

Establishing an Eco-Industrial Network

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International and Irish experience indicates clearly that environmental performance may be enhanced and cost savings made by companies operating in partnership with others: the general term used for such arrangements is 'Eco-Industrial Networks'. An Eco-Industrial Network is more than an informal arrangement amongst companies: it is intended to be a long-lasting arrangement with some formalised rules in which participating companies share information which allows them to actively seek out ways in which environmental and cost-effectiveness may be increased over time. They vary greatly in scale and purpose: for example, some may be established simply to share information on new technologies, legislation or training opportunities; others may co-operate to attract new companies that can use the waste products of existing companies as resource materials. In some networks, environmental performance and competitiveness are achieved by actions taken by individual companies; in others, action is taken to create facilities or access services for groups of companies to achieve economies of scale. Examples of such actions are provided throughout this guide. Networks are often managed by steering committees, which include representatives of national- and regional-scale decision makers, such as Regional Waste Management Offices and Local Authorities. This has been found to increase company awareness of policy concerns and increase decision makers' awareness of the needs of industry. While there are many international examples of successful Eco-Industrial Networks, few have been established in Ireland.



Introduction

This guide is aimed at industries that might see benefits for themselves in being part of a Network, but are unsure how to go about setting one up, or joining an existing one. As both Eco-Industrial Networks and individual companies vary in size, location, sector and purpose, it is not possible to provide a 'one-size-fits-all' list of steps to be taken to establish such a Network. In practice, a range of alternatives has to be considered, and choices made, on the basis of the particular needs, available resources and location of a company. This guide is structured around a set of key questions, and it is intended that in answering these questions a company will be aided in deciding whether it is worthwhile for it to either plan to set up a Network, or join an existing Network.

What are the aims of establishing the Network?

Different Networks will have different aims: there needs to be clarity in setting out aims at the outset, but with the understanding that these aims are likely to evolve through time as both the Network and the economy develop. Aims that justify the establishment of Eco-Industrial Networks include one or several of the following:

- To make the supply chain more cost-efficient and to enhance environmental performance. For example, to use a nearby source of raw materials or sub-components, thus reducing transport costs and carbon emissions; to find a source of less toxic raw materials, reducing waste disposal costs; to adopt

modern cleaner technologies that save on energy and water consumption.

- To enable companies located close to one another to share services and facilities, to reduce costs and enhance environmental performance. For example, to share freight transport so as to ensure containers are full more of the time; to move pallets on or off site as required by a group of companies; to centralise waste collection for more recycling so as to reduce landfill costs.
- To enable geographically dispersed companies, often operating in diverse sectors, to reduce costs and enhance environmental performance. For example, to share information on cheap and efficient waste contractors; to share training opportunities; to learn more about relevant environmental legislation to avoid accidental breaches of laws and regulations.
- To help comply with environmental legislation.

What type of activity is of greatest interest to the planned Network?

Networks vary greatly in the range of activities through which companies are linked. The types of activity that are most important relate to what are considered to be the most important shared needs. Three overall activity types may be recognised; however, these are not mutually exclusive:

1. The Network may function primarily to exchange knowledge and information (e.g. legislation, regulations), and efficiencies are to be achieved through actions by existing individual companies.

2. The Network may function primarily to create functional links among existing companies (such as sharing transport and waste management facilities), and efficiencies are achieved through several or many companies acting in concert.
3. The Network may function to facilitate new business start-ups within a designated site, greenfield or brownfield.

Arising from the choice of activities, it is necessary to identify incentives that will encourage companies to participate. Companies need to see clear advantages in establishing or joining a Network. These advantages vary amongst companies but include: finding new sources of resource materials or sub-components, cutting production costs, finding new markets for existing output, identifying new outputs, getting information on new technologies, saving money on pooled transport and employee training, keeping up to date with changing environmental laws and regulations, help in gaining accreditation to ISO 14000 standards, possibilities for positive PR.

Which company or organisation is going to lead the Network?

All Networks require a champion. A crucial job is the review of candidate companies and the selection of appropriate members (this point is covered in more detail in Questions 4 and 5 overleaf). Another crucial job is the collection, safe storage and analysis of (often confidential) information regarding Network members' activities. Often Networks are established by companies working in partnership with universities and technical colleges, which provide technical expertise and initial neutral chairing of meetings.

Existing Networks established to exploit joint actions to enhance profitability or market access have often evolved additional functions related to enhancing environmental performance. Different Networks have different champions: international experience shows that successful champions may be:

- Existing commercial Networks
- Property developers
- Larger businesses
- Local Authorities
- Universities
- Trade associations.

What types and numbers of enterprises should be involved in the Network?

Networks established in the past have linked different types of enterprise.

These enterprise types include:

- Larger indigenous companies
- Multinational companies
- Subsidiaries
- Manufacturing companies
- Service providers (e.g. transport, waste management, energy)
- Micros and small- and medium-sized enterprises (SMEs)
- Sole traders.

Choices have to be made in relation to which of these, or which mixes of these, are to be included in a Network. Networks have been formed with different numbers of partner

companies, from 20 to 150. Bigger numbers of participating companies can prove more difficult to manage, and contact amongst companies may fail to develop. However, there are also important advantages in bigger numbers. A Network may depend on a particular company for delivery of a function, such as collective waste recycling. If this company closes down, then the Network loses this service. It is therefore better to have more than one participant company providing (in this case) waste management services. Bigger numbers also mean that a wider range of industries and services can be included, which provides more opportunities for a company to find partners that offer services appropriate to its needs.

Which companies should be invited to participate in the Network?

From the perspective of enhancing environmental performance, it is clearly advantageous to include service companies operating in areas such as energy, transport, solid waste and waste-water management.

Networks have failed in the past when participating companies have not been able to initiate or maintain meaningful co-operation with other companies. The attributes of companies that have been successful in benefiting from, and contributing to, Networks usually include the following:

- Strong commitment to the project from top management
- Strong commitment to the project from an array of personnel (e.g. middle management, unions, social clubs, etc.)
- Where relevant, parent company awareness and encouragement

- Companies planning accreditation to ISO 14001 or the EU *Eco-Management and Audit Scheme* (EMAS)
- Companies interested in entering environmental management or technology
- Companies prepared to provide adequate time and resources to Network membership.

The geographical boundary of the Network needs to be considered. Networks of companies located close together offer more opportunities for synergies and other co-operation than do Networks formed by more dispersed companies. Not all companies are located close to others, but they may still benefit from Network membership. However, as a general rule, to aid communication and co-operation, distances greater than ~20 km should be avoided.

How is the Network to be funded?

Initial set-up funding is required. International experience shows that this may be provided in part or in total by:

- Participating companies
- A Local Authority
- A State agency.

Within contemporary Ireland, as a rule, resources are not available from the last two listed. After the set-up phase, if successful, the participants will fund the Network as membership confers cost savings.

Are there particular issues with Micros and SMEs as Network members?

Inclusion of smaller companies in Networks has special benefits. Smaller companies

stand to benefit greatly from Network membership. This is because:

- They often do not have time or resources to acquaint themselves with up-to-date information on regulations and laws, for example in relation to the environmental legislation.
- They often regard themselves as too small to have an appreciable environmental impact, though together they may have a significant cumulative impact.
- Their small size and relative isolation often leaves them prone to being charged high prices for materials and services (e.g. waste disposal, transport).
- They have the ability to change practices quickly and decisively (some argue especially if owner-managed).

However, consideration should also be given to the fact that it is not always easy for smaller companies to maintain Network membership or inputs over the longer term as:

- They may change location more frequently.
- They may change function more regularly.
- They may close down more frequently.
- Departure of a single key person may greatly affect their ability to participate effectively in a Network.

How will the Network be managed?

Networks in Ireland and other countries have been managed by Steering Committees formed of some of the following:

- Representatives from participating companies
- Third-level researchers
- Representatives of Local Authorities, Regional Waste Management Offices, etc.
- Intermediaries, e.g. pre-existing Network representatives
- Representatives of national organisations, e.g. the EPA.
- Products and markets
- Employee numbers, travel to work modes and distances
- Raw materials, components
- Waste streams and treatment
- Water use and costs
- Energy sources and costs
- Environmental impacts
- Freight modes and costs
- Training needs
- Health and safety issues.

Each has a potential role to play: participating company representatives provide information on the attributes and needs of these companies; third-level researchers bring expertise on new technologies and management systems, provide a neutral setting for meetings, and provide facilities for the safe storage of often confidential information; Local Authority representatives bring to the committee information on local environmental initiatives, planning regulations and constraints; pre-existing Network representatives have invaluable information on contacts already established amongst participating companies, and other companies in the region that might be interested in joining the Network; national organisation representatives bring crucial information on national policy and funding opportunities to enhance environmental sustainability.

What information is usually needed on Network members?

This varies with the function of the Network, but will usually include:

- Information on buildings, heating, services employed

Should Network activities just involve key representatives?

No, as one of the crucial, though often neglected, aspects of Network functioning is the 'social side'. Facilitating communication on shared experiences, hands-on approaches, etc., is of great importance in engendering trust and encouraging companies (especially smaller companies) to act on advice and introduce innovation. It is perfectly possible to use the Network as a vehicle for involving employee families in environmental awareness-raising social activities.

How fast can the Network develop?

It must not be anticipated that a Network can become established very quickly; 18 months is the usual minimum time for successful start-up. Steps that take time but are crucial usually include:

- Identifying and assembling membership

- Collecting information on each member's activities
- Reviewing this information to identify common issues and problems
- Identifying opportunities for site-specific or concerted actions
- Finding practical and efficient solutions.

What benefits can be achieved by Networked companies in the short and longer terms?

The example benefits listed here will both enhance environmental performance, and result in significant financial savings.

Short-term benefits include, for example:

- Shared training and knowledge of training opportunities
- Increased knowledge of environmental legislation
- Increased recycling, less waste to landfill

- Reduced water consumption
- Better freight transport efficiency
- Better energy use efficiency
- Canteen waste reduction
- Better use and reuse of pallets.

Longer-term benefits include, for example:

- Shared energy generation (e.g. combined heat and power (CHP))
- Shared transport arrangements (always full containers)
- Using waste and by-products as resources for partner companies
- Pooled waste collection, sorting and recycling
- Relocation of companies to form clusters
- New company set-ups to exploit new Network opportunities.



For Further Information

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The full report *Establishing an Eco-Industrial Network for Small- to Medium-Sized Enterprises in the Mid-West Region* by Dr Bernadette O'Regan and Prof. Richard Moles is published by the Environmental Protection Agency and is available from <http://erc.epa.ie/safer/reports>.