

Eco-design Innovation in Small and Medium Sized Enterprises; some early conclusions.

Paper presented at the 7th International Greening of Industry Conference, Partnership and Leadership. Building Alliances for a Sustainable Future. November 15-18, Rome.

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Abstract.

This paper outlines a selection of small and medium sized-enterprises that have developed 'green' goods, 'eco-efficient' products, and 'green' services. The study is based on interviews conducted with 14 growth oriented, UK based small and medium sized enterprises (SMEs), drawn from a range of sectors. This follows from the research outlined at the 1997 Greening of Industry conference. These companies operate in different markets to those involved in 'environmental technology'. They also differ from 'non-green' firms that are likely to be influenced by compliance with general business pressures, including legislation, industrial standards and supply chain management. The focus of schemes, designed to assist these firms improve their environmental performance, typically address process innovations that achieve cost reductions. Environmental benefits arise through such actions. These schemes will not promote a cultural shift and are unlikely to encourage the adoption of sound environmental practices. They are also unlikely to recognise the competitive advantages of exceeding minimum compliance, as illustrated by eco-efficiency models.

Non-green firms contrast strongly with the 'green' companies interviewed for this research. They typically exceed the minimum levels of compliance with environmental legislation, and may be pro-active in the process of setting regulatory standards. However, they are presented with significant obstacles that inhibit their further development and progress.

The barriers that prevent further progress include support agencies with excessively complex bureaucracies, inadequate investment and inappropriate regulatory mechanisms. They are also typically faced with the problem of fragmented, under-developed markets.

The forms of intervention the firms themselves have suggested to overcome their limitations include the need to stimulate demand for their products and services. All the firms interviewed are aware that they currently occupy marginal markets, but all intend their products to become mainstream.

The findings inform eco-design innovation theory, the need to transform non-green firms through supply side policies, and the introduction of demand side measures to stimulate growth in 'green' firms.

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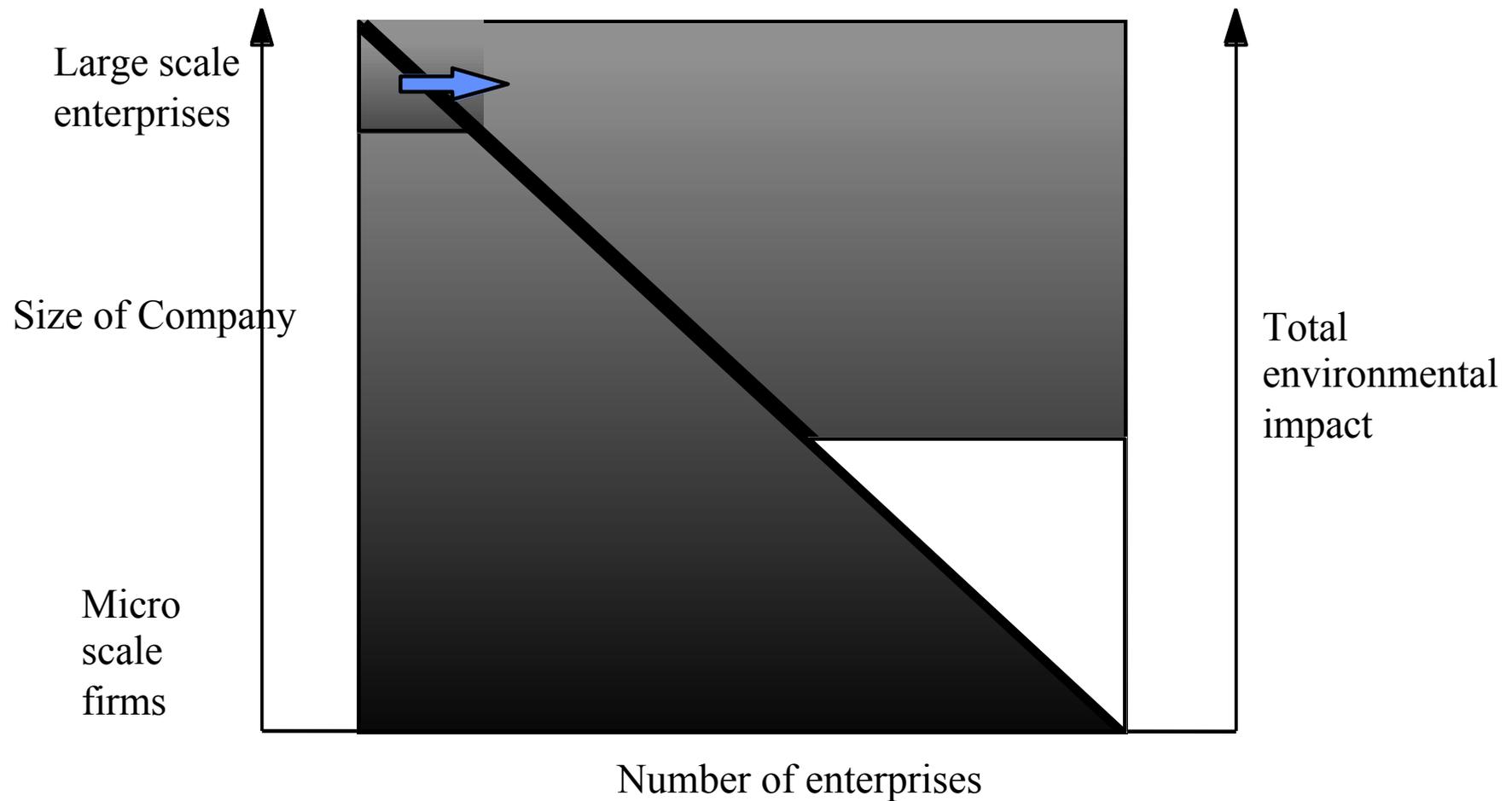
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SMEs: Environmental and Economic Context



'Green' Technology versus Environmental Technology

- Environmental Technology

- Equipment for 'clean' production
- 'End-of-Pipe' Pollution abatement
- Waste treatment
- Energy saving/efficient equipment

- Green Technology

- Clean technology
- Eco-products
- Product and process redesign

The greening of SMEs: Industrial Transformation

- **Sticks**
 - Regulation
 - Standards
 - Supply Chain Pressure
- **Carrots**
 - Financial Support
 - Information; Diffusion of clean technology
 - Product Innovation

Eco-design in UK SMEs

Typology of Firms

- Type of Firm
 - *Transitional*
 - *Green*
 - *Service*
- Characteristics
 - Products have improved environmental performance;
Focus on eco-efficiency
 - Holistic approach;
Based on conventional concepts of products
 - Intangible product;
Information based company.

Summary of Eco-Design Strategies

- *Product Improvement*
 - Demands process innovation; Greening 'non-green' firms.
- *Redesign Product/
Function Innovation*
 - Includes 'green' SMEs; Select for environmentally friendly materials; Firms positioned to make further innovations.
- *System Innovation*
 - 'Green' firms limited by current economic system; Government level intervention Required; Demand 'green' market dynamics & cultural shifts.