The participants included owners of hotels, rental housing, restaurants and shops, and providers of transport and outdoor activities such as skiing, fishing and sleighing.

7.2.2 Projects Supported

The projects supported were all within conventional tourism sector activities, but they were wide-ranging in content. Whereas the smallest project related to the expansion of a waste-sorting area for a hotel facility, most projects encompassed a number of factors in an integrated manner. In such cases, the content addressed themes including waste reduction and management, energy saving, reduced water consumption, environment-friendly materials, environmental information and sign-posting, and favouring local suppliers. This was supplemented with features such as the creation of nature trails and cycle paths, encouraging ecological farms, providing environment, fishing and mountain guides for tourists, and moving towards sustainable transportation.

7.2.3 Scale and Timing of Awards

The awards varied substantially, ranging from NOK 37,500 to NOK 1,800,000, and from 10 percent of project costs up to 50 percent.

In timescale, the grants were made during the period 1995 to 1999. Most were delivered in a single payment, but a few were phased as instalments over two or three years.

7.3 Project Design

7.3.1 Environmental Capacity

Most applicants had very little advance knowledge of environment. Whereas they had considerable knowledge of the tourism business, environmental awareness within a tourism context represented a new chal-

lenge. In these cases, learning commenced with the process of developing the application.

In one case, the applicant had some advance knowledge of environment, related to the savings that could be made with modified procedures, and the project was specifically to clarify how much this would comprise. In another exceptional case, the applicant had a very good prior knowledge, drawn from previous experience in nature preservation and eco-tourism.

7.3.2 Incentive Discovery

The beneficiaries learned of the grant's existence in different ways, but always through GRIP activity. In some cases, GRIP had approached the company directly, suggesting that much could be gained through submitting an application. In others, they were responding to GRIP announcements in the press with invitations to come forward with project ideas.

7.3.3 Generation of Project Ideas

In two cases, the activity was already planned or underway, and the GRIP grant represented a windfall gain, appearing at a convenient time to support these activities. In those instances, GRIP approved the plans and let the applicants determine how the project developed.

In the other cases, GRIP was much more involved in steering the project design process. Having generated new ideas and stimulated the applicants into action, GRIP advised on drawing up applications that matched the agency's requirements in the search for good examples to include in best practice manuals for different sectors within the tourism industry.

Only in one case did the advertising of the grant initiate a new project idea that was independent of scheme targeting by the administrators. However, even in that case the applicant subsequently followed a GRIP framework for activities to be explored.

7.3.4 Project Targets

Of the projects that set targets, these were mostly qualitative. They ranged over themes such as improving the treatment of environmental issues, introducing environmental management techniques, facilitating the marketing of areas as environmental destinations, encouraging greater use of bicycles, and more generally disseminating environmental ideas that might promote more strategic thinking among businesses.

GRIP appears not to have included guidance on how to set precise quantitative/numerical targets, and only one project stated that both qualitative and quantitative factors were addressed.

7.3.5 Scenarios without Incentive Support

If the GRIP grant had not been available, at least two of the projects would not have taken place. These ones received the largest contributions to project costs - 33 percent and 50 percent – and the absence of this scale of funding would have made the work unfeasible. In one of the cases, the savings generated by project implementation may have been the main factor that kept the company in business.

The other three projects would have gone ahead, but with different implications in each case. One represented compliance with anticipated new laws, so the work would have progressed using own funding entirely (replacing the 12 percent contribution from GRIP). Another would have been scaled down and lasted a shorter time – one year – as the GRIP funding supported the second year of operation, and was being used to attract co-financing.

The third project, which was receiving 10 percent, would have gone ahead in a different form, most likely focused on economic gain. The participation of GRIP had introduced a strong strategic environmental emphasis to this case, which had encouraged a number of hotels to express commitment and participate. It is considered that this momentum and scale of involvement would not have been realised without the grant and the associated guidance.

7.4 Incentive Impact

7.4.1 Environmental Working Practices

Corporate Environmental Strategy

In most cases, environmental visions, rather than strategies, have evolved from project implementation. These encompass aspirations such as becoming an environmentally sustainable destination, using local wood and materials in building and local produce in restaurants, and becoming a leading company environmentally within the tourism sector in that region of Norway. In one example, the waste project supported by the grant became the catalyst or first step in the development of an environmental strategy.

Environmental Management Systems (EMS)

The investigation of environmental management systems was supported in a number of projects, generally through advice and guidance rather than direct funding. The local hotels have explored options, with varied outcomes.

In one case, the demands of ISO accreditation were perceived as too high, but application is being made for the Nordic Environmental Light-

house certificate as an intermediate step. At the other end of the scale, a hotel group attained certification through the environmental programme of the Green Globe, the brand of the World Tourism and Travel Council, the highest body in the travel industry. However, recognising that consumers are more familiar with ISO and EMAS, the company approached the Norwegian Industrial Association (NHO) to identify alternative certifying bodies. The hotel's subsequent attainment of the Nordic eco-label (Swan) was the first outcome of this, and it has since gained EMAS certification and ISO 14001 accreditation. Working to gain the EU eco-label (Flower) may be the next step in this progression.

Resource Usage

All of the project beneficiaries cited a reduction in energy consumption as a main outcome of the project. This included energy saved on electricity by using timers and thermostats for heating, lowering the temperature in rooms/cabins, low energy bulbs being substituted for conventional lighting, windows being sealed with draughtproofing, and exploring alternative means of chilling food. One hotel quoted a saving of NOK 200,000 on electricity, and another devised an alternative means of water heating. A problem with water leakage was also resolved, with identifiable savings.

Waste Management

Waste management was improved in three of the supported projects. In systematising working practices, different waste products such as glass were separated from non-recyclable materials, and first steps towards waste minimisation were taken, such as re-using containers, changing from paper cups to glasses, and printing on both sides of paper. In one case, 30 percent less waste was produced, which corresponded to a reduction of 60 percent in waste disposal costs. Additional investments were made in more efficient systems that produced less waste and facilitated waste recycling. In one project, composting was successfully initiated, but in another area, the offer to convert waste food into animal feedstock was not taken up by local farmers.

Company Profile

Even though the company profiles have not changed substantially, a number of the beneficiaries now mention their environmental credentials in marketing and promotional literature. Two of the companies have participated in GRIP conferences, describing the project achievements and the revisions to company environmental practices. This information has also been disseminated in manuals and listed on the GRIP Internet homepage.

Supplier Links

Impacts on the supply chain comprised, in one case, the initiation of an annual review of supplier links, with outputs such as persuading suppliers to reduce the paper flow and work more with e-mails. In another example, smaller suppliers were encouraged to use the same packaging for delivery and return, so reducing overall packaging requirements. However, these small projects found that there was insufficient scope to make an impact on larger suppliers, such as chain stores. One company experimented with suppliers of organic foods, but found this option restrictive and expensive, and thereafter they confined operations to using local produce and materials.

Other Environmental Impacts

In most cases, the experience gained and retained through the projects has allowed follow-up initiatives, progressing each theme further. Even in instances where the expertise was subsequently lost through staff replacement, the image of being an environmentally astute destination has been sustained, enhancing reputations within tourism markets. This is supported in practice, as hotel networks have continued as a basis for sharing environmental information, and some have progressed to certification through the environmental lighthouse initiative.

In one company, a form of environmental ethic has been developed, with a new environmental committee meeting six times a year. Staff members are kept informed of environmental aspects of company performance, and this has been observed as having increased motivation and individual involvement and created a sense of ownership of environmental initiatives.

Other cases documented an educational process that has continued through regular contact with GRIP regarding environmental seminars, meetings and educational programmes, as well as the formalisation of routines, as a practical method of integrating environmental thinking with daily business practice.

7.4.2 *Economic Performance*

Costs and Operating Efficiency

With regard to overall profitability, the projects reported achieving greater environmental efficiency, with associated benefits through reduced costs, especially in energy costs. This appeared to be the main economic benefit of the project, namely that the companies were now saving money, rather than making money.

Business Opportunities

None of the companies was able to identify new business or increased sales as a consequence of project participation. In some cases, the ab-

sence of this economic benefit, regardless of the range of activities undertaken, is attributed to the timescale, suggesting that it might take several years for their new environmental credentials to make an impact.

Whereas this seems evident in examples where no formal environmental certificates have yet been attained, it also applied to the hotel group that continued to develop well after the GRIP grant. It received several certificates, met all environmental laws and even exceeded legal requirements, but the environmental investment brought no immediate commercial advantage. For example, its inclusion on the regional administration preferential list for conferences and overnight stays was not renewed, even though it held much higher environmental policy credentials than competitor hotels. Its membership was subsequently renewed, but no bookings materialised.

Employment Levels

Only two companies identified impacts on employment. These comprised the temporary employment of one person to manage a bicycle-hire business, and the (follow-on) establishment of a new outdoor activity company with professional staff involved in developing various pursuits and attractions.

Other Economic Impacts

As a direct result of project implementation, plans have been made to develop initiatives such as fishing activities and creating forest trails.

7.4.3 Attitudes and Perceptions

Environmental Learning

For the companies that had not previously embraced environmental questions, receipt of the grant launched them into this area, and they generally emerged with the impression that this activity was useful and worth continuing. Even though financial profits were not evident, other broader benefits were apparent, and it helped them to focus their thinking and identify future needs.

In one case, even though the individual who trained with GRIP subsequently left the company, a great deal had been learned during the implementation phase, and there is now a higher awareness of environmental factors. In another, the financial savings were the clearest immediate benefit, but the experience has set the company on the path to gain certifications at a later date.

For one company, after the GRIP grant had acted as a first source of environmental information, it chose to go beyond Norwegian sources to investigate international bodies. Currently, that company is moving closer to EU practices, anticipating achieving the EU eco-label, which is expected to attract tourists from outside the Nordic countries.

Nevertheless, in the short-to-medium term, the commercial value of undertaking environmental investment has been questioned. Certifications often require fees that are considered too high, especially since they would further undermine attempts to increase turnover. This has prompted one company director to join a Nordic committee to seek to reduce these costs.

In addition, it was observed that young people appear more interested in working for a hotel company if it is perceived as environmentally friendly. This was based on hotel placements of work-experience students, from a university department for hotels and hospitals management.

Meeting Expectations

In terms of the project outcomes, the beneficiaries varied in their judgement of expectations against actual impacts. Whereas the more straightforward technical aspects were fulfilled, there was disappointment with features such as generating staff involvement and economic benefit, for which some projects had high expectations. Not all hotels were able to report on enthusiastic participation by employees, and in some cases this seemed insurmountable. As for economic gain through increased turnover, there was no evidence of direct benefits, and this reduced motivation amongst project-holders. Enquiries directed at local politicians received the response that circumstances for economic-environmental rewards were improving, but it would require more time.

By contrast, in the area of cost savings the grant exceeded expectations, especially with regard to waste treatment and energy consumption.

7.5 Administration

7.5.1 Interaction

In most cases, there was regular contact with GRIP during the project's lifetime. This principally comprised telephone and e-mail contact, but also included visits to GRIP and from GRIP personnel. In those instances where GRIP had initiated the project idea, such regular input was considered essential for the project's on-going development, as the beneficiaries relied upon the agency's environmental expertise to direct each stage. For one of the projects, which related to the first years in GRIP's operations, there appears to have been less contact, and advice on capital investment took a considerable time to arrive.

7.5.2 Organisation

The grant recipients mostly described their experience of the grant administration as very positive. The liaison was carried out efficiently and within deadlines, a substantial amount of useful information was provided, and good contact was maintained throughout implementation and the subsequent period.

With regard to outcomes, GRIP drew the best parts from each project to construct manuals of good practice. These contained information for hotels and the tourism industry to become more environmentally friendly, and this was taken entirely from Norwegian experiences. In this pilot project framework, GRIP was perceived as a strong and positive influence on project themes and the approaches taken.

The timing of GRIP's interventions received some criticism. In one case, the training course on environment occurred one year after the project had started, which meant that the project holder spent the first twelve months trying to identify how to proceed, and the training of local companies was delayed. In another instance, the earlier involvement of GRIP would have been appreciated, but in the project's first year the company was unaware of the grant, suggesting that GRIP's marketing of the incentive had maintained a low profile.

In another criticism, no direction was given on measuring achievements. Although this has now commenced, the results from the funded project were restricted to isolated examples of interesting developments, rather than a structured sectoral performance measurement. Lastly, some companies sought a greater orientation towards economic reward. This might take the form of preferential treatment, which could encourage more competitiveness if environmental conversion is seen to be a practical advantage.

8. Environmental Design Grant, Sweden

8.1 Incentive Characteristics

8.1.1 Background and Funding Base

From 1997-2000, NUTEK administered the programme Design for the Environment in SMEs (also referred to as the Ekodesign programme). In content, this scheme sought to focus on products within an environmental management system, with a strong emphasis placed on research and development, meaning that the participants were mostly industrial research institutes and universities. The Environmental Design Grant programme was not open to individual companies, but rather to groups of companies. It involved approximately 20 projects and 120 companies over a three-year period, and during this time, NUTEK's budget for the scheme amounted to SEK 25 million.

8.1.2 Eligible Activity

The theme of “design for the environment” related to practical means of improving products environmentally. This was approached from two perspectives: first, devising new methods or tools for product design; and second, modifying existing methods and promoting examples of good practice.

In the latter category, an eco-design project managed by Swedish Industrial Design (SVID) was considered a particular success. It used existing methods to integrate lifecycle assessment knowledge into companies' operations, with a number of good examples resulting. In this respect, the themes supported could also be influenced by the existence of specialist sectoral organisations, industrial research institutes or universities with a certain competence.

8.1.3 Project Selection

In the first instance, general demands had to be met. These included co-operating in a network (the minimum was three organisations, but more were usually involved), fulfilling an existing need, being based clearly within a specific trade or industry, and producing documentation that made the results accessible by a larger group. Thereafter, specific selection criteria were used as a means of differentiating between competing

projects. For example, this might relate to whether the applicants were well established locally or regionally, viewed in comparison with their links to the sector. Ideally, the applicants would meet both these criteria.

For the Environmental Design Grant, there was a specific demand that the company should have some form of product development or could influence product development. An internal grading template was used to assist project selection. Although this contained a degree of subjectivity, it still afforded support to decisions. If unconditional demands were not met, projects received a zero score, and approval could not be granted. In practice, NUTEK administrators consider that this decision support tool was effective in selecting the best projects. A decision protocol was also completed, addressing categories such as project feasibility, value-added, and dissemination of results, generally considered from a NUTEK perspective.

A reference group assessed the applications as part of the decision process. The group consisted of about 10 people, representing a wide spectrum drawn from municipalities, consultancy firms, universities, and companies of varying sizes, amongst other sources. The reference group was very active in the design programme, but the continuous/open system for applications meant that it proved difficult to compare the different proposals.

8.1.4 Award Characteristics

In comparison with the parallel environmental management programme (MISF) run by NUTEK, projects supported by the Environmental Design Grant were fewer in number and received higher awards. This reflected the strong research orientation of several major projects. Project leaders had to submit a final report after project completion. In addition to an economic statement of how the money was used, this report often contained a description of a tool or method, or good examples worth highlighting.

8.2 Beneficiaries

8.2.1 Participant SMEs

Four companies were interviewed for the Environmental Design Grant. Located in different parts of Sweden, all four companies develop and sell products, but the degree of involvement in the production differs.

Blueair was launched in 1996, producing air cleaners, for which the company conducts its own sales and marketing. In the beginning, the focus was on the Swedish market, but this has now shifted towards foreign markets, and most of the activities are now out-sourced to subcon-

tractors in China and the United States. The company is currently in a development phase and expects growth in employees, sales and profits in the near future.

Kron, located in Vinslöv, was founded in 1871. This company manufactures, markets and sells cleaning products such as dish brushes, dust brushes and cloths, mostly to wholesale outlets and stores. Sixty percent of its range comprises its own manufacturing, and the rest is made up of complementary products from other sources. In recent years, the number of employees has reduced from 38 to 35, due to more efficient administration and production, and sales have decreased. However, both sales and profits are expected to increase in future.

Swepac, which has been in existence for 10 years, produces, markets and sells ground compactors. Several subcontractors manufacture the individual product parts, and the machines are then assembled in the company premises. At present, there are 12 employees, but one additional member of staff is expected next year. Its prime customers comprise construction and machine rental companies. Swepac has 60 percent of the Swedish market in this sector, and it is now aiming to capture international markets. Business cycles have reduced sales and profits recently, but sales and profits are expected to increase soon.

Konftel in Umeå has existed since 1987. It develops, markets and sells conference telephones, for which it occupies second place on the world market. During 1997-2001, as a stock market listed company, it grew to 450 employees, but today it is an SME with 11 employees. The production takes place in China. At present, Konftel is working to gain a foothold in the US market.

8.2.2 Projects Supported

Within the programme, the companies participated in environmental design activities, as well as network meetings with lectures, seminars and discussions. The objective was to develop new products, taking environmental aspects of design, production and product life cycle into consideration from the beginning of the working process. Each of the beneficiary companies worked with an industrial designer with specialist knowledge in environmental design. Two companies developed new products, and two others refined their existing products and learned about lifecycle assessment (LCA), recycling, packaging and resource efficiency, amongst other factors.

8.2.3 Scale and Timing of Awards

Funding from the Environmental Design Grant was paid to the industrial designers, not to the companies. For this reason, the companies were not always fully aware of financial and administrative details.

To take part in the Ekodesign programme, each company had to contribute SEK 50,000. Thereafter, the designers received payments covering time and work expenses, ranging from SEK 50,000 to SEK 80,000. In one case, the financial allocation was more than adequate, but in another the funding was not sufficient to cover the costs.

The project ran from 1997 to 2000, but in some cases the processes initiated within the companies continued into subsequent years.

8.3 Project Design

8.3.1 Environmental Capacity

None of the companies had extensive knowledge of environmental issues before applying to participate in the project. Most referred to everyday knowledge and the societal debate as popular sources, while their own work focused on technology and product development.

Two companies with some previous knowledge envisaged participation as a way to learn more and expand their knowledge. One of these companies already had a written environmental policy, but this seems to have been created primarily to satisfy clients, rather than being the result of in-house environmental awareness.

8.3.2 Incentive Discovery

In an untypical characteristic, for all companies the initiative to take part came from the industrial designers. The proposal had been channelled through Swedish Industrial Design, and the designers were looking for suitable companies with which to work. In some cases, the designers were already established contacts, but in others the links represented new associations.

8.3.3 Generation of Project Ideas

The awarding body, NUTEK, appears to have had no involvement in the generation of project ideas. In comparison, SVID, the lead institution on the design side, influenced thinking within the projects, but to differing extents and mainly through introducing new knowledge and inspiration, rather than steering the companies' activities.

In most cases, the project themes originated from the companies, representing ideas that had been in existence for some time, but awaiting realisation. It was convenient that the topics and the programme aims complemented each other. Only in one case did the company learn about the project, decide to become involved, and then formulate an idea regarding product development.

8.3.4 Project Targets

Rather than setting specific quantitative targets, the companies had qualitative targets for their development activities, all focused on increased knowledge. The project was seen as an opportunity to learn, to experiment with a new product or test an idea, to investigate possible alternative materials, or to develop a more efficient resource use.

8.3.5 Scenarios without Incentive Support

If the Environmental Design Grant had not existed to support this framework, two of the companies would not have proceeded with the product development. In one case, the company may have tried to identify other funding possibilities, as access to the development process is costly for SMEs, but realisation of the idea would have been substantially delayed, at least.

Two other companies would have developed their ideas even without the programme support. In one case, participating in the project had definitely refined the thinking process, but the idea had not originated with Ekodesign programme. Moreover, since the project had not provided financial assistance, there was no funding element as a decisive factor. In the second case, the difference would have been in the timescale and the level of knowledge in environmental issues.

8.4 Incentive Impact

8.4.1 Environmental Working Practices

For all companies, the most important result of the Ekodesign participation was a new way of thinking and an increased awareness of the importance of environmental considerations. In each case, the participants appear to have been strongly influenced by the lectures and the co-operation with the industrial designer.

Corporate Environmental Strategy

Whereas one company already had an environmental strategy prior to participation, two others are developing such strategies as a direct result of project involvement. In the latter examples, environmental issues relating to product development are now taken into consideration more and, in one case, raised at every product meeting.

Environmental Management System (EMS)

Two of the companies had a form of accredited EMS, but this was already in place before their involvement in the programme.

Resource Usage

The educational aspects of the project, such as the lectures on LCA, increased the participants' knowledge on resource use, and this produced tangible results in some cases. For example, one company reduced packaging of its products, and this led to more efficient transport as the products now take up less space.

Waste Management

Increased knowledge in product lifecycles has resulted in higher awareness of producer responsibility, and one company is now considering how this should be integrated into future activities.

Production or Process Methods

In one case, the project had major effects on views of the company activities, encouraging reconsideration of choice of materials, resource use and recycling, amongst other factors. The product development process has changed, environmental concerns are now a central part of it, and ideas have emerged on how to reorganise the logistics of production. For instance, in the future internationalisation of this company, one idea is that instead of putting together the product and then exporting it, the file that describes the parts and the production process could be exported instead. The product could then be assembled on location with parts bought from the closest supplier, so reducing transport. The company already supplies spare parts in a similar way.

In another case, the company considered its product was now more environment-friendly, due to the increased awareness of environmental impacts, but that the production methods had not required modification to achieve this outcome.

Company Profile

Two companies developed environmental profiles as a result of project participation, and in a third case, the company attempts to use its environmental credentials as a persuasive factor in marketing. Another company was engaged in discussions to compile a brochure with information highlighting its environmental profile.

Supplier Links

The new environmental awareness has, in at least one case, been transferred from the companies downstream to its suppliers. Rather than changing the suppliers, it has meant changing how existing suppliers operate i.e. they are now expected to meet the same demands as the company imposes on its own operations.

8.4.2 Economic Performance

One company has developed and started to sell a new product as a result of the project, but it was considered too early to identify economic impacts. For two other companies, production and product modifications are still in the development phase.

Investment Intentions

In one case where environmental thinking has now become a fundamental part of the company's overall approach to business, investment decisions are now tailored to ensure environment-friendly choices in the development process.

Business Opportunities

One company stated that implementation of the new environmental knowledge has led to positive client reactions, and as a consequence more business opportunities.

8.4.3 Attitudes and Perceptions

Environmental Learning

Attitudes and perceptions of environmental issues are the areas where the greatest impacts can be seen. The companies confirmed that as more was learned about environmental aspects of production, attitudes changed. The product development phase is where the effects can be seen, and two companies described environmental considerations as now forming a key element of product development, with the designers using the LCA method.

As the project progressed, in one case it changed the perceptions of both the designer and the company. In another example, environmental thinking is anchored in the staff group, which is small and involved in the whole process.

Meeting Expectations

All the beneficiaries were positive regarding how the project had met expectations, and in some cases the results were better than expected. There were fewer effects on technical features than had been anticipated, with impacts more focused on new design ideas.

In one case, an earlier benefit from marketing had been expected for the company, but this reward was still to materialise. In another case, the employees had presented an unexpected and considerable resistance to change, resulting in problems in communicating the new knowledge and a challenge to persuade the employees of the value of activities such as testing new materials.

8.5 Administration

8.5.1 Interaction

During the implementation phase, there was regular contact with SVID for network meetings and the progress reporting, but – as in the application phase - there was no interaction with NUTEK. All the companies considered the meetings, contacts and input from SVID as very positive, with interest and understanding shown in the different projects and valuable inputs made in environmental knowledge transfer (such as LCA).

8.5.2 Organisation

With regard to project organisation, the beneficiaries made various observations. One company would have preferred the seminars on LCA to have been scheduled earlier in the process, whereas others suggested means of involving employees more effectively. For example, if the project had been in the form of a paid grant with required result reporting and quantified goals, they believed that this would have made it easier to motivate employees at all levels, since it would have been perceived as more important. According to another company, ensuring that the employees realise that the management is very involved with the project would encourage them to engage more.

9. Environment-Driven Business Development Grant, Sweden

9.1 Incentive Characteristics

9.1.1 Background and Funding Base

From 2001, NUTEK has administered a grant programme on environment-driven business development (MAF). Drawing on the experience and results of previous programmes (MISF and MPU), this scheme seeks to increase existing levels of competence and upgrade the knowledge base. The overall aim of the programme is to strengthen the competitiveness of SMEs by stimulating them to develop their operations and their products from the perspective of sustainability. The focus is on the entire company, with improvements not only reducing environmental impact but also offering new business opportunities. The philosophy is that profit can be made from transition, based on being in the forefront of development. As in the previous programmes, NUTEK does not work directly with the companies, but instead through regional actors, who ultimately become project leaders for group applications. The projects are conducted through networks with active participation by SMEs.

The MAF scheme is open to local and regional institutions (e.g. environment and business departments in municipalities, ALMI, or county administrative boards), non-governmental or trades organisations, industrial research institutes, universities and groupings of companies, amongst others. With regard to funding, The Ministry of Trade and Industry allocated SEK 11 million to NUTEK for the first year of operation. About 25-30 projects will be granted money for a pilot phase, but only about a third of that number will be financed for the subsequent main phase.

9.1.2 Eligible Activity

The MAF programme is divided into two thematic areas. The first relates to environmentally-sound products as a competitive device. Its aim is to raise environmental and sustainability performance in product and business development. In this process, it is important for companies to establish the balance between ecological, economic and social aspects at an early stage. Eligible activity under this theme includes new ways of thinking, new working methods and tools to influence the business strategy of the company, as well as the preparation of plans to introduce sustainable products that open doors to new markets. The product must be

developed so that leads to environmental improvements and generates more business. One example would be to involve a group of companies in a supply chain and work on the development of a product at all the different stages.

The second theme relates to operational development that focuses on continuous improvement. This refers to the unexploited potential in the environmental management systems of companies, where the capacity to deliver on-going improvement has decreased. Accordingly, the aim is to stimulate, measure and communicate continuous improvements within the framework of a company's EMS, with an emphasis on organisation, leadership, participation, communication and competence building.

No finance goes directly to the companies, but instead they gain access to the knowledge within the network, to experts, and to events such as competence-raising seminars. However, participants must also become active in development.

9.1.3 Project Selection

For MAF, there is only one call annually for project applications. This method allows all applications to be considered simultaneously in the competition for funds. The standard application form, which can be downloaded from the NUTEK website, has been revised and simplified for MAF.

The application is divided into two steps. The first step leads to a pilot study, which takes four months, and the second stage relates to the main project. For theme 1, the principle criterion is that the companies wanting to participate must already have some form of organised environmental system. They do not have to be EMS certified, but they must have experience of dealing with such questions. Alternative qualifications include experience with quality systems and an interest in environmental issues. Theme 2 relates more to SMEs that have already profited from environmental work and see a market value in developing environmentally sound products; and to organisations or companies that work with small enterprises to develop products from an environmental and sustainability perspective.

In considering applications, general demands must be met, and these are the same for both themes. They include co-operating in a network (with a minimum of three companies), fulfilling an existing need, being based clearly within a specific trade or industry, and producing documentation that makes the results accessible by a larger group. Thereafter, specific selection criteria are used as a means of differentiating between competing projects. They differ slightly between themes, reflecting the different arrangements. An internal grading template with two variants is used to assist project selection. Although this contains a degree of subjectivity, it still affords support to decisions. If unconditional demands are

not met, projects receive a zero score, and approval cannot be granted. In practice, NUTEK administrators consider that this decision support tool is effective in selecting the best projects. A decision protocol is also completed, addressing categories such as project feasibility, value-added, and dissemination of results, generally considered from a NUTEK perspective.

A reference group assesses the applications as part of the decision process. The group consists of about 10 people, representing a wide spectrum drawn from municipalities, consultancy firms, universities, and companies of varying sizes, amongst other sources.

9.1.4 Award Characteristics

NUTEK finances pilot studies with up to 100% grant awards. This is subject to an upper limit of SEK 100,000, which is given in relation to the number of participating companies. For the main projects, NUTEK provides co-financing of up to 50% of the total project cost, with a financial upper limit of SEK 800,000. In order to guarantee the quality of the project, participating companies are expected to contribute by engaging their own staff and by making a cash investment in the main project of minimum SEK 5,000 per company.

NUTEK's co-financing can be combined with other public and private funds, provided the EC provisions on state aid are followed. The *de minimis* rules on support allow a company to receive public aid totalling maximum EUR 100,000 during a three-year period. Companies in the agricultural, fisheries and transport sectors are not eligible. The money goes to the project owner, in most cases a university, industrial research institute or municipality. In practice, it is seldom a group of companies, because they are less effective in disseminating project results, and they often have insufficient regional linkages.

Project leaders must submit a final report following implementation. In addition to an economic statement of how the money was used, this report often contains a description of a tool or method, or good examples worth highlighting.

9.2 Beneficiaries

9.2.1 Participant SMEs

The five companies interviewed for the Environment-driven business development grant are located in Östergötland and the larger Stockholm region. The companies in Östergötland participated in a *regional project* called Advantage Environmental Product Development (Fördel MPU), and the other companies were part of a *certification project* for SMEs ,

resulting in an Environmental Product Declaration (EPD) designed as a tool for environment-driven product development³². Both projects were financed by NUTEK through the Environment-Driven Business Development Grant

HTC Sweden is based in Söderköping. Founded in 1987, it began as a floor grinding entrepreneur, but since 1994-95 it develops, produces, sells and markets its own products to clients that include major machine sellers as well as one-person businesses. Since 1992, the company has consistently been growing in employees, sales and turnover, and there are currently 27 full-time and four part-time employees, the last few years having seen increases of 4-5 persons per year. Eighty percent of sales are exported to 40 different countries, and in its special product - polished industrial floors – the company has around 95 percent of the market, as well as 75 percent of the world market in other fields of work.

Gateway Security produces and sells store alarms through distributors. The production is located in Motala, Sweden and in Brazil, and sales are made to 54 countries. The company has existed since 1984, beginning as a small family business of up to five employees, but during the 1990s it experienced strong growth, and today there are 30 employees.

EWAB started in 1970, with a business idea that moved the company into the field of automatic conveyors, and now it produces, markets and sells conveyor solutions to the industrial sector. In practice, this involves both putting together the conveyor structure and assembling the integrated system in the client's premises. EWAB has its development department in Vadstena, where they devise conveyor solutions and store a supply of parts. Other company locations in Europe (in eight countries at present) are supplied from Sweden. In all countries, EWAB has a total of ca. 260 employees, with 57 of them based in Vadstena. In future, the work force, sales and profits are expected to stay at current levels.

JM Skyltservice was started in 1995, and it makes and sells a range of printed signs for stores, cars, tarpaulin etc. Located in Södertälje, southwest of Stockholm, the company comprises four persons, and there are no plans for expansion. Its turnover increased three years ago, but since then it has been maintained at that level.

Perfect Print provides service solutions to companies (recycling of toners, printer maintenance etc.), but it works principally with recycling of toner cartridges from laser printers. The company was started in 1995, and today it has 17 employees, comprising both service and sales personnel.

³² "Certifierade miljövarudeklarationer i mindre företag som verktyg för miljödriven produktutveckling" led by Sinf Miljö& Kvalitet, a company within the Swedish Industry Association.

9.2.2 Projects Supported

Three of the companies took part in the MPU regional network and knowledge project, and each had its own in-house project. Through seminars and meetings, the respective projects and progress reports were discussed. In addition, within the framework of the project, the companies could buy consultancy services to assist their development work. Financing came from NUTEK, but JG Consult was engaged as the project manager. The project activities concerned creating a new product that represented a further development of existing products, and the development of new technology for existing products and production process.

In the two cases for EPD certifications for SMEs, the activities comprised preparatory work as part of moving towards environmental certification, with the project basically a test to ascertain whether certification of these businesses was possible. For example, the consultants examined the company's production processes and working procedures and established the basis for certification. In one case, the consultants created an Excel-based environmental management system, and in another they conducted lifecycle assessments. This was paralleled by internal training for employees to understand what the environmental certification would mean. In one case, the EPD process was conducted simultaneously with work on ISO certification (14001 and 9000) and with working environment certification (AFS). Together, these inputs presented a total "review and revision" of the company administration, production process, waste management and psychological working environment.

9.2.3 Scale and Timing of Award

For the companies participating in the MPU project, the level of support and funded components were differentiated. To cover costs, the companies received grants ranging from SEK 50,000 to SEK 150,000. In general, costs for bought services such as external consultancy could be recovered, but time committed to the project was not eligible. These three projects started in 2002, with the grants paid in installments.

In the EPD project, no grants were given to the companies. Instead, they had to meet their own initial expenses, and additional costs were anticipated later in the certification process.

9.3 Project Design

9.3.1 Environmental Capacity

Levels of environmental knowledge prior to the project differed between companies. Typically, this knowledge was focused on office environment matters such as paper recycling, and attention to the production process

and products was limited. In one cases, company products sometimes contained mercury, making issues of waste disposal a regular feature of standard procedures; and another company had already worked partly with recycling, so a level of environmental awareness was inherent in the business function.

9.3.2 Incentive Discovery

For the MPU regional project, the companies were introduced to it by either the project management or ALMI (a government owned business development organisation that offers financing and consultations for SMEs). For the EPD certification project, the companies learned of its existence from the Swedish Industry Association or from NUTEK.

9.3.3 Generation of Project Ideas

For the generation of project ideas, the differences relate to the two umbrella projects. The focus of the MPU project – moving product and production process development towards increased environmental considerations – worked on ideas that were often already in existence. In contrast, in the EPD project was a sectoral initiative that did not come from the companies, nor did the companies carry out the work alone, but drew on external experts.

Apart from supplying the funding, the involvement of NUTEK appears to have been very limited, for instance only conducting *ex post* evaluation. The main contact was with the project management, which took responsibility for auditing company products and processes, arranging meetings, seminars and lectures, recommending consultancy contacts and other inputs, but without steering or shaping specific projects.

9.3.4 Project Targets

The approach to goals and target-setting was also determined by which umbrella project the companies followed. In the EPD project, an audit produced environmental goals that the amount of waste should be weighed, the amount of transportation should be noted, and that sorting, recycling and disposal of waste should be quantified. In another example, targets formulated during the earlier ISO certification process had included measuring waste production, increasing recycling, and performing client surveys, with the result that the EPD review found little need to modify production and administration processes.

In the MPU project, the companies had different experiences with goals. In one case, the goals were primarily of a technical character, and environmental targets were introduced later, for example to reduce the number of components in a product and to extend its working life. In

another case, where the project idea already existed, specific goals were in place from the outset. They were primarily qualitative, investigating the scope to utilise new technology specifically in developing the company product. In a third case, the LCA had indicated that the production process was already efficient, and the project was reoriented towards the product's lifetime, with targets related to energy efficiency and recycling.

9.3.5 Scenarios without Incentive Support

Without the environment-driven business development support, only two of the companies would have proceeded with the project. In one case, it would have maintained the same timeframe and content, but in the other case it would have occurred later and with a considerably reduced emphasis on environmental aspects.

In the three other examples, the companies would not have launched the projects independently, partly because the initiative stimulated and encouraged action, partly on financial grounds, but also because other options were available such as settling for ISO certification, rather than aiming at environmental product declaration. Each of these companies acknowledged that the professional network, range of contacts, new knowledge and management assistance were direct benefits and key factors and incentives that persuaded them to engage with the project.

9.4 Incentive Impact

9.4.1 Environmental Working Practices

Corporate Environmental Strategy

Each of the EPD companies produced an environmental strategy, as part of the certification process. In one other case, the new knowledge about environmental design and product development means that the company is now considering more carefully the choice of materials and the life of a product.

Environmental Management System (EMS)

One of the EPD companies successfully launched an environmental management system, which also gained accreditation.

Resource Usage

Most companies cited that the project resulted in a reduced resource usage. However, no precise measurements had been taken to support this view. Across companies, the savings comprised using fewer components in the product, a simplified production procedure, new technology with lower energy requirements, and a smaller product with a consequently

smaller transport volume. In two cases, the reduced energy consumption occurred during use of the product by customers.

Waste Management

One company stated that improved waste disposal and recycling was one of the main results of the project, whereas another cited that its products were now easier to separate for recycling, but that further investigation into waste disposal and recycling routines would be conducted in future.

Production or Process Methods

For participants in the MPU project, the main focus was on products, rather than production or process methods, with one company succeeding in creating a new, more environmentally efficient product. Its innovative merit consisted of fewer parts, fewer types of materials, a modified production process, and a product that was much easier to recycle.

Company Profile

No new marketing profiles have been created as a result of the project, but it was expected that the certifications and the character of the new products would be used in marketing. It was considered that certification presented a competitive advantage, and that it was perceived as an indication of serious engagement, demonstrating that the company had a future orientation.

Supplier Links

In the one company that changed suppliers after the project, environmental reasons do not appear to have been significant, but since then it has commenced examining the environmental profile of suppliers. In the company that already had ISO certification, the existing suppliers already met these criteria.

Other Environmental Impacts

For one company, the increased awareness of transport activity and related costs is expected to lead to a reduction of transportation in future. In other companies, the results included the ability to communicate the environmental profits of products to customers and a drive to find even more environmental arguments for products.

9.4.2 Economic Performance

It was difficult for companies to estimate impact on economic performance since the products had not yet completed the development phase.

Similarly, it was too early for companies to record an improved sales performance or increased market share, but it was anticipated that in future there would be a positive impact on profitability.

9.4.3 Attitudes and Perceptions

Environmental Learning

The impacts on attitudes and perceptions of environment and sustainable development differ between companies because of factors such as the type of project, number of employees involved, and how far the project has progressed.

For instance, in one company a considerable amount had been learned throughout the process, but the knowledge was confined to three persons at product development level, and it had not reached the employees who manufacture the products. By contrast, in a smaller company, the attitude change was apparent at all levels. Each employee had been involved in the certification process, and the new approach was visible both in the production process and in the office activities. In another example, the impact occurred in the construction side of the company, where various individuals received training in environmental product development.

In one exceptional case, the experience appears to have resulted in a heightened scepticism and critical attitude towards sustainable development and environmental regulation. As different parts of the market and regulatory system appear to operate without synchronisation, certifications such as EPD remain persuasive rather than powerful, leading the company to conclude that it had invested time and money on an insecure objective.

Meeting Expectations

In cases where the project met expectations, the results varied. A very positive outcome was derived when a network of companies developed as an unexpected result, whereas in another instance the level of increased knowledge and improved product was lower than anticipated, but still had a positive impact on ways of thinking regarding product construction.

For companies with unfulfilled expectations, one case related to the assumption that the business organisation would gain more knowledge and would become a certified company, but the activity represented only preparatory work for a certification procedure. In another case, the EPD certification proved to have a low profile in the market, and it was claimed that public sector agencies and authorities were not following their own recommendations and regulations to buy only from certified producers.

9.5 Administration

9.5.1 Interaction

Amongst the MPU participants, companies received visits from NUTEK and the county administration, but in practice most interaction took place with the project management. Comprising consultants engaged to oversee the process, the project managers were credited with a good understanding of the products being developed.

On the EPD project, the project management personnel were involved to a high degree through visits to companies, staff interviewing, and auditing the company procedures. Again, these consultants appeared to understand the companies well, and the working interaction was effective.

9.5.2 Organisation

In terms of administration, the project experience was generally described as a very satisfactory and positive co-operation. Thereafter, different companies placed value on different aspects. For some, a larger grant would have made a significant difference, for others the grant was less important and greater emphasis was placed on the meetings, contacts gained and networks established.

10 Thematic Comparison

10.1 Introduction

In Section 2 of this report, the various environmental incentives available in the Nordic countries were reviewed from a comparative perspective. In this section, the comparative review is extended to draw together the company perspectives on the incentives surveyed in the second phase of this project.

The themes considered are divided into beneficiaries, projects, incentive experience, environmental impact, economic impact, and associated outcomes.

10.2 Beneficiaries

The companies in receipt of the various grants and loans were selected from the four Nordic countries of Denmark, Finland Norway and Sweden. Their activities encompassed a broad range of environmental factors. In the tourism sector, these included hotel and cabin rental, destination development and promotion. In manufacturing, they included composite products for trains, buses, trams and trucks, air cleaners, alarms, bicycles, ground compactors, telephones and pipeline insulation. Others included processes such as PCB removal, recycling of metals, plastics and other waste materials, textile colouring, oil spill treatment, surface treatments (such as sandblasting and lacquering), transport and erection of wind turbines, printing, and industrial flooring.

Approximately half of the companies had some form of environmental knowledge prior to applying for project funding. The reasons for this varied. In several cases, this was based on educational backgrounds, previous work experience in environmental professions or existing engagement in the environmental sector. In certain instances, this knowledge had been gained specifically to enter the environmental sector, and developed to a high degree of specialism. In others, it related to the hazards of the work environment, where environmentally dangerous materials were in regular use, or to customers holding certificates in environmental management systems that sought suppliers conforming to their policies.

Those with no environmental knowledge especially included tourism companies, for which this represented a new undertaking, and the learning commenced with the application process. Others described their knowledge as basic, related to matters such as office materials recycling, and one company with a written environmental policy indicated that it

had been prepared to satisfy clients, rather than resulting from in-house knowledge.

10.3 Projects

The sample included a wide range of project types. Although there was always an environmental dimension, the specific focus varied by sector and within incentives. The main topics comprised incorporating environmental management systems, providing start-up finance for SMEs, improvements to production processes, investments in new or additional technology, applying environmental design considerations into new and existing products, and, for the tourism sector, reducing resource consumption and materials use, creating nature trails and ecological farms.

In terms of how the project ideas originated, most (75 percent of cases) came from the companies. In some instances, these were long-standing ideas, and the incentive presented an opportunity to realise these ideas. In others, the ideas were more recent, prompted by the increasing emphasis within industry related to environmental compatibility, and in some instances this meant responding to legislation. In instances where the ideas came from the incentive agency, it reflected cases where methods were already well-developed or formalised, such as EMS, or where a specific end product was already in view, such as a best practice manual.

Within projects, targets were not always requested or encouraged. Where this did happen, in a few incentives, the administering authority such as SND had made a request for their inclusion in business plans. In most cases, targets were qualitative, corresponding more to goals or aspirations, such as to increase environmental knowledge, gain environmental management certification, or improve the scope for environmental destination marketing. Some of these examples adopted quantitative targets later on, during project implementation,

In cases where targets were quantitative from the outset, they included figures for energy savings or materials reduction, recycling or waste disposal. This was typified by the EMS specifications, which built into the process a requirement to develop further targets each year, so refining the process. In some companies, the initial targets were revised during project implementation, for example connected to sales and market share, responding to market signals.

Fourteen (60%) of the companies stated that without the incentive support, their projects would not have proceeded. On the theme of EMS certification, regardless of legal and supplier pressures, several companies stated that the absence of funding would have effectively cancelled their participation in the projects. In three other cases, including one related to new technology, the financial investment was so large that if the incentive support had not been forthcoming, the companies would have

dismissed the project ideas as impossible. As alternatives, conventional banks are not considered to welcome such high-risk projects.

In one case, the cost savings generated by the project may have protected the company from bankruptcy. In others, the significance of the incentive awards included the production of documentation and evidence of public sector backing that encouraged other investors, so securing the realisation of the project. In other examples, the motivating factor was not the finance, but rather the opportunity to become involved in the momentum of an initiative that offered a professional network and a range of new contacts, as well as new knowledge and management assistance.

10.4 Incentive Experience

In terms of how the incentives were encountered, there were national differences in the survey. In Finland and Norway, all of the beneficiary companies learned of the grant and loans through the administrating agencies. This was either directly or through activity designed to publicise the incentive. In each country, the institutions were well known to the companies, as was their expertise in the area. By contrast, the incentives in Denmark and Sweden were mostly discovered through intermediaries such as sectoral organisations, consultants, municipalities, and other public sector agencies. This was sometimes part of a drive to meet the demands of legislation, and in others as part of special sectoral initiatives to promote environmental integration.

Regular contact between the government agency or intermediary and the companies was a positive feature of most the incentives surveyed. This took the form of telephone calls, e-mails, visits by and to agencies, and the formal reporting requirements. In some cases, such as GRIP in Norway, visits were seen as very important, as the tourism companies were taking their first steps in environmental work, and they needed ongoing advice and guidance. A similar experience was recorded with the Environmental Design Grant in Sweden, where SVID contacts lead the companies through different stages, learning more and developing ideas as the initiative progressed.

In some cases, such as the Danish Environmental Competence Grant and the Swedish Environment-Driven Business Development Grant, the networking function by intermediaries had a positive outcome, with the companies encountering a range of consultants, business organisations and specialists in environmental management certification. This mix of expertise and experience proved especially valuable to companies.

The degree of involvement varied. In some cases that were supported by direct grants, processes such as certification involved the whole company, from managers to factory floor staff, and this was judged to have been a successful integration. In others where the grants were paid to the

organisers rather than the companies, it was considered that the formal grant status – including a reporting of results and quantified goals - would have generated a better response from employees.

Risk was raised as an issue, particularly in the Norwegian Environmental Technology Loan. Some beneficiaries believed that SND should take greater risks with finance, be less cautious in project selection, and act more as a venture fund.

Timing of projects and project components was considered a weakness in a few cases. The companies had either to proceed with the integration process while awaiting guidance, or informative seminars featured at a late stage in the process, whereas they would have been more effective in encouraging participation if conducted at an earlier stage.

The financial cycle was identified as causing problems, in that the need to make payments before claiming the funds through receipts still meant that the companies had first to find the extra money and operate with a greater debt until the applications were processed.

The approval and implementation of the grants and loans extended over a ten-year period, from 1995 to 2004, precluding comparability of awards and currencies. The highest grant awards amounted to DKK 750,000 and NOK 1,800,000. The loans extended to 50 percent of costs, but the largest loan of NOK 10 million represented 22 percent of costs. In procedural terms, grants and loans were sometimes delivered in a single payment, but in others as two, three or even four instalments. In the Swedish incentives, the funds were paid to the designers and other intermediaries, and grants to the companies were designed only to assist them in recovering costs.

10.5 Environmental Impact

In this section, the various environmental impacts of the incentives, as identified by the interviewees, are considered. Table 4 presents a numerical summary of impacts in ranked order of significance. The following categories review the incidence and characteristics of each of those factors.

10.5.1 Resource Usage

The category of resource usage was the highest scoring in the survey. Although precise measurements were not available, three quarters of the companies in the case studies stated that they had reduced and improved their use of resources. In most cases, this referred to more efficient use of energy. This occurred especially in production processes and the maintenance of tourist accommodation with regard to heating, lighting and

draughtproofing. It also featured in the form of waste now being used to produce energy, and in more energy-efficient transportation.

Other areas of resource improvement included savings in materials through the use of fewer components in products, reduced packaging, and effective recycling resulting in less waste. Lower water consumption was a benefit as a result both of recycling and resolving problems of leakage.

Table 4: Incentive Environmental Impacts, in ranked order³³

	Denmark		Finland	Norway		Sweden		Total
	ECG	GJG	EL	ETL	SPCG	EDG	EBDG	
Resource usage	4		2	2	5	2	4	19
Company profile and marketing	1	1	2	1	3	4	3	15
Production and process methods	5		4	2		1	1	13
Waste management	2		2	3	3	1	2	13
Corporate environmental strategy	5	1	1		1	2	2	12
Supplier links	2	1	1	2	2	1	1	10
Environmental management system	5				2		1	8
Other environmental impacts		1	2	1	3		1	8

10.5.2 Company Profile/Marketing

Two-thirds of the companies stated that project participation had influenced or created their environmental profile or marketing image. In cases of environmental management systems certification, the new status proved an advantage for companies in sectors where this was uncommon, but in other sectors the advantage was short-lived, as most competitor companies rapidly gained similar status as a sectoral norm. In most companies, the environmental credentials gained have been incorporated into a documented environmental profile or into marketing literature, and two Norwegian companies made conference presentations specifically to promote their environmental transformation. In cases related to modified or new products, such as in the Swedish Environment-Driven Business Development Grant, it is still too early for tangible outputs, but some of the participants intend to market their new certificates or products as a comparative advantage.

10.5.3 Production/Process Methods

Most companies stated that the project impacted on production and process methods. In some cases, such as in the Finnish Environmental Loan,

³³ The following abbreviations are used for the various grants and loans: GJG - Green Job Grant; ECG - Environmental Competence Grant; EL - Environmental Loan; SPCG - Sustainable Production and Consumption Grant; ETL - Environmental Technology Loan; EDG - Environmental Design Grant; EBDG - Environment-Driven Business Development Grant

this was the main focus of the incentive, and identifiable changes ranged from new strategies to modify existing methods to direct changes to processing techniques, materials selection and application, recycling and the efficient use of energy. Similar improvements were recorded in other cases, such as reducing the number of components used in the production process, investing in new, improved technology, and in one company even extending into reorganising the logistics of production with regard to internationalisation. In addition, several companies found the impact was more focused on their products, making them more environment-friendly.

10.5.4 Waste Management

Just over half of the companies indicated that aspects of waste management had been improved as a direct result of implementing the incentive. This occurred mostly in the Norwegian examples, which related to activities involving improved waste separation and sorting, waste minimisation, recycling and composting. In one of these cases, 30 percent less waste was produced, with a corresponding reduction of 60 percent in waste disposal costs. In comparison, the Finnish Environmental Loan produced instances where 80 percent of previous waste metals were now recycled, with painted metals partly recycled, and in another case a 15-20 percent reduction in waste has occurred as a result of improved quality control in production. Anticipated future developments included a recycling/exchange initiative between companies, and investigations into waste disposal and recycling routines.

10.5.5 Corporate Environmental Strategy

Half of the surveyed companies produced environmental strategies as part of incentive implementation. In the Danish Environmental Competence Grant, for example, all five supported companies either produced a corporate environmental strategy or improved an existing strategy as part of the required process for EMS certification. In separate cases, the grant had been sought precisely to support development of a new strategy and company direction, and in a waste project the grant became the first step in the development of an environmental strategy.

Other approximations included the introduction of ecological aspects from the product strategy into a business plan, which was not equivalent to a separate corporate environmental strategy, but nonetheless formed a strategic recognition of environmental factors. In a number of tourism projects, environmental visions, rather than strategies, evolved from project implementation. These related to environmentally sustainable destinations, building with local wood and materials, serving local produce in restaurants, and becoming a regional leading company environmentally.

10.5.6 Supplier Links

Just under half of the companies cited impacts with regard to suppliers, and these were of two types. In most cases, it meant persuading existing suppliers to change or improve their practices to match the new environmental awareness of the company. This included imposing conditions on new contracts, for example stating that organic soils should be used, encouraging the re-use of packaging materials, and persuading suppliers to reduce the paper flow by working primarily with e-mail. In one case, the company expected its suppliers to match its own environmental performance requirements.

In other instances, where the impact meant moving to new suppliers that complied with environmental standards, the methods used included providing a standard questionnaire for suppliers to complete to verify their credentials. Other lasting impacts included an annual review and appraisal of supplier links. In companies that already had an environmental capacity, where suppliers were already instructed to meet environmental criteria, attention was drawn to the balancing act and negotiation required when clients make environmental demands that the company must then impose on its suppliers.

10.5.7 Environmental Management Systems

A third of the companies used the incentive to investigate the scope for environmental management system certification. The majority were funded through the Danish Environmental competence Grant, where all five companies implemented an accredited EMS, in one case as preparation for the ISO 14001 standard. In another exceptional case, a hotel group in Norway gained a Green Globe certificate from the World Travel and Tourism Council, and then subsequently progressed to attain the Nordic Ecolabel, EMAS and ISO 14001 certificates, with the European Ecolabel as the next target.

10.5.8 Other Environmental Impacts

A number of additional environmental impacts were recorded. These included the introduction of a new certified ecological product onto the Danish market, improvements to working environments that safeguard the health of employees, and relocation of manufacturing activities to a waterfront site. In the latter case, the direct access for loading and unloading meant that the environmental impacts of business expansion were more effectively contained.

Other enduring effects comprise an on-going educational process through seminars, programmes and routines to integrate environmental thinking into business practice. In one company, the development of environmental ethic means that a special committee now reports back regu-

larly to employees on company performance, and staff have become directly engaged with the company's various initiatives.

In certain tourism destinations, experience has shown that even though the staff members originally trained through the incentive have now left, the knowledge base has been retained and the regional image of an environment-conscious destination has become a permanent feature.

10.6 Economic Impact

With regard to economic impacts on companies, it is more difficult to identify the individual impacts, particularly since the companies did not always separate interconnected themes. Consequently, a table similar to the environmental impacts presentation cannot be constructed, and this section has a discursive content addressing the themes of business opportunities, employment levels, performance/operating efficiency and other economic impacts.

10.6.1 Business Opportunities and Market Share

Companies in receipt of most of the incentives were able to identify new business opportunities arising from project implementation, and these were often converted into a larger market share. In a number of cases, this meant an expansion to accommodate international clients, especially in Western Europe and Central and Eastern Europe, whereas other companies used the opportunity to consolidate domestic markets. For example, one of the Norwegian beneficiaries was commissioned to undertake an environmental information promotional tour, addressing sectoral organisations, and this demonstration of expertise attracted substantial new business from across the country.

Environmental certification was also perceived as having attracted new business. In one instance, a large commission from a public institution was directly related to the attainment of the environmental management systems qualification. This advantage resulted from the relative absence of such certifications in the sector, and the requirement for public authorities to place orders with certified suppliers. In a similar outcome, another company believed that the improvements to the work environment, in terms of increased safety and environmental control, had sufficiently impressed German clients to increase the company's status and competitiveness in that market.

In one case, a contrasting scenario resulted, as the company's new environmental code derived from the certification means that it has been active in declining new business judged inappropriate on environmental grounds.

10.6.2 Employment Levels

Eleven companies recorded an increase in employment levels as a direct consequence of receiving the environmental incentive. In the Danish Green Jobs Grant, the main purpose of the grant was to increase employment through facilitating hiring of additional staff, and this was achieved in each of the companies. The scale of increase was small, representing only 1-2 persons in each case, but it was considered strategically important in supporting expansion amongst environmental sector SMEs. In another Danish example, within the Environmental Competence Grant, one company hired an additional employee to manage environmental matters, following up on its recent EMS certification.

In Finland, small increases in employment occurred in two companies that received the Environmental Loan. These represented between one and three new full-time staff.

The Norwegian grant and loan together supported employment increases in four companies. In the manufacturing businesses, this amounted to increases of up to five persons to operate new production lines. In the tourism sector, the increases were more modest, with the creation of one new job, which was a temporary position, and a new outdoor activities company. External employment impacts were also identified, as specialists were hired to conduct a range of analyses and monitoring activities. These competences were not local, but instead engaged from other areas.

In Sweden, the nature of the incentive knowledge transfer did not translate into immediate employment impacts, being focused more on environmental design and product modification.

10.6.3 Performance/Operating Efficiency

Companies generally found it difficult to distinguish between increased sales resulting from incentive activity and from other, perhaps unrelated factors. Nevertheless, approximately half of the beneficiary companies registered an increase in overall profitability that they believed was linked to project implementation. In some cases, the profits were substantial enough to absorb the effect of low returns through price increases on international markets.

Improvements were identified in operating efficiency through reductions in costs. These factors had directly enhanced competitiveness, for instance by simultaneously improving the quality of products while lowering production prices. Through these changes, two Norwegian manufacturing companies gained a position of dominance or monopoly within Norway, in one case reflecting an increase from 80 percent to 100 percent of market share, edging out smaller and less competent competitors.

In another example, the introduction of recycling saved costs of transporting waste materials to disposal sites, while bringing additional in-

come through the sale of waste to recycling companies. New technology also allowed faster production and heightened efficiency. In some cases, the attainment of EMS certificates impacted positively on sales and overall profitability, although in one instance this comparative advantage seems already to have been lost, as other companies have gained equal certification.

In the tourism sector, in relation to the Sustainable Production and Consumption Grant, the main benefits of the projects appeared to have been that companies are now more effective in saving money, rather than generating new income. Several companies anticipated that greater economic benefit would be forthcoming in years ahead, as their new environmental credentials make an impact on market share.

10.7 Associated Outcomes

10.7.1 Environmental Learning

A range of environmental learning outcomes resulted from implementation of the incentives. Overall, most companies found that participation promoted increased interest in environmental issues and a perception that this field of activity is worth further investment of time and resources.

The types of learning included factors such as identifying and understanding environmental impacts more broadly, exercising greater control over production processes and working methods to bring corporate and environmental benefits, and reducing environmentally inefficient activities, particularly through increased knowledge of materials recycling. Companies changed their perspective on their operations, and in some cases these first steps assisted them in seeing potential for very practical contributions to sustainable development.

For certain companies, the learning process that was launched with the incentive has continued into formal environmental education for employees, and it features in salary and career development appraisals. For others, the changes in perceptions and attitudes mean that all of the staff now engages in environmental considerations.

In several examples, there was no appreciable learning. Reasons for this included previous environmental knowledge that had brought them to the incentive initially, or because the beneficiaries were primarily interested in the economic gains of company development, and the environmental dimension had been coincidental. This might relate to projects seeking new or expanded technology, for example, where the incentive represented a windfall gain that promoted environment-friendly options.

In a few cases, the new knowledge and associated experience discouraged companies from seeking further environmental credentials. In one example, where meeting market demands was perceived as the priority,

this was hindered by constraints of certification, resulting in a reversion to non-ecological products. In another case, the lack of synchronisation between markets and regulatory systems encouraged the conclusion that investments in EMS certifications were not worth pursuing.

Although the learning experience was confined to small units or individuals in a number of the surveyed projects, other examples exist in which the whole company became involved and enthusiastic. Both types occurred within projects funded by the Swedish Environment-Driven Business Development Grant, where in one case only three people from product development were involved, and yet in another the whole company was involved in the certification process, with tangible changes to production processes and office activities. Similarly, in one Finnish example, the company's new learning lead to a subsequent risk analysis that produced a certified quality system, with broad participation from management and the factory workforce.

10.7.2 Expectations and Results

Overall, most companies were satisfied that the results of participation met their expectations related to objectives. These particularly included cost savings, recycling goals, job-creation and business development. In a number of these cases, the outcomes exceeded expectations, and unforeseen benefits also occurred, such as new sectoral networks of linked companies. However, there were also a number of instances where companies were disappointed with the implementation and results.

For some companies, the impact of environmental certification was lower than expected. Whereas the new status was anticipated to bring very positive reactions from clients and tangible benefits to the companies, it resulted instead in a distrust of large corporations and dissatisfaction with public sector agencies that claimed to favour subcontractors with high environmental management standards. Certifications often require high fees and considerable investments of time, especially for SMEs, and if the increased turnover does not materialise, it undermines the commercial value of undertaking environmental investment.

In another instance related to certification, it was expected that the project would lead to EMS qualification, but it transpired that the incentive supported only preparatory efforts to launch the certification procedure.

In general, technical aspects of projects appear to have been fulfilled, but achievement of the economic and participatory elements, primarily in the tourism sector, were less in evidence. In another case related to environmental design, the company employees resisted the change in attitude, creating obstacles to the fulfilment of the new approach and effective environmental integration.

11. Conclusions

- Amongst public sector assistance for industry, environmental incentives in the Nordic countries are supporting a range of environmental investments which, in many cases, would not otherwise be realised.

In this respect, they have a strategic role in promoting good practice within SMEs and contributing to the overall transition of Nordic economies towards sustainable development. In a number of instances, it is evident that the assisted projects would find alternative funding sources, most notably the investments in production technology, but receipt of environmental incentive means that the investment could be steered towards choices and directions that most benefit the environment. In other words, the availability of the incentives effectively creates scope for public sector agencies to exercise influence that favours environmental integration.

- As would be anticipated, the primary impacts from environmental incentives comprise positive change in environmental dimensions of company practices.

The eligibility is very broad in terms of subject coverage, relating to environmental management, construction, resource usage, the production process, waste management, recycling, business strategy, product design, lifecycle assessment, tourism management and hotel accommodation, amongst other themes. Immediate benefits are realised, for example through implementing environmental management systems and new or improved technologies. Other projects have a longer-term perspective before returns are identifiable, such as investments in tourism destinations, environmental design and training initiatives.

- In addition to readily measurable impacts, environmental incentives have contributed to raising environmental awareness amongst SMEs and engendered a greater sense of environmental responsibility.

The experience of working with environmental incentives has affected attitudes and perceptions in a form that can be expected to modify management practices for years ahead, supporting a convergence that regulation alone cannot secure. Following the philosophy that profit can be made from transition, based on being in the forefront of development, this public sector encouragement and support of transition in companies relies

on persuasion rather than pressure, and its outcomes may foster attitudes sympathetic to concepts such as environmental stewardship.

- Nordic environmental incentives have had identifiable economic impacts on company performance.

The scale of impact varies with sector, size and focus of the project. Whereas themes such as cost savings represent an obvious and accepted target where impacts are measurable and can be substantial, job creation and product promotion are areas where economic gains tend to be more modest or longer term. The exceptions to these categories comprise technological enhancements in the manufacturing sector, where the project ideas have originated from the economic premise that improved or expanded production facilities will increase turnover and profits. Nevertheless, across the supported sectors, the indicators reveal that SMEs in receipt of environmental incentives are improving their performance and becoming more competitive and sustainable.

- The administration and management of environmental incentives appears well conducted by agencies and intermediaries, though beneficiaries are not satisfied with all aspects of intervention.

A considerable amount of expertise and management skills have been accumulated in the administering agencies, building important relationships with companies and establishing communication and trust that often continues long after the grant or loan has been concluded. In many instances, this forms the beginning of a working interaction that benefits both parties. However, methods and effectiveness vary between institutions, and SMEs have been disadvantaged by lack of knowledge of incentives, by appraisal systems that favour single deadlines rather than open submission procedures, meaning that high-quality projects may be denied support, and by extended delays in the delivery of finance or guidance.

- Following project implementation, outcomes do not always match expectations, discouraging some beneficiaries from making further environmental investments.

With regard to benefits that might arise from projects, disappointments have mostly concerned economic rather than environmental factors. Participant SMEs are prepared to commit funds to environmental improvement, but their agreement is often based on the assumption of early returns for their investment of time and money. The longer the period between these two events, the more unwilling companies may become to engage in further environmental ventures. In addition, the greater the investment, the greater the disillusionment, if rewards are not forthcoming.

ing. In some instances, this scenario has been exacerbated by lack of appropriate responses from major public and private sector clients that demand high environmental credentials.

- SMEs perceive that there is uncertainty regarding the future form and scale of environmental incentives, but they consider that these schemes should be continued and receive a higher profile.

With changes in governments, ministers and policy priorities, environmental subsidies can be an obvious instrument to dismiss when financial cutbacks are scheduled, as occurred most visibly in Denmark in recent years. Furthermore, in comparison to other EU member states, the Nordic countries have maintained a higher proportion of grants than loans, and policy revisions are anticipated in this sphere, potentially favouring tax concessions. For SMEs, stability in policy programmes is important, and greater commitment to environmental incentives would be welcomed. Rather than diminishment, companies favour a higher profile for incentive availability, more extensive reporting of achievements, and cross-sectoral initiatives to foster greater appreciation of the merits of environmental integration.

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Appendices

Appendix 1: Advisory Panel and list of Interviews

Advisory Panel Members

- Tove Jensen, Danish Environmental Protection Agency, Copenhagen
- Hanne Eriksen, Danish Environmental Protection Agency, Copenhagen
- Jari Pirinen, Finnvera, Oulu
- Pekka Harju-Autti, Finnish Ministry of the Environment, Helsinki
- Bjorn Nordby, SND, Oslo
- Eva Britt Isager, GRIP, Oslo
- Stefan Henningsson, Nutek, Stockholm

Environmental Finance Administrators Interviewed during Phase 1

Denmark

- Tove Jensen, Danish Environmental Protection Agency
- Hanne Eriksen, Danish Environmental Protection Agency
- Dorte Maimann, Danish Energy Agency,
- Kai Worsae, Danish Energy Agency
- Henrik Andersen, Danish Energy Agency

Finland

- Jukka Saarinen, Ministry of Trade and Industry
- Pekka Harju-Autti and Antero Honkasalo, Ministry of Environment
- Jari Pirinen, Finerva
- Ilari Aho, Motiva

Norway

- Grethe Torrissen, Ministry of Environment
- Hege Normann, Norwegian Pollution Control Authority
- Bjorn Nordby, SND
- Eva Britt Isager, GRIP
- Birger Bergesen, Norwegian Water Resources and Energy Directorate

Sweden

- Arne Andersson, Swedish Energy Authority
- Monique Wannding, NUTEK
- Carl Naumburg, Vinnova

SME Environmental Directors interviewed during Phase 2

Denmark

- Gitte Baun, A2SEA
- Jørgen Løgstrup, Baccess A/S
- Martin Bregnballe, Kokken og Køkkenhaven
- Niels Holme Larsen, Nihola
- Jan Sørensen, Glostrup Produkthandel
- Inger Liljeberg, OMØ Verkstaeder
- Bjarne Holm, Allerød Autoophug
- Robert Leth, Specielbrød
- Kim Rewitz, Respekt Danmark

Finland

- Tapio Ollanketo, EC-Engineering Oy
- Heikki Salmela, Eurocon
- Johanna Koskelainen, Kymppi-Eristys Oy
- Timo Rantanen, Lamor Corporation
- Mats Hästbacka, Värissävy

Norway

- Gunther Motzke, Gålå Høgfjellshotell og Hytter
- Helge Haugen, Hurum Glass
- Halvard Brennodden, Folldal Gjenvinning
- Richard Dahl, Aaltvedt Betong
- Knut Sørli, Norsk Metallfragmentering
- Terese Jemtegård, Rauland Turist
- Roger Fagerli, Destination Lofoten
- Tommy Edvardsen, Nordnes Camp
- Kjell Mykkeltvedt, Hol Kommune

Sweden

- Johan Wetterström, Blueair
- Dick Ahlberg, Kron AB
- Lennart Svensson, Swepac

- Peter Renkel, Konftel
- Karl Thysell, HTC Sweden
- Claes Kemmer, Gateway
- David Karlsson, EWAB
- Jörgen Wickman, JM Skyltservice
- Mats Persson, Perfect Print

Appendix 2: Nordic Environmental Incentives Summary Tabel

Environmental Incentives for SMEs in Denmark

Theme	Instru- ment	Time- frame	Objectives	Core Criteria	SME Award Rates	Evaluation
Environ- mentCom- petence	Grant	1999- 2003	Increase environmental management skills in purchasing and product development through to lifecycle assessment.	Previous knowledge of environmental management, staff commitment, how results will be achieved, impact on company development.	Up to 50% of eligible expenditure, and a maximum of DKK 300,000.	Annual reports available for 1999-2001 operation. Self-evaluation reports completed by beneficiary companies.
Green Jobs	Grant	1997- 2001	Create new environment-friendly jobs for people on labour market periphery, and market innovative environmental technology.	Contribution to environmental improvement, sustainable job creation, address a new theory or product, growth potential, demonstration value for other projects.	For job-creation, up to 50% of costs, between DKK 350-750,000; for environmental technology grants over DKK 600,000.	in 1999 and 2001 focused on business-economic impacts, environmental impacts and social gains in qualifications/skills.
Energy Efficiency	Grant	1993-	Encourage purchase of energy-efficient technology from a predetermined list of 16 approved categories.	Identification as eligible technology, estimated impact on CO ² reduction, investment payback period.	Up to 26% of project costs, and a maximum of DKK 10 million.	Evaluation carried out in 1999, focused on the reduction of CO ² emissions achieved in trade and industry.
Renewable Energy	Grant	1990-	Support technology research, development and demonstration projects, especially in windcraft.	Identification as eligible technology, estimated impact on CO ₂ reduction, national energy technology programmes compatibility.	Up to 100% of project costs – exceptionally - with no formal financial upper limit.	Evaluation carried out in 2001, incorporating minor survey of company experience.

Environmental Incentives for SMEs in Finland

Theme	Instrument	Time-frame	Objectives	Core Criteria	SME Award Rates	Evaluation
Environmental Protection	Grant	1996-	Support the development of new technologies, systems applications or forms of co-operation and good practice.	Initiation of development activity, expected environmental benefits, innovative character, job-creation potential, technical feasibility.	Between 50% and 100% of project costs, with a lower financial threshold of EUR 17,000.	Comprehensive evaluation planned for 2002. Single region evaluation has examined environmental benefit and employment impact.
Environmental Protection	Loan	1997-	Awaken environmental responsibility in SMEs related to competitiveness, new products and specialisation in environmental technology.	Company size (maximum of 250 for loan and 100 for loan guarantee) risk assessment (low rating from investment grading system for guarantee), financial base, environmental analysis.	Level of interest set below market rate. Typical award is around EUR 175,000, but there is no upper limit financially.	Evaluation carried out by the European Investment Fund, but with a restricted focus on EU level of activity.
Energy Conservation	Grant	1992-	Support energy efficiency surveys, energy audits of production facilities and buildings, preparation of action plans to increase efficiency, and energy investments.	Participation in energy conservation agreements, conventional quality criteria.	For energy audits, up to 50% of eligible or actual costs. For conventional or advanced technology, up to 10% or 30% respectively. Award limit of EUR 83,000.	A number of energy conservation agreements have been evaluated, reviewing project impacts on CO2 emissions and energy costs.

Environmental Incentives for SMEs in Norway

Theme	Instrument	Time-frame	Objectives	Core Criteria	SME Award Rates	Evaluation
Sustainable Production and Consumption	Grant	1992-	Develop and test methods to improve eco-efficiency, communicate these methods to enterprises, support EMS certification.	New technology and innovative content, knowledge transfer, evidence of demand, expected environmental impact, competitive attributes.	Up to 50% of project costs, with no upper limit financially. Average awards are between 30-40%.	Internal evaluations have modified project selection criteria. Impact on companies will be evaluated during 2002.
Environmental Technology	Grant	1990-1996	Support cleaner production assessments and pilot projects, seek technical solutions for a sustainable industrial sector.	Environmental problem tackled, innovative content in new or existing technology, knowledge transfer capacity, emissions reduction.	Up to 40% of eligible costs in designated regions in the north, and up to 35% elsewhere in Norway.	The most recent evaluation was in 1995, reviewing overall performance, but not company impacts.
Environmental Technology	Loan	1998-2000	Promote investment or development in environment-friendly technology that reduces emissions of greenhouse gases, amongst others.	Emissions reduction capacity, eco-efficiency and resource efficiency, innovative content related to new technology or new applications of existing technology.	Level of interest initially 1-4%, latterly raised to 4.6%. No upper limit financially.	Internal evaluation prepared as report for Ministry of Environment, appraising cumulative impact of loans and associated investments.
Renewable Energy	Grant	1997-	Support energy efficiency through creation of renewable energy capacity.	Major factors are the amount of energy that would be saved, and the innovative content of the project.	Up to 60% for private sector projects. Average awards are around NOK 200,000.	An evaluation derived a performance ratio for the energy saved, but environmental benefits were not explored.

Environmental Incentives for SMEs in Sweden

Theme	Instrument	Time-frame	Objectives	Core Criteria	SME Award Rates	Evaluation
Environmental Management	Grant	1996-1998	Stimulate the development of high environmental awareness amongst SMEs, especially through EMS.	Sectoral base, well established locally, project feasibility, value-added, accessibility of documentation.	For networks only, up to 50% of project costs, SEK 500,000 was rarely exceeded.	Evaluation has focused on company experiences, but not environmental and economic impacts.
Environmental Design	Grant	1997-2000	Devise new methods or tools for product design, modify existing methods, promote good practice.	Sectoral base, well established locally, project feasibility, value-added, accessibility of documentation.	For networks only, up to 50% of project costs.	Evaluation has followed up on project objectives, but not environmental and economic impacts.
Environment-Driven Business Development	Grant	2001-	Strengthen the competitive ability of SMEs by introducing sustainability to operations and products and initiating on-going EMS improvements.	Existing EMS, quality systems experience, environmental products focus, sectoral base, well established locally, project feasibility, value-added, accessibility of documentation.	For networks only, up to 100% for pilot studies, with SEK 100,000 upper limit, up to 50% for main projects, with SEK 100,000 upper limit.	No evaluation has taken place yet.
Renewable Energy	Grant	1997-	Increase renewable energy capacity in electricity production, especially wind and wave power.	Scale of electricity generation, estimated cost-efficiency.	Up to 10% of eligible costs, with no upper limit financially.	Quantitative evaluation features in company annual reports only.