



industry and environment

ISSN 0378-9993
Industry and Environment
Volume 26 No. 4
October - December 2003

A publication of the United Nations Environment Programme
Division of Technology, Industry and Economics

Une publication du Programme des Nations Unies pour l'environnement
Division Technologie, Industrie et Economie

Una publicación del Programa de las Naciones Unidas para el Medio Ambiente
División de Tecnología, Industria y Economía

Big challenge for small business: sustainability and SMEs

- ◆ Challenges and opportunities
- ◆ Tools and approaches
- ◆ SMEs as models
- ◆ Role of supply chains



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Industry and Environment is a quarterly review published by the United Nations Environment Programme Division of Technology, Industry and Economics (UNEP DTIE), Tour Mirabeau, 39-43 quai André-Citroën, 75739 Paris Cedex 15, France. Tel: +33 1 44 37 14 50; Fax: +33 1 44 37 14 74; E-mail: unep.tie@unep.fr; <http://www.unep.tie.org>

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Subscriptions

Industry and Environment is subject to an annual subscription fee of US\$ 60.00. See back cover for order form. Upon application to the Director, submitted on letterhead, the annual subscription charge may be waived for government, educational and non-profit organizations in developing countries which are unable to remit payment.

Industry and Environment is available on-line at www.unep.tie.org/media/review/ie_home.htm.

Industry and Environment is printed on 100% chlorine free paper.

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The spotlight is turning towards smaller enterprises

Major international companies tend to occupy the spotlight with respect to economic news and discussions of corporate environmental and social responsibility (CESR). Until recently it has been too easy to overlook small and medium-sized enterprises, but this is changing.

SMEs were cited as a target for awareness-raising efforts and information dissemination at the June 2003 meeting in Marrakech, Morocco, on the development of a ten-year "framework plan" for improving consumption and production patterns (as mandated at the Johannesburg Summit).

In many countries SMEs are the fastest-growing part of the economy: they account for major shares of exports and the bulk of new jobs. This is one reason these companies have recently received greater attention. SMEs have long accounted for the vast majority of businesses (by number) and at least half of all jobs. While most SMEs are in the service sector the one-quarter or so engaged in manufacturing produce an important share of industrial waste. SMEs are particularly strong in sectors characterized by high intensity of resource use and by polluting emissions.

Another reason SMEs have recently received considerable attention is that far too often they do much less (individually or as a group) than large businesses to address their negative environmental impacts, even if many big firms are far from perfect in this regard. The reasons are numerous and are, for the most part, quite understandable. A vast majority of SMEs are micro enterprises; many of them, especially in developing countries, suffer from relative lack of training, know-how, technology and money. In a number of countries SMEs are not covered by occupational health and safety laws.

In both the developed and developing world many SMEs fall into the grey area known as the "informal sector". In that sector in particular, SMEs are often run by women, who confront more obstacles than male entrepreneurs. Only now are special initiatives being developed concerning corporate environmental and social responsibility for small companies. Thus the business case for SME CESR is still imperfectly understood.

SMEs are under less pressure from consumers and NGOs than are big firms with respect to their operations' sustainability. They also receive less information regarding their sustainability and how to achieve it. For most SME managers, upgrading technology, management and marketing to meet stiff price competition has the highest priority. If they know about CESR at all, managers probably perceive it as a burden rather than an opportunity.

Once SMEs are persuaded of the benefits (to themselves and to society at large) of providing products and services that require smaller amounts of materials and energy, they have an important job to do in changing the way consumers' needs are met. Some SMEs are even better positioned than large companies in that regard. This is especially true of the most innovative businesses in areas such as chemical management, energy efficiency services and renewable energy supply.

Many tools and approaches have been shown to be environmentally and economically beneficial to businesses, including SMEs. The problem has been to persuade SMEs to adopt them. However, for many small companies moving towards sustainability is becoming a necessity. SMEs must increasingly cope with sustainability demands from the large companies to whose supply chains they belong. As environmental risks become a factor in obtaining access to capital, it seems likely that smaller firms in particular will be affected. Micro finance donors are increasingly aware of the environmental implications of loans for small industry.

Government, businesses, financial institutions and business development services should be actively involved in providing SMEs with triple-bottom-line tools and approaches. Flexibility will therefore be required. It is fair to ask whether SMEs can be – or should be – expected to file full-scale sustainability reports, with comprehensive coverage of environmental matters, e.g. including impacts on biodiversity. When it comes to certification, SMEs may not be able to afford to comply with systems as complex as ISO 14001. Special tools for SMEs could be needed. However, small businesses (by virtue of their staff size, closeness of staff relations, and their position in their communities) may be well suited for activities and reporting related to sustainability's social aspects.

Issues such as these are being addressed in a number of ways – from national initiatives to multilateral activities by UN bodies including UNIDO, which is responsible for SMEs under the Global Compact, and UNEP with its capacity building tools for SMEs. "SME-friendly" environmental management systems are being developed in some countries to help introduce SMEs to integrated management systems and certification schemes.

UNEP DTIE played an active role at the Marrakech meeting in June. It will continue to be active in the subsequent "Marrakech Process" – especially where work regarding SMEs is concerned. This issue of *Industry and Environment* is part of that work. The articles address barriers and opportunities facing SMEs in their drive towards sustainability, as well as many of the available tools and approaches. ◆

Small and medium-sized enterprises and sustainability: facts and figures

In most countries – large and small, developed and developing – the vast majority of businesses are small and medium-sized enterprises (SMEs). These businesses provide at least half of all jobs.

Big business is often perceived as the “backbone” of national economies. In that case, SMEs are the flesh and sinews. We have become accustomed to being concerned about the social and environmental impacts of the largest companies. However, in many countries the cumulative impacts of SMEs are just as great if not greater.

Definitions

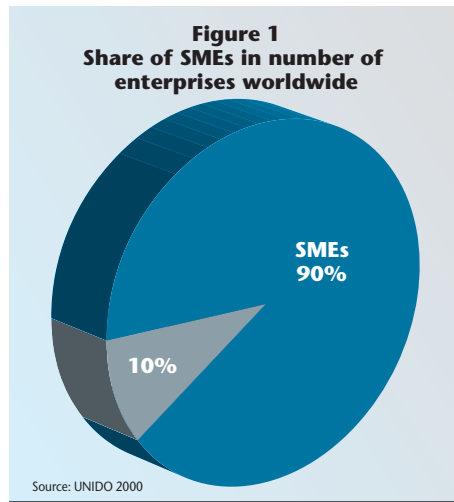
Use of the term “SMEs” is often restricted to non-primary enterprises (i.e. it does not include farming, fishery or the extractive industries). This is generally how the term is used in this issue of *Industry and Environment*. Nevertheless, small-scale fishery and mining operations, for example, are very important economically in many countries, especially developing ones.

How small is “small”? Definitions vary according to countries and regions. The European Union categorizes SMEs as “micro” (one to nine employees), “small” (up to 49) and “medium-sized” (up to 249). For the OECD, companies with up to 19 employees are “very small,” those with up to 99 are “small” and those with 100 to 499 are “medium”.

In Canada, the United States and Mexico, definitions of “small businesses” vary by sector and are based on the number of employees (a maximum of 500 employees is the most common cut-off point) or annual gross income. Brazil defines a “micro enterprise” as one with up to 19 employees and a “small enterprise” as one with between 20 and 99, with a gross annual income under 1.5 million reals in each case.¹ In India a “small enterprise” is one whose total investment in plant and machinery is not greater than 7.5 million rupees.

Definitions that take the number of employees into account could become less relevant in a “new economy” based on information and communications technology (ICT).

In Europe and much of the rest of the world, most SMEs are micro in size. In central and eastern Europe and the former Soviet Union, many private



companies with small-scale operations were created during the privatization and break-up of large state firms.² Only five years after transition began, there were 2.1 million companies in Poland: 92% employed five or fewer people, 6% employed six to 50, and only 2% employed over 50.

Most SMEs are in the tertiary, or service, sector. A 2001 survey by the Observatory of European SMEs (which monitors the 15 EU Member States, Iceland, Liechtenstein, Norway and Switzerland) showed that 25% of SMEs were involved in manufacturing and construction. The remainder were in wholesale and retail commerce, transport and communications, and business and personal services. Many countries have identified

a SME sub-category, “small and medium-sized industries” (SMIs), which generally means manufacturing/construction firms.

The triple impact of SMEs

Economic

Some 90% of all the businesses in the world are SMEs (Figure 1). These businesses are responsible for 50-60% of total employment. In OECD countries 95% of businesses are SMEs and 60-70% of jobs are in these businesses. In 1998, 66% of European jobs and 46% of those in the US were estimated to be in SMEs (Table 1). SMEs employed around 60% of Poland’s workforce in 1995.

OECD figures show that SMEs create by far the greatest number of jobs in the rich world. The ILO considers that this is probably also true in the developing world, but figures are difficult to obtain.

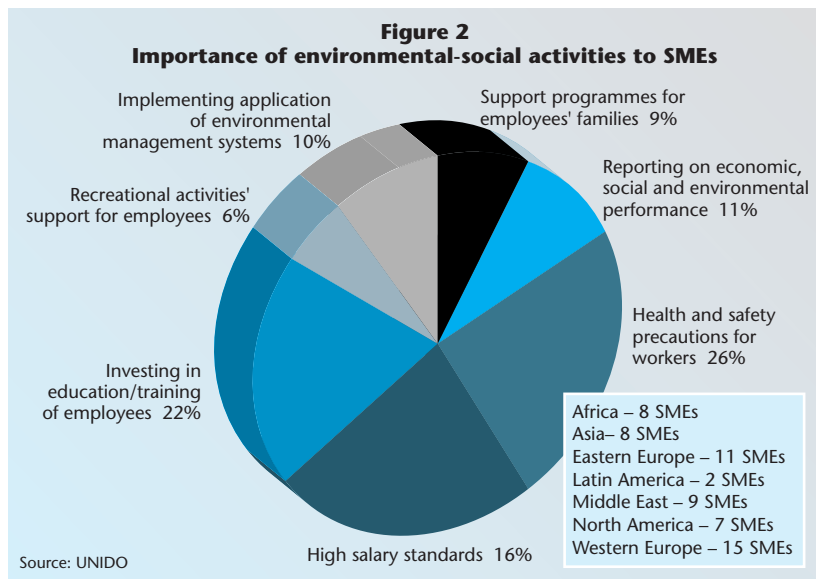
SMEs account for over half of India’s GDP. Around 51% of shipped manufactured goods in Japan are produced by SMEs.

Environmental

As the economic significance of SMEs continues to grow, so do their environmental impacts. In India it is estimated that SMEs produce over 65% of industrial waste. In Canada and the United States toxic emissions from facilities emitting 10 to 100 short tonnes of pollution per year increased by 32% between 1998 and 2000, even though overall industrial pollution decreased by 4%.³ These smaller facilities are a cross-section of industry, ranging from metalworking to food processing. As one observer put it, they are “the companies that are in the industrial parks” (of which the two countries have over 15,000).

The Foundation for International Training, a Canadian NGO, reports that a recent survey of 116,300 SMEs in China’s Jiangsu Province found 67.7% were causing serious pollution and 28.5% moderate pollution. Only 4% appeared to be pollution free.⁴

SMEs are generally prevalent in industries with relatively high resource and emission intensity (e.g. metal finishing, leather tanning, dry cleaning, printing, dyeing, brewing, food processing, fish farming, textile making and chemicals). In Japan, as in much of the rest of Asia, many



- Africa – 8 SMEs
- Asia – 8 SMEs
- Eastern Europe – 11 SMEs
- Latin America – 2 SMEs
- Middle East – 9 SMEs
- North America – 7 SMEs
- Western Europe – 15 SMEs

SME employees are engaged in traditional occupations.

Smaller businesses are generally concentrated in less capital-intensive sectors or those where economies of scale are not of the greatest importance. Economies of scale could become less important, however, in economies that are increasingly ICT-based. (Small ICT start-ups can be as implicated in e-waste generation as heavyweights in this field.)

SMEs' potential environmental impact might be expected to be commensurate with that of larger companies in the same sector. However, SMEs usually do not have the same levels of technology or employee training as large companies, especially in developing countries.

It should be noted that many companies in what might loosely be referred to as the "sustainability sector" (e.g. eco-services, eco-tourism, triple-bottom-line consulting) are SMEs.

Social

Reasons for the growth of the SME sector worldwide include:

- ◆ regional shifts in employment location, often associated with "downsizing" related to globalization or with the dismantling of large state-run entities (e.g. in the transition economies and China), which may give mid-career employees little choice but to create businesses of their own;
- ◆ growth in franchising;
- ◆ subcontracting and outsourcing by large companies.

In some countries, environmental health and safety (OHS) inspections of SMEs are not required. In others, where SMEs are subject to inspection, inspectors may fail to visit many of those in the "informal sector". Staff turnover can be high in sectors where SMEs predominate.⁵ Following up health and safety and other job-related problems can therefore be difficult, even if inspections have taken place.

The overlap between SMEs and the informal sector complicates efforts to study small businesses, or to communicate and work with them. Most of the informal sector – in most countries – is made up of SMEs. The International Labour Organization (ILO) sees the informal sector as a major source of jobs in poor countries, but it has not proposed a precise definition.

Does the informal sector include one-person micro enterprises? For the ILO the answer is yes – except in the case of "administrative workers, professionals and technicians." But many (perhaps most) countries are likely to classify, say, a self-employed shoe repairer with no employees as a micro enterprise in the formal sector, so long as that person is registered with labour and tax authorities.

Countries and regions vary considerably with respect to whether the informal sector is included in definitions of SMEs. But whatever definitions are adopted, SMEs and the informal sector face similar barriers to the adoption and practice of environmental and social responsibility (Table 2). A recent UNIDO survey of SMEs participating in the UN's Global Compact reveals some of the most important motives for overcoming such bar-

Table 1
Employment breakdown by company size

	Europe (1998)	USA (1998)	Japan (1996)
	%		
SMEs			
- Micro	34	11	n/a
- Small	19	19	n/a
- Medium-sized	13	16	n/a
- Total	66	46	33
Large enterprises	34	54	67
Number of enterprises	118.3 million	108.1 million	57.3 million
Occupied persons per enterprise	6	19	10

Source: SMEs in Europe, Including a First Glance at EU Candidate Countries (Observatory of European SMEs)

riers, as cited by SMEs themselves. Employee welfare is by far the most significant (Figure 2).

Women in developed countries are responsible for significantly more business start-ups than men, yet they often face worse obstacles (e.g. in obtaining finance for start-up, development and expansion). They are especially active in the informal sector, where there are probably even more women than the rare available statistics suggest.

UNIDO has identified what it calls the "corporate social responsibility paradox" (i.e. is the business case for CSR that applies to larger companies also applicable to SMEs?)

Reponses

Over half the SMEs in Europe take part in social responsibility activities. The larger the size category, the more companies are involved in environmental and social activities. More environmental and social responsibility activities take place in northern than in southern Europe.

Environmental activities appear to be more difficult for SMEs to carry out than those concerned with social responsibility. One explanation is that many SMEs are tightly woven into the social fabric. Relationships with the local community, and with employees and their families, are of basic importance to their survival. Environmental issues can seem less urgent and unnecessarily expensive.

Lack of information is another factor. Smaller businesses generally have their hands full complying with basic regulations, which they may not always completely understand. Indeed, the most pressing need in the case of many small business owners and managers is for capacity building – not so much in environmental management as in business management.

Table 2
SME barriers to adoption of environmental and social responsibility

- ◆ insufficient technology, expertise, training and capital
- ◆ lack of initiatives tailored for small companies
- ◆ inadequate understanding of what the business case is for SME environmental and social responsibility
- ◆ the need to deal with more pressing matters such as upgrading the quality of technology, management and marketing
- ◆ price competition
- ◆ limited consumer pressure

Source: UNIDO 2002

An increasingly common way to overcome barriers to the acceptance of environmental and social responsibility is for SMEs to work together to address issues like waste management and recycling. "Waste minimization circles" have been created in India, as has a network of UNIDO-supported "subcontracting and partnership exchanges" (SPX) where small companies can share technical information.⁶

A Web site with cleaner production and other environmental information targeted to SMEs has been developed by the Canadian Centre for Pollution Prevention.⁷ Other such sites, publicly or privately supported, exist in many countries.⁸

The United States Small Business Administration and a number of individual US state governments offer low-interest loans to help smaller companies adopt cleaner production techniques. Indonesia, with support from Germany, is undertaking a pilot Industrial Efficiency and Pollution Control Project in which SMEs receive loans for investment in efficient production and cleaner technology.⁹

Another approach is to award grants for environmental assessments. The Eco-Efficiency Centre in Dartmouth, Nova Scotia, has a pilot Eco-Efficiency Business Assistance Program that provides funding to SMEs for consultant fees, providing up to 75% (to a maximum of C\$ 6000). Another Canadian programme, in Ontario, estimates that the assessments it has helped fund for 16 SMEs have resulted in an implementation rate of over 90%, total savings of C\$1.2 million per year, and total capital investment by the SMEs of C\$ 1.2 million, with a one-year payback period.¹⁰

There are similar support programmes in Europe.¹¹ At EU level, assistance is based on instruments such as the Community Eco-Management and Audit Scheme (EMAS), the European eco-label, and promotion of cleaner technology and best available techniques.

Several forms of "light" or "SME-friendly" environmental management systems are being developed in Europe. Examples are the recently adopted British standard BS 8555¹² and the Norwegian Eco-Lighthouse programme.¹³ Other European initiatives involve promoting integrated management programmes for SMEs, for example through the Austrian Chambers of Commerce.¹⁴

Financing institutions that offer small business loans and micro-finance can also improve SMEs' sustainability awareness. Concerning micro-

finance in particular, there is growing awareness of the environmental implications of loans for small industry.

Perhaps the strongest influence on SMEs comes from multinational corporations, which increasingly ask their suppliers (including those in developing countries) to meet social and environmental standards as a precondition for doing business. Such standards may be presented as codes of conduct for individual supply chains or certification systems for entire sectors.

Large corporations usually find that their guidelines cannot easily be imposed on smaller firms. Educational and “mentoring” approaches are being developed, often with the cooperation of governments. Such an approach was announced earlier this year by General Motors and automotive suppliers. The Suppliers Partnership for the Environment is a forum where companies can share environmental best practices up and down the supply chain. When GM and the US EPA announced this initiative, they stressed that it was especially designed to benefit smaller companies in the chain.¹⁵

Selected sources (organizations)

- Confederation of Indian Industry (www.ciionline.org)
- Environmental Business Information Center (www.environmental-center.com)
- International Labour Organization (www.ilo.org)

- Japan Small and Medium Enterprise Corporation (www.jasmec.go.jp/english)
- Observatory of European SMEs (http://europa.eu.int/comm/enterprise_policy/analysis/observatory.htm)
- Organisation for Economic Co-operation and Development (www.oecd.org)
- North American Commission for Environmental Cooperation (Taking Stock reports) (www.cec.org/taking_stock)
- United Nations International Development Organization (UNIDO) (www.unido.org)
- United States Small Business Administration (www.sba.gov)

Selected publications

- *Corporate Social Responsibility: Implications for Small and Medium Enterprises in Developing Countries*. UNIDO, Vienna, 2002.
- Hillary, Ruth, *Small and Medium-sized Enterprises and the Environment: Business Imperatives*. Greenleaf, Sheffield, UK, 2000.
- Wafta, Nabil T., Saeed Awan and Rodger Goodson. Chemical risk assessment and occupational hygiene preventive measures in small and medium-sized enterprises. Paper for the ILO Action Programme on Safety in the Use of Chemicals at Work. International Labour Office, Geneva, 1998.

Notes

1. See article in this issue by Ricardo L.P. de Bar-

ros, Maria de Fátima F. de Paiva and Cristina L.S. Sisinno, “Cleaner production challenges in Brazilian SMEs” (p. 26).

2. See article in this issue by Gyula Zilahy, “SMEs and the environment in Hungary” (p. 29).

3. See the annual pollution emission report by the NAFTA Commission for Environmental Cooperation (www.cec.org).

4. In Jiangsu Province 62% of all enterprises were non-state owned SMEs, or “township village enterprises”. See <http://www.ffit.org/SMEEP/Menu/Frames/main.htm>.

5. For example, retailing and construction. See *Industry and Environment*, Vol. 26, Nos. 1 and 2-3.

6. See <http://wmc.nic.in/chapter4.asp>.

7. See www.c2p2online.com/smep2.

8. See page 15 of this issue.

9. See www.unescap.org/drpad/vc/conference/ex_id_45_iep.htm.

10. See www.oceta.on.ca/TORSUS/home.htm.

11. Examples from Austria, Belgium, Finland, Germany, the Netherlands and the UK are presented on <http://europa.eu.int/comm/environment/sme/smestudy.pdf>.

12. See www.theacorntrust.org.

13. See www.eco-lighthouse.com.

14. See www.eval.at.

15. See www.epa.govt/oppt/suppliers/pressrelease.htm. An article about the retailer Swiss Coop and its work with smaller companies all along the supply chain appeared in *Industry and Environment*, Vol. 26, No. 1. ◆

Challenges for SMEs in a globalized world economy

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Summary

SMEs are increasingly expected to take responsibility for their own environmental and social impacts (just as multinational companies are), to understand different stakeholders' interests and demands, and to demonstrate responsible behaviour through greater transparency. A number of factors can either hinder or drive adoption by smaller companies of strategies promoting corporate environmental and social responsibility. To overcome barriers to the adoption of such strategies, available tools need to be adaptable to small and medium companies' requirements. Promising initiatives along these lines have been initiated in some areas, with transnational corporations a key stakeholder group.

Résumé

On attend de plus en plus des PME qu'elles assument la responsabilité de leurs impacts environnementaux et sociaux (à l'instar des multinationales), qu'elles comprennent les intérêts et les attentes des différentes parties prenantes et fassent preuve d'un comportement responsable par une plus grande transparence. Plusieurs facteurs peuvent soit dissuader, soit encourager les PME à adopter des stratégies favorisant la responsabilité environnementale et sociale de l'entreprise. Pour surmonter les obstacles à l'adoption de ces stratégies, il faut que les outils disponibles puissent être adaptés aux besoins des PME. Dans cet esprit, des initiatives prometteuses dans lesquelles des entreprises transnationales jouent un rôle majeur ont été prises dans certaines régions.

Resumen

La expectativa de que las pymes, al igual que las empresas multinacionales, asuman la responsabilidad de sus impactos ambientales y sociales, comprendan los intereses y las demandas de las diversas partes interesadas, y demuestren un comportamiento responsable a través de una mayor transparencia es cada vez mayor. Hay una serie de factores que pueden obstaculizar o impulsar la adopción de estrategias que promuevan la responsabilidad corporativa en materia ambiental y social en las pequeñas empresas. Es necesario que las herramientas disponibles sean adaptables a las características específicas de las pymes para superar las barreras que impiden la adopción de este tipo de estrategias. En este sentido, se han lanzado iniciativas prometedoras en algunas áreas y las corporaciones transnacionales aparecen como un grupo clave.

In a globalizing economy liberalization, deregulation and privatization continuously redraw the lines between state and market. They also change the basis on which private enterprise is expected to contribute to public wealth. As a result of the growing legal, ethical, social and environmental expectations of various stakeholders, demand for corporate environmental and social responsibility (CESR)¹ is continuously increasing. While pressure grows from a wide range of stakeholders, including governments, consumers, NGOs, research institutions and financial markets, a number of companies are beginning to

implement CESR processes such as public commitment to standards, community investment, continuous improvement, stakeholder engagement, and corporate reporting on social and environmental performance.

CESR has been widely discussed in recent political and academic debates on the implementation of sustainable development in the business sector. Although there is no commonly accepted definition of corporate environmental and social responsibility, it refers to business decision-making linked to ethical values, compliance with legal requirements, and respect for people, especially

workers, employees, local communities and the environment. The aim is to encourage business to operate in such a way that it meets or exceeds the ethical, legal, commercial, public and environmental expectations that society has of it. Currently a number of these issues are being discussed and debated in the public policy sphere: the European Commission has published a green paper on integrated product policy and on corporate social responsibility (CSR); a European Multi-Stakeholder Forum has been initiated; 2005 has been designated the European year of CSR; and the UN Global Compact is bringing together companies and UN agencies to address the topic.

However, the debates and responses concerning CSR's objectives still mainly focus on large transnational corporations (TNCs) serving northern markets but operating in developing countries. Large companies have recently developed and implemented a wide array of tools and instruments including codes of conduct, environmental management systems (EMS) and sustainability reports. These initiatives have been bolstered by a growing body of empirical studies demonstrating that the application of CESR issues tends to have a positive impact on business's financial performance.

Many SMEs remain at an early stage of environmental and social management, limited in most cases to local philanthropic activities such as charitable donations. But due to increased pressure from customers (mainly procurement agencies of large companies demanding standards within their international supply chain, central wholesale organizations and public authorities), environmental and social concern is gradually growing. SMEs are increasingly expected to comply with regulations and sector-wide certification schemes. Nevertheless, CESR initiatives developed by large companies frequently fail when they are adopted by SMEs. In most cases they scarcely suit the particular needs of these SMEs. If this is the case for SMEs in industrialized countries, the question arising in the context of economic internationalization is how CESR issues can best be tackled by SMEs in developing countries and countries in transition.

The aim of this article is to identify efficient ways to promote CESR, considering SMEs' specific conditions and needs. We describe the state of the art of CESR in SMEs, followed by an iden-

tification of drivers and barriers to implementation. We also outline what needs to be done to promote CESR in SMEs.

State of the art of CESR in SMEs

SMEs make up over 90% of businesses worldwide. They account for 50-60% of employment.² Their work is strongly customer-oriented, and they are a source of innovation, employment and competitive entrepreneurial spirit. SMEs are an important source of businesses of the future, and therefore play a crucial role in reaching sustainability targets, e.g. as set out in the Kyoto Protocol to the UN Framework Convention on Climate Change³, the “factor 4/10 concept”³ and the UN Millennium Development Declaration.⁴

SMEs are the backbone of most supply chains. Thus they are of crucial importance in getting supply chains ready to meet future standards. The global trend of larger enterprises to reorganize, downsize and outsource, and the increase in franchising and self-employment, will lead to growth in number of SMEs in the future. Large product chain actors (e.g. TNCs) are continuously becoming more interested in having reliable, flexible and innovative partners that produce high-quality products which are environmentally sound and respect social standards.

Some SMEs have already taken the lead in managing their environmental and social impacts in a well-structured way through implementing EMS, reporting on their environmental and social performance, training and qualifying their staff with respect to environmental and social affairs, and working in cooperation with other firms in the supply chain to reduce the environmental impacts of products and services.

Overall, SMEs tend to be most focused on internal issues. Many of their responsible business practices concentrate on staffing issues, including employee skill development, team-building and motivation within the organization. Even community and environmental initiatives are sometimes focused on or designed to impact on employees. Internal benefits might be the most distinctive feature of SME involvement in CESR activities. By tradition, many SMEs are integrated in the community through their employees and their limited spatial mobility. They maintain links to the local surrounding civil society. They may be more aware of local health and well-being than internationally managed companies. In terms of strategic actions, however, SMEs do not address local civil and cultural issues as systematically as do TNCs.

In summary, existing social and environmental activities of SMEs are fragmented and informal. Only a few SMEs feel the need for formal policies or sector-wide approaches, as desired by large companies. Focusing on SMEs in developing countries or countries in transition, the arena becomes even more complex since the CESR themes emphasized in these countries (e.g. corruption and poverty alleviation) may differ from those of concern in industrialized countries. However, many companies are engaged with at least part of the CESR agenda and practising some

kind of “inherent business responsibility”, generally through employees and through services they may provide for the community. In reality, this may be a perception of their informal engagement. Often they are unable to articulate what they are doing and so do not have a common basis on which new and innovative approaches and initiatives could successfully be explored according to a more formal CESR definition.

Adoption of CESR in SMEs – influential factors

As highlighted before, SMEs are important for reaching the goal of sustainable development and could be more engaged in CESR. A number of factors influence adoption of CESR strategies in SMEs. The main drivers and barriers for CESR engagement in SMEs are described below, from an SME perspective.

Barriers to SME engagement in CESR

Social and environmental standards are increasingly a precondition for SMEs doing business with large companies. They can take the form of, for example, individual supply chain codes of conduct and sector-wide certification systems. Many SMEs adopting this “big business” framework fear the significant cost of implementing such complex monitoring and certification schemes. Among a large number of SMEs, the perception prevails that these systems are irrelevant or ill-suited to their needs and that they create a counterproductive administrative burden. The “big business” framework may pose a particular threat to SMEs in developing countries. The focus of most issues and standards in such frameworks reflects the concerns and priorities of customers and consumers in the north, as well as prevailing technologies and best practice in countries where the frameworks (e.g. EMS, ISO standards) were developed. The complexity of such certification processes and the financial burdens are often a major barrier to SMEs getting involved in CESR.

Another barrier is the low prices of many raw materials on international markets, which result in margins being too small to make resource efficiency strategies, for example, financially feasible. Intensive price competition and limited consumer/stakeholder pressure on SMEs are also barriers in this context. Support projects of larger suppliers are scarce, owing to the bureaucracy and inertia that tend to characterize large companies. In addition, many smaller companies that buy small amounts of raw materials are not in direct contact with the raw material producers since intermediate dealers supply smaller SMEs. These dealers could also constitute potential information barriers in the product chain.

In many cases SMEs’ customers, and often SMEs themselves, are unwilling to change the product system, which might be necessary in the case of some product innovations in the chain. Stated reasons for this reluctance are the high cost of production changes and the low cost of most end-of-life management options.

Further barriers in SMEs are lack of time and financial and human resources, and fear of grow-

ing bureaucracy. In the case of product innovations, demand for R&D finance is high, leaving less or nothing for expertise, technology innovations or CESR training. The staff of SMEs also face the problem of locating (and having the time to locate) good quality advice and information. As SMEs are primarily concerned with short-term economic survival, they are not motivated to ask for – or use – environmental and/or social information or support. Moreover, smaller manufacturing companies often do not have staff with sufficient environmental and social knowledge and expertise to address problems and opportunities related to environmental and social issues.

Another major barrier concerns the corporate culture and its attitudes. SMEs, which have often developed from small, “single fighter” firms, may be unwilling to cooperate and to share information. Some SMEs fear the power of large companies and the threat of acquisition by these companies. Many SMEs are unaware that engaging in social and environmental issues is not just “goodwill”, but an essential part of responsible business practice. They lack awareness of the positive impacts of CESR. In many cases, involvement of employees by top management and internal cross-functional communication are lacking, which results in internal and external communicational barriers.

A general management problem with respect to CESR improvement strategies is the fact that improvement opportunities are often seen as only process-related. Product-oriented CESR strategies, including upgrading the quality of technology, management and marketing, are frequently not within the scope of SMEs. The financial benefits of product management beyond the gate do not seem clear for many SMEs, and CESR may mainly be perceived as cost factor.

Drivers for SME engagement in CESR

A significant driver for CESR seems to be larger businesses as customers of SMEs. Within international supply chains, large corporate customers increasingly ask SMEs to comply with health, safety and environmental practices. To a lesser degree, this is also becoming more evident regarding SMEs’ social or community commitments. There is clearly a role for large organizations in promoting and influencing SMEs (as opposed to enforcing), in combination with trusted service providers and intermediaries. Shifting markets, the need to align production towards changing consumer preferences, and internationalization of standards are another driver.

Suppliers are also drivers of activities in SMEs, as companies supply environmental information on existing and new substances or life-cycle assessment data to customers. Providing leadership and inspiring SMEs to take action on CESR issues seems beneficial to large companies through increased social and environmental responsibility, but also through enhanced customer relationships. However, very often little preventive cooperation exists between large companies and SMEs.

Third-party involvement (e.g. in accreditation, endorsement) and award initiatives involving leg-

isolation and/or regulating actors are key drivers of CESR activities in SMEs. Local, regional and supranational authorities (e.g. the European Commission) enforce both activities in SMEs through innovative policy frameworks, fees and other sanctions. Local pressure on SMEs is exerted through regulation, public policy and civil society.

Personal interest in an "inherent business responsibility" and the internal benefits of morale and increased employee motivation seem to be of high importance as drivers. Respecting the environment and giving something back to the local community is expected to result in a good business image or reputation. Personal fulfilment for those involved is also a key driver – and an added benefit. CESR activities are often driven by the personal values and frame of mind of the owner and the company's senior management.

With regard to organizational drivers in the company, good internal process-related management practices are a precondition for CESR. Especially once an EMS is implemented, it can support the adoption of CESR activities provided application of EMS is understood not only as a procedural act but also as aiming at substantial performance improvement. Other organizational drivers for CESR activities are powerful mother companies. These companies provide intensive communication, as well as cooperation without competition. They can create high environmental awareness among employees.

Concerning financial drivers in the company, good overall economic conditions are a prerequisite for CESR activities. Cost savings through these activities are seldom mentioned as drivers. The range of employee benefits from CESR activities range from improved morale and company image, to greater motivation, qualification and awareness, to better working conditions (e.g. when less hazardous substances are handled). CESR strategies can foster communication between employees and management, though for strategic reasons large companies try to reach the end customer, not intermediate SMEs, in most industry sectors. In addition, some SMEs fear the influential power of large companies. Acquisitions from larger companies "seem to become a part of their product portfolio."

Engaging SMEs in CESR – what can be done?

SMEs can be engaged in CESR through provision of suitable tools and improved communication and cooperation with relevant stakeholders. A wide range of tools are already available for CESR in general. While these tools have been improved and have become more sophisticated (especially for large companies) in recent years, a growing body of research on CESR tools in SMEs shows that the existing tools are often too complex for SMEs to handle. To get a critical mass of SMEs moving towards CESR improvements, more pragmatic assistance is needed.

For SMEs, the tools that seem most suitable are those that can reflect their specific needs and enhance their information base cost-effectively. In line with the saying "What gets measured gets

done," companies commonly use indicators or indicator sets (e.g. for target-setting, monitoring and steering of performance, benchmarking, or reporting to internal and external stakeholders). Economic performance measures/indicators are already commonly accepted as management tools and are used throughout business. Considerable effort has been made recently to develop CESR indicators for use by large companies. However, suitable indicators for SMEs have not been the key focus of research. Research institutions could develop indicator sets and measurement systems that are adaptable to the business case of SMEs. Simple tools can also raise CESR awareness within SMEs. This could motivate SMEs to become involved in CESR activities.

Adoption of CESR can be promoted externally through improved communication and cooperation. Different "information gatekeepers" and potential partners at international, national, regional and (most important) local level could help SMEs raise awareness and promote activities aimed at improvements with respect to economic, environmental and social performance aspects.

Financial institutions can substantially motivate CESR activities. By demanding CESR information from SMEs within financial risk assessment (e.g. for credit giving) financial institutions can steer SMEs towards CESR improvements. Suitable screening methods and sustainability indexes could also be introduced for SMEs that may result in increased competition on "best CESR practices" within small and medium companies. The development of industry-wide financial tools with a common performance assessment format and database can increase effectiveness when challenging corporations. Sectoral framework guidelines can be developed (e.g. as done in the Global Reporting Initiative's Sector Supplements). Also insurance companies play a crucial role for SMEs and could offer insurance contracts with premiums that reward CESR engagement in SMEs.

Local, regional and international governments are "information gatekeepers". They can help overcome barriers and promote the drivers of CESR in SMEs. Governments can initiate regional networks for capacity building in SMEs, but also networks between TNCs, business and trade associations and civil society organizations for promotion of CESR in SMEs. Governments could also develop policy instruments supporting CESR in SMEs, e.g. purchasing policies rewarding corporate performance improvements and collaboration.

Ultimately TNCs seem to be the most important stakeholder group for CESR adoption in SMEs, as they can influence SMEs from different perspectives. TNCs could give methodical support to SMEs in designing indicator sets and CESR measurement systems, act as network partners promoting stakeholder dialogues, and pressure SMEs to address environmental and social aspects of their business activities. Building on existing links, TNCs could improve and deepen their communication channels with SMEs to obtain a better understanding of their specific needs and better insight into their particular busi-

ness case. TNCs might develop purchasing policies rewarding corporate performance improvements and collaboration (not only certified EMS). It may be necessary for TNCs to provide financial incentives, management support and mentoring mechanisms that focus on general business development for SMEs and supply chain management.

Upgrading and training support for SMEs could integrate social and environmental management skills in relation to entering into global supply chains and serving local markets. Existing tools for quality management improvements in SMEs can be integrated with tools to improve the social and environmental impacts of business activities. Supply chain CESR initiatives could include support for quality management in SMEs and could focus on the business case as well as on compliance mechanisms. Benefits might include better alignment with consumer concerns, partnership opportunities with TNCs, improved productivity, and better capacity for learning and innovation.

In conclusion, SMEs tend to have a good understanding of their local cultural, political and environmental context and to have close links with local civil society. However, their inherent business responsibility can be expanded to a broader environmental and social responsibility. Suitable strategies for this process consider the specific conditions of SMEs and involve relevant stakeholders. Some promising initiatives have begun to address the challenge of SMEs' engagement in CESR. They may strengthen the role of SMEs as a source of innovation towards sustainable development.

Notes

1. A number of terms are currently in use, including corporate responsibility (CR), corporate social responsibility (CSR), corporate citizenship, corporate accountability and socially responsible business (SRB). Although there are important differences in emphasis and approach, they share broad aims and outlooks. In this article the term corporate environmental and social responsibility (CESR) is used to cover these and related approaches concerned with understanding and improving the environmental and social impact of business.
2. UNIDO (2002) *Corporate Social Responsibility: Implications for Small and Medium Enterprises in Developing Countries*, Vienna, p. 2.
3. For an introduction to the "factor 4/factor 10" sustainability objectives, see E. von Weizsäcker, A.B. Lovins and L. Hunter Lovins, *Factor Four: Doubling Wealth – Halving Resource Use*, Earthscan Publications Ltd., London, 1997, and *The Factor Ten Club: The Carnoules Declaration – Statement to Government and Business Leaders*, Wuppertal Institute for Climate, Environment and Energy, Wuppertal, Germany, 1997.
4. The goals of the Declaration include eradication of poverty and hunger, universal primary education, gender equality, and combating HIV/AIDS and other diseases. See www.un.org/millenniumgoals/.

CSR in the Netherlands: changing consumption and production patterns

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Summary

Governments can play a significant role in helping small companies make their consumption and production patterns more sustainable. In the Netherlands the national government has a new sustainable consumption and production agenda covering the next few years. While it does not differentiate between small and large companies, many issues addressed in the Dutch debate on corporate responsibility concern SMEs. An important element of Dutch policy is the categorization of companies according to their readiness to use sustainability approaches. The main challenge is to encourage voluntary approaches. Further regulation is not seen as a solution. Companies are considered responsible for their own progress.

Résumé

Les gouvernements peuvent faire beaucoup pour aider les petites entreprises à rendre leurs modes de consommation et de production plus compatibles avec un développement durable. Aux Pays-Bas, le gouvernement a mis au point pour les prochaines années un nouveau programme en faveur de modes de consommation et de production plus durables. Si ce programme ne fait pas de distinction entre grandes entreprises et PME, beaucoup de questions abordées dans le cadre du débat sur la responsabilité des entreprises qui a été amorcé dans le pays concernent les PME. Un trait majeur de la politique néerlandaise est la classification des entreprises selon qu'elles sont plus ou moins prêtes à s'engager dans une stratégie de développement durable. La principale difficulté est d'encourager les démarches volontaires. Une nouvelle réglementation n'est en effet pas considérée comme une solution : on estime que les entreprises sont responsables de leurs propres progrès.

Resumen

Los gobiernos pueden desempeñar un importante papel al brindar apoyo a las pequeñas empresas para que desarrollen patrones de consumo y de producción más sostenibles. El gobierno de los Países Bajos cuenta con una nueva agenda de consumo y producción sostenibles para los próximos años. Aunque el debate en este país no diferencia específicamente las empresas pequeñas de las grandes, muchos de los temas de discusión sobre responsabilidad corporativa competen a las pymes. Un elemento importante de la política holandesa es la clasificación de empresas de acuerdo con su receptividad para aplicar enfoques de sostenibilidad. El principal desafío es alentar los esfuerzos de tipo voluntario. No se cree que la solución radique en el establecimiento de reglamentaciones adicionales, ya que las empresas son responsables de su propio progreso.

Policy on corporate social responsibility (CSR) in the Netherlands is geared towards the “triple p”: “people, planet and profit”. Each government ministry or department has its own issues to address in relation to sustainable development. The Ministry of Economic Affairs coordinates work on CSR; the Secretary of State for Trade, who is part of this ministry, is the cabinet member responsible for CSR. The Ministry of Economic Affairs provides a platform for inter-departmental exchanges on CSR.

All ministries are invited to attend the CSR meetings. The following ministries are especially active within this structure: Development Cooperation; Housing, Spatial Planning and Environment (VROM); Social Affairs; Agriculture, Nature Management and Fisheries; and Interior and Kingdom Relations.

Overall, no distinction is made between larger and smaller companies, either at policy level or in

activities that promote CSR. However, the themes dominating discussions on the topic are certainly applicable to small and medium-sized enterprises. These discussions are wide-ranging, as CSR consistently generates a high level of interest on the part of the public, the media and the government in the Netherlands. The main themes of this debate include:

- ◆ the role of government – stimulating CSR by regulation or voluntary principles;
- ◆ transparency and improvement of annual reporting;
- ◆ making the supply chain sustainable and stimulating CSR;
- ◆ organization of stakeholder dialogue;
- ◆ self-enrichment of managers/CEOs;
- ◆ accounting;
- ◆ labour conditions in developing countries;
- ◆ the effects of globalization on sustainability.

Discussions take place at meetings and confer-

ences, where all stakeholders (business, trade unions, NGOs, government) are usually involved. Some debates on specific issues or on the behaviour of a specific company take place through the media and are often followed by questions in Parliament.

The Netherlands developed its current national and international action plans for sustainable development following last year's Johannesburg summit. The Secretary of State of VROM is the coordinating member for sustainable development in the cabinet. As real change can only be reached internationally, Dutch delegations participate in meetings on sustainable consumption and production at European and global level.

To facilitate discussions and actively promote CSR, the Dutch government follows a general policy based on a report by the Social and Economic Council, *Corporate Social Responsibility: A Dutch Approach*.¹ The current government, which is relatively new, is developing its own policies to continue to promote and stimulate CSR. The Netherlands believes in seeking and promoting partnerships and focuses on the voluntary approach while stimulating and facilitating CSR among businesses. In short, the government takes the role of change agent, brings different parties together, and invites them to engage in innovative cooperation. The 12 provinces and the municipalities are partners in this approach.

Classifying companies according to their environmental-social outlook

VROM categorizes companies in three groups, based on the level of their environmental and social outlook and the different types of relationships this creates with the government (Figure 1). The ministry uses this classification system, described below, to determine how it can best stimulate and facilitate CSR, including transparency and communication, beyond simple compliance with regulations. Most SMEs are in the first or “compliance focus” group.

Environmental compliance focus

The first group is made up of companies that focus on compliance with regulations. This group includes both those that fall below current regulatory standards and those that comply, often reactively. For these companies a combination of permitting, reporting, inspection and enforcement is the most practical approach.

Environmental optimization focus

Businesses in this group seek proactively to meet

their legal obligations or perform beyond them. They actively look for ways to improve their environmental strategies. VROM asks many of these companies to voluntarily sign sector-level agreements called "environmental covenants". Each covenant involves a framework and a jointly developed action plan for meeting environmental targets. Among other things, the covenant obliges companies to produce an annual environmental report.

The benefits for participating companies are tangible and often financially advantageous, through incentives or rebates. If, for example, a company buys new machinery with substantially low energy consumption, or with the latest technology for emission reduction, it can obtain an extra tax reduction on the investment. NOVEM, the Netherlands Agency for Energy and the Environment, is promoting several environmental programmes in which money from different ministries is used to stimulate research and development focused on new innovative technologies within companies.²

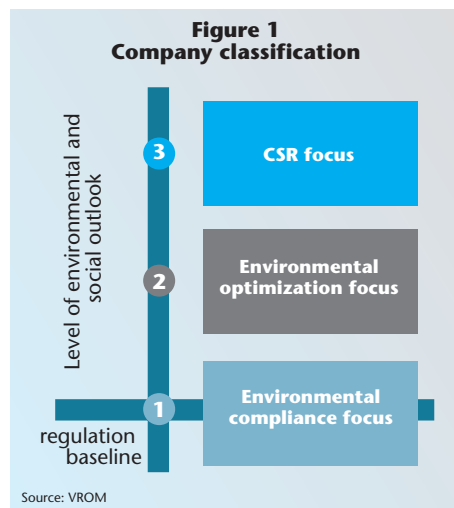
CSR focus

The companies in this group are concerned not only with their environmental impact, but also with their societal impact and their "licence to operate" – an accepted expression in CSR, meaning they know they must get and hold the support of stakeholders. Without this support, they lose the credibility to produce and sell (in fact, their licence to operate). There is a strong connection with reputation management. They are stepping into the world of CSR and "triple p." This means looking not just at their own factories and short-term benefits, but also at what is happening outside, up and down the supply chain; it means looking for possibilities to improve the whole system.

Government's role is very different at this level. Rather than sitting on the sidelines watching, or "just" providing some regulations and support, government is one of the players in the CSR discussion. This is not only because government is a kind of business itself, but also because it can wield a set of instruments to manage markets. The third group's work is a complex network involving NGOs, consumers, government and business. It requires VROM to continually form dynamic partnerships with all stakeholders. The relationships are fluid and situation-based, which makes them very complicated.

Covenants, used most in the case of the second group, take account of SMEs' needs. Each SME in a given sector is required to develop an EMS meeting the sectoral covenant's requirements. However, in sectors where SMEs dominate (e.g. the printing sector, with over 3000 mostly small companies) enterprises are not required to develop the four-year company environmental plan that is part of most covenants. Since most SMEs would have trouble planning this far in advance, they set annual targets based on their sector's BAT workbook.

VROM works mainly with or on behalf of the two first groups. A majority of SMEs are in the first group. There are rather fewer in the second group and very few in the third.



The Netherlands has developed a robust system for implementing environmental policy to reach its sustainable development goals. The system includes an annual environmental outlook, which is presented to the Parliament,³ and a series of national policy plans. The fourth National Environmental Policy Plan (NEPP4, 2001)⁴ emphasizes the need for managing transitions. The government has defined four paths for transitions – towards sustainable biodiversity, sustainable energy supply, sustainable agriculture and sustainable mobility. This will require it to continue seeking new partnerships, as governments cannot make the world sustainable on their own; input and cooperation from other stakeholders, especially from businesses, are essential.

The recent focus on CSR does not mean less concentration on the first two groups; this must continue full speed ahead. CSR can be seen as a top level, part of the difficult process of managing transitions. At this top level it is impossible to regulate or even foresee the business practices that need to occur. But this does not mean the government cannot help. VROM is interested in how it can stimulate a push forward in terms of technology and working methods, and what it can contribute to the network of players that will make a big transition possible. Transparency that goes above and beyond what the current state of reporting offers is essential.

The Duproco project on sustainable consumption and production

Inspired by the national policy on CSR, and with the knowledge, experience and network from its "daily" environmental business, VROM began with several CSR activities. It conducted research, helped businesses with pilot studies and experiments, sponsored actions by NGOs, developed green-friendly tax rebate programmes, created new networks (e.g. with national banks), organized national congresses, and introduced a contest for "best in class" CSR manager.

In 2002 the Ministry decided to evaluate its efforts so far in order to formulate a new strategy on sustainable consumption and production (in short, and in Dutch, *Duproco*). An important part of the Duproco project was organizing a debate involving all stakeholders, in which they were

asked what they expected from the government, especially from VROM, in the process of stimulating CSR. The result, in the summer of 2003, was an agenda for the next few years in which VROM will focus on six priorities:

Getting prices right

Because the market doesn't take all societal costs into account and the consumer is not always capable of making green decisions, VROM will continue the difficult task of finding (international) ways to implement external cost into the price of consumer goods.

Helping partners set CSR goals

Because of the complexity of CSR, people can run away from their responsibilities. Companies find it difficult to take environmental aspects into account in the decision-making process. Therefore, VROM will help businesses in making CSR tailor-made. This can be achieved by helping companies and sectors formulate their business case, introducing sector-specific information (like indicators), disseminating existing information and tools, creating CSR covenants with the dairy, paper and chemical sectors, and more.

Stimulating transparency

Because CSR takes place within a complex network of different stakeholders with different expectations, the current environmental reporting approach does not meet the needs of the majority of stakeholders or provide them with the triple p transparency companies hope for. There is a strong connection with the former priority given to describing the CSR goals.

Since regulations can only prescribe behaviour up to a certain level, VROM is eager to find other ways to drive transparency and, ultimately, dialogue. VROM initiatives will focus, among other things, on promoting the Global Reporting Initiative (GRI) and stimulating development of clear and reliable consumer information on products and services. The plan is to establish a new institute that can develop inspirational high-level indicators for sustainable consumption and production – sector-specific or product-specific – that go further than the existing indicators used for product labelling.

Be sustainable in business ourselves

National and local governments can only be reliable partners in the field of CSR if they demonstrate their own responsibility and if, for example, they intensify governmental programmes such as green procurement and work with management systems like that of ISO to optimize their internal processes.

Make use of the governmental network (national, provincial, local) by stimulating CSR

VROM and the Ministry of Economic Affairs have jointly built up a network of experts working with companies at provincial and municipal level. It is the provinces and municipalities that implement and regulate environmental law regarding compa-

Negotiated environmental covenants

Developed at the beginning of 1990s, negotiated agreements (covenants) encapsulate the evolution of Dutch environmental policy, which sought to develop shared responsibility by the different actors for environmental goals, integration of environmental media, and achievement of national targets set in National Environmental Policy Plans. Covenants now exist in 11 industrial sectors.* These sectors cover over 20,739 enterprises, which account for 90% of all industrial pollution in the Netherlands. Among the tools included in the covenants are environmental management systems (EMS). Thus they can help increase uptake of EMS by SMEs.

The existing covenants have been developed in the following manner:

- ◆ Each sector specifies its integrated environmental targets for 2000 and 2010.
- ◆ The regional licensing authorities and the sector sign an agreement representing the sector-wide plan.
- ◆ A consultative committee made up of representatives from industry and/or trade associations, the licensing authorities and relevant ministries (e.g. for economic affairs, environment, transport, public works, agriculture) provides workbooks on best available technology

(BAT) for the sector, coordinates and review implementation, reports to VROM annually on progress, and acts as a solution provider.

◆ In consultation with the licensing authorities, each company draws up a four-year company environmental plan incorporating the sector's BAT targets, on which companies must report annually.

One area where covenants score highly is feedback from users, with industry generally being very supportive of the agreements. Trade associations and their members gain from participation in consultative committees and in the process of drawing up BAT workbooks and sector targets. They also benefit by hearing from the diverse range of licensing authorities that also take part in the committees. Companies based in different regions sometimes have to deal with conflicting views from licensing authorities, but in the consultative committees the authorities are united with respect to BAT sector targets.

* *Basic metals (37 enterprises covered), chemicals (112), dairy (66), metal products and electronics (17,000), textiles and carpets (47), paper and cardboard (26), printing (3000), concrete and cement products (200), abattoirs and meat products (170), rubber and plastics (70) and oil and gas (11).*

nies (especially applicable to companies in the first group). Companies also receive financial and technical support to improve their environmental impact (in particular, help to the second group).

VROM and the Ministry of Economic Affairs provide the financial instruments. For several years the main focus of such instruments was on environment (waste, noise, air, water) and energy-saving. Now the network is being transformed to a CSR network (stimulating the third group), which will constitute an essential bridge between government and companies, especially SMEs.

Taking an active role internationally

VROM will begin an implementation programme to establish the framework for increasing CSR. Of importance in this process is to bring ideas originating in the Netherlands to the European level, and to cooperate with similar initiatives beginning within the EU and programmes such as UNEP.

VROM's agenda is part of the Dutch strategy on CSR. In addition, other ministries are developing their new initiatives. Not everything will be new, as good existing activities are in place.

For example:

◆ development of a national CSR knowledge centre

The centre will not conduct new research, but must function like a matchmaker between supply and demand of information, experience and tools for organizations that want to make a start with CSR. The centre will start probably in 2004.

◆ financial support of the CSR research programme

CSR is not just a matter of good intentions. It is

also about feasibility. To bring policy into line with principles, practical expertise is needed. The university research programme on CSR is going to provide this.

◆ stimulation of partnerships in B2B.

The important thing is to encourage the Dutch private sector to work with its counterparts in developing countries, and to make partnership the basis for initiatives in the field of CSR and businesses working against poverty. During trade missions this will be a regular item in the programme.

◆ organization of a multi-stakeholder platform

The Dutch government believes it should have more intensive contact with NGOs and intermediaries and be more open to initiatives from social organizations. It is important to have a dialogue with all the parties involved. This can be done through a multi-stakeholder platform. Potential partners are businesses, trade unions, intermediary organizations, banks, pension funds and NGOs. VROM already talks with NGOs, banks and the Chambers of Commerce on a regular base about the CSR initiatives.

◆ improving the quality of annual reporting in the Netherlands

In October 2003 the Dutch Council for Annual Reporting will issue an advisory report on the production of social annual reports. Combined with the activities of the GRI, the advisory council will provide an important stimulus to improving CSR reporting.

◆ improving the role of NGOs in the CSR debate and in playing their role in "checking" on businesses

Good initiatives from NGOs are financially supported by VROM.

◆ supporting development of new CSR tools, often developed by consultants.

SMEs and CSR

Dutch policy promoting sustainability makes no particular distinction between big and small companies. There have been few specific actions involving SMEs, but much of VROM's work has been applicable to SMEs. As noted, in terms of the company classification system a majority of SMEs are in the first group and are just striving to comply with the law or the bottom line. Municipalities are their partners in organizing the right regulatory measures. CSR is not the main motivation of this group.

It is less common for SMEs to form part of the second group. In environmental policy VROM looks at the group of companies responsible for the major part of air, water and soil pollution. SMEs are often too small and diverse to be part of this group. However, to the extent they do fall into this category they are covered by specific policy for industry, which includes the 11 sector covenants described in the accompanying box.

The Ministry of Economic Affairs and VROM, together with Dutch industry, have also developed specific plans for energy saving and CO₂ reduction. These include such approaches as the Clean Development Mechanisms and Joint Implementation (from the Kyoto Protocol), a benchmark covenant on energy efficiency and trading of CO₂ and NO_x emissions. Many other internationally known instruments are also available for group 2. They are used not only by big industry, but also by SMEs; these instruments include implementation of ISO 9000, ISO 14001 or EMAS systems to improve production systems, exploration of possibilities for dematerialization, life-cycle analysis and eco-efficiency in designing and production products, stimulation of cleaner production through offering specific subsidies and tax rebates, funding of specific research programmes for technical innovations, improving the environmental reporting system, and enlarging the group of participating companies.

Only a few SMEs are part of the third group, i.e. companies with a focus on CSR. That doesn't mean SMEs will be excluded from implementing the CSR agenda in coming years. In general, smaller companies are in contact with municipalities and not directly with ministries. The new initiatives will be developed through the governmental network mentioned above, and will be especially designed for SMEs. Together with the new CSR knowledge centre, the government provides SMEs with the support they need for making their steps towards CSR.

Notes

1. Reviewed in *Industry and Environment*, Vol. 25, No. 2. See also www.ser.nl, Advisory Reports 2000.
2. See www.novem.org.
3. See www.rivm.nl/en/ (reports on environment and nature, Environmental Balance 2003).
4. See www.minvrom.nl/international/ (downloads environment, NEPP4). ◆

L'approche collective, de nouvelles solutions pour les PME

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Summary

With respect to sustainable development, including environmental protection, small and medium-sized enterprises (SMEs) are of the greatest importance. They need to be aware of the challenges to be met in the future. They also need to be informed about possible solutions, especially so they can go beyond some of the structural limits related to their size. Information and training tools, and collective approaches such as those increasingly used in France, allow SMEs to develop appropriate solutions. Some examples are presented in this article.

Résumé

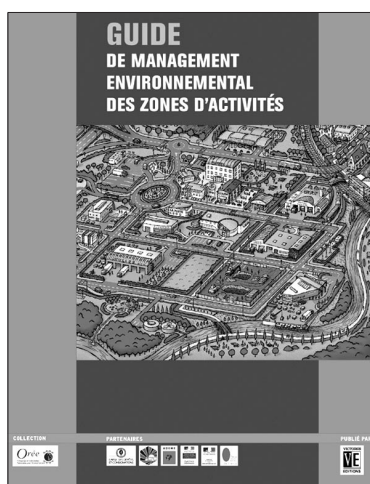
Les petites et moyennes entreprises (PME) représentent l'enjeu de demain dans le domaine de l'environnement, et plus largement du développement durable. Mais pour cela, elles doivent être sensibilisées aux défis à relever, informées des solutions possibles, notamment pour dépasser certaines limites structurelles liées à leur taille. Des outils d'information et de formation, des approches collectives telles que celles qui se multiplient en France, permettent aux PME de trouver des solutions adaptées. Quelques exemples sont présentés ci-dessous.

Resumen

Las pymes representan el desafío del futuro en nuestros esfuerzos por proteger el medio ambiente y alcanzar el desarrollo sostenible. Para enfrentar este reto, habremos de fomentar la sensibilidad de las pymes a los temas ambientales, proporcionarles información sobre posibles soluciones y, sobre todo, ayudarles a superar los límites estructurales inherentes a su tamaño. La información y las herramientas de capacitación, los enfoques colectivos como aquellos que se practican en Francia, apoyan a las pymes en el desarrollo de soluciones diseñadas a la medida de sus necesidades. A continuación se muestran algunos ejemplos.

Aider les PME à intégrer une dimension environnementale à travers un partenariat avec les pouvoirs publics locaux, tel est l'objet de l'Association Orée. Créée il y a plus de dix ans, cette association française regroupe des grandes entreprises comme : LVMH, L'Oréal ou 3M, des pouvoirs publics locaux comme le Conseil Régional du Nord Pas de Calais ou de Picardie, la Communauté Urbaine de Bordeaux, des gestionnaires de zones d'activités comme le Parc industriel de la plaine de l'Ain et d'autres associations.

L'association s'attache essentiellement à promouvoir des démarches de gestion environnementale à travers la participation à des colloques et l'organisation de formations s'adressant principalement à ses adhérents. Elle réalise aussi de nombreux outils issus d'expérimentations sur le terrain. Le site internet de l'Association Orée, avec ses 8000 visiteurs par jour, est devenu une référence dans le domaine de la gestion environnementale. De nombreuses informations et exemples sont fournis sur le site, avec des exclusivités comme la liste des entreprises françaises certifiées ISO 14001. L'extranet de l'association, réservé aux adhérents, assure des services de questions-réponses en ligne, de recherches documentaires et de veille de l'information. Afin de compléter ces actions d'assistance et de conseils, la Lettre Orée (bimensuelle) est dif-



fusée à environ 3 000 exemplaires. Elle met en avant les bonnes pratiques développées par ses adhérents.

L'Association Orée s'appuie sur des groupes de travail pour réaliser ces outils. Ces lieux d'échanges multi-acteurs permettent une confrontation constructive de points de vue. Aujourd'hui, l'association en anime quatre : la gestion environnementale des zones d'activités, la relation client – fournisseur, la concertation locale et le transport de marchandises. Ces échanges, associés à une forte

expérience du terrain, lui ont permis de concevoir des approches innovantes au service des PME.

Les PME : des petits et moyens émetteurs

Les PME, comme leur nom l'indique, peuvent être caractérisées par un petit nombre d'employés. La priorité à l'embauche est rarement donnée à l'environnement. Les PME se retrouvent alors sans culture environnementale leur permettant d'appréhender pleinement leurs impacts sur l'environnement et les solutions à y apporter. Une étude menée par la fédération française des parcs naturels régionaux a démontré que les chefs d'entreprises s'adressent en priorité à leurs amis, leurs familles ou leurs partenaires lors d'une prise de décision importante. Sans connaissance, des actions volontaires sont difficilement envisageables.

Les PME peuvent aussi être appréhendées comme de petits et moyens émetteurs. Leurs impacts sur l'environnement sont souvent assez limités. Par contre, les solutions techniques sont souvent disproportionnées par rapport à ces impacts. Les prestataires de services se sont peu intéressés à cette problématique et à l'adéquation du matériel proposé. Certains trouvent auprès de ces interlocuteurs peu informés un terrain favorable à des solutions disproportionnées. Mais la problématique n'est pas simple. Par exemple, comment mettre en place un tri du papier dans une petite entreprise de 40 personnes qui ne remplit qu'une poubelle par semaine ?

Ces deux facteurs cumulés font que la prise en compte de l'environnement au sein d'une PME représente un coût certain en raison de l'acquisition d'une culture et de la mise en place de solutions peu optimisées.

Ce constat est aggravé par la faible qualité des lieux d'implantation des PME qui n'incite pas les chefs d'entreprises à l'initiative. Une majorité des zones d'activités en France n'est pas gérée et présente bien souvent une image fort négative. De plus, l'absence d'interlocuteur ne facilite pas le développement de relations entre les entreprises.

Fort de ce constat, l'Association Orée a cherché des solutions d'amélioration à travers trois axes. Le premier consiste à inciter les pouvoirs publics locaux à montrer l'exemple par une gestion exemplaire de leur territoire. Le second a été de rechercher avec les PME des solutions de regroupement pour bénéficier d'économies d'échelle. Enfin, le troisième repose sur la relation client – fournisseur pour cerner au mieux le rôle positif que peuvent jouer les grands groupes auprès des PME.

Evolution of a popular SMEs tool: *Efficient Entrepreneur* calendar becomes *The SMART Entrepreneur*

The *Efficient Entrepreneur* calendar and guide is undergoing major changes, both in form and in approach. Originally produced in 2000 in wall calendar format by UNEP DTIE and the Wuppertal Institute's Eco-Efficiency and Sustainable Enterprise Team, it will now be disseminated in pocket or desk size. The accompanying "assistant guide" will be available on CD and (partially) via Internet, as well as on paper.

The Global Reporting Initiative (GRI) and CSR Europe, a European business reference point for social responsibility issues, are joining the team, reflecting a shift in emphasis from environmental responsibility alone to the environment-social-economic approach that defines sustainability. The new product will therefore be a "triple-bottom-line performance toolkit" for SMEs. It will be called *The SMART Entrepreneur* (SMART comes from "Sustainability for the Small and Medium-sized Enterprise committed to Accountability, Responsibility and Transparency").

Strictly environmental *Efficient Entrepreneur* material, however, is still being produced. Developed in English, Spanish and French, this product quickly caught on with governments and corporations, some of which have produced their own versions. A Belgian company has published a Flemish version tailored to its own environmental, health and safety system. UNEP's Regional Office for Latin America and the Caribbean (ROLAC), together with Costa Rica's National Cleaner Production Centre, recently brought out a Spanish edition financed by USAID. There are also German and Italian versions, the latter a joint production of the Tuscany regional government and the Banca Etica, based in Padua.

As in the case of the *Efficient Entrepreneur*, *The SMART Entrepreneur* constitutes an open invitation to companies, governments, associations and other organizations to adapt and translate the material it contains. Unlike the *Efficient Entrepreneur*, *The SMART Entrepreneur* will not begin in January and end in December. Reminders, themes and activities will be organized in 12 sections but will not be dated; companies may start using it any time they choose.

The Efficient Entrepreneur emphasizes practical advice and takes seriously the saying "What's measured gets done." It provides performance measures that can be easily assessed and evaluated by managers of smaller firms – or larger ones. Specifically targeted at SMEs, it can be used by any company that needs an introduction to performance management and reporting.

In the SMART version under development, the calendar diary and assistant guide will continue to function as the core of the "toolkit". However, new material is being added in response to user surveys and participation by GRI and CSR Europe. The new version, for instance, will come with a supplement that tells companies how to use the GRI Guidelines for sustainability reporting. The supplement will present the business case for SME reporting, along with case studies.

Some of the new material also builds on the SME Key, a product managed by CSR Europe as part of the European Business Campaign on Social Responsibility. The "Key" is an online support tool that helps SMEs make the case for environmental and social responsibility. A software tool, it allows companies to enter environmental/social reports into a database. (For more information see www.smekey.org)

Another new element will be a training package to educate and inform those whose job is to distribute the "toolkit". These "information gatekeepers" – such as cleaner production centres, environmental and social auditors, chambers of commerce, industry associations – can use the training package to help SMEs build capacity.

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Global Reporting Initiative: see www.globalreporting.org
CSR Europe: see www.csreurope.org.

Un territoire propice au développement durable des PME

Le lieu d'implantation d'une entreprise peut influencer son comportement de manière notable. Montrer l'exemple par une gestion environnementale des zones d'activités, rechercher des solutions avec les entreprises à travers de nouveaux services et favoriser un regroupement des entreprises, tels sont les défis que doivent relever aujourd'hui les pouvoirs publics locaux.

Pour les aider dans cette démarche, l'Association Orée anime depuis dix ans un groupe de travail national sur la thématique de la gestion environnementale des zones d'activités. Le groupe a cherché à développer des outils opérationnels directement inspirés des expériences sur le terrain.

Cela s'est traduit par la réalisation de nombreuses fiches techniques d'une dizaine de pages, consultables gratuitement sur le site internet de l'association (www.oree.org, dans la partie Démarches) comme :

- ◆ la gestion collective des déchets par les entreprises,
- ◆ les chartes de qualité environnementale des zones d'activités,
- ◆ la gestion collective des rejets liquides,
- ◆ la communication des actions environ-



Les contraintes réglementaires en matière de traitement des rejets liquides constituent un sujet complexe et d'actualité tant pour les collectivités que pour les entreprises. Les collectivités commencent à s'intéresser à la nature des rejets qu'elles traitent dans leur station d'épuration et les entreprises essayent de trouver des solutions pertinentes pour être en conformité avec la législation.

La concrétisation actuelle de cette problématique est la signature de conventions de rejets. Cette signature soulève bien des questionnements pour les collectivités et les entreprises car la problématique des rejets liquides est bien complexe au regard de différents points. Tout d'abord la législation existante est riche et peu connue des entreprises. Les installations de traitement nécessitent souvent des investissements importants pour les entreprises. Enfin, l'installation de ces dernières nécessite une emprise foncière dont ne disposent pas nécessairement les industriels.

Ces différentes contraintes imposent de penser différemment la mise en place de solutions en privilégiant l'approche collective et partenariale. Les exemples développés dans cette fiche démontrent que les entreprises qui se regroupent et travaillent de concert avec les collectivités et les différents acteurs arrivent à élaborer des solutions pertinentes et économiquement viables de traitement.

Fiche Technique n°3 La gestion collective des rejets liquides des entreprises

Objectifs

- Respecter la législation.
- Identifier des solutions pour les besoins individuels des entreprises.
- Trouver des solutions collectives optimales pour le traitement des rejets liquides des entreprises.
- Répondre aux exigences des collectivités par rapport à l'assainissement.
- Maîtriser les coûts de gestion.
- Concevoir des solutions techniques et organisationnelles.
- Optimiser les lieux de traitement au sein des entreprises.

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Document principal :
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Méthodologie
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organisationnelles
Facteurs de réussite
Difficultés rencontrées
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Partenaires financiers

Annexes :
• Lexique
• Rappel juridique
• Redevances et aides
• Agences de l'eau
• Exemples
• Eaux usées et pluviales
• Conventions de raccordement

nementales sur les zones d'activités.

Elle termine actuellement une nouvelle fiche : La gestion des risques industriels sur les zones d'activités.

Elle a également publié plusieurs guides sur le sujet dont *Le management environnemental des zones d'activités 23* qui fait suite à un premier guide réalisé en partenariat avec le PNUE.

Cet outil apporte un véritable soutien méthodologique pour les gestionnaires de zones d'activités qui souhaitent mettre en place un système de gestion environnementale en vue d'une éventuelle certification ISO 14001. Parmi les nombreux outils proposés se trouve une nouveauté : les écocartes zones d'activités[®]. Ce système de cartographie permet de visualiser simplement les impacts sur l'environnement et les actions associées pour en limiter les conséquences. Un site internet est dédié à cet outil : www.ecocartes-za.org.

Ce système de gestion environnementale permet de maintenir la qualité initiale de la zone d'activités. Ainsi les entreprises ne sont pas incitées au laisser-aller et ne trouvent pas d'excuses dans l'attitude des pouvoirs publics locaux. Il est courant d'entendre les chefs d'entreprises refuser de

Networks and tools for SMEs

Network	Description + URL
International Network for Environmental Management (INEM)	INEM is the world federation of non-profit environmental management associations and cleaner production centres. The INEM network comprises over 30 member and affiliated environmental management associations and 10 cleaner production centres in more than 25 countries worldwide. The main goal is to minimize the environmental impacts of industrial operations, and to help business and industry reconcile the imperatives of development and the environment. www.inem.org
European Environment Agency (EEA) Sustainable Development Online	Sustainable Development Online (SDO) gives access to significant sustainable development sites. It provides descriptions of, and links to, many hundreds of sites covering the broad subject of sustainable development, including networks and tools for business. SDO is continually updated and maintained. Each site listed has been visited by one of the EEA's researchers. http://sd-online.ewindows.eu.org
Oekoradar	Oekoradar is an internet portal for businesses interested in sustainable development. The goal is to support companies in increasing their environmental performance. (In German only.) www.oekoradar.de/de/index.html

The following networks do not specifically focus on eco-efficiency/sustainability:

International Network for SMEs (INSME)	The network's goal is to stimulate innovation and technology transfer for SMEs by promoting a public-private partnership approach. INSME acts as a hub, multiplier and disseminator of knowledge. www.insme.info/page.asp
International Small Business Congress (ICBC)	The ICBC is a congress held once a year since 1974. The basic objective of this network is to bring together different actors such as businesses, researchers and financial institutions to exchange knowledge, and to provide business opportunities among participating SMEs. www.isbc.or.jp
The Environmental Management Navigator	The EMN is a capacity building package on environmental management tools. It is devised as a response to SMEs' need for assistance in selecting the most suitable environmental management tools according to internal organizational and external market demands. Tools covered range from environmental management systems, cleaner production assessment and environmental cost accounting to environmental performance measuring and reporting. www.em-navigator.net
Sustainability Assessment For Enterprises (SAFE)	The aim of SAFE (Sustainability Assessment For small and medium sized Enterprises) is to support enterprises that are improving their competitiveness and tackling the difficult task of increasing their eco-efficiency. Use of materials, energy and money is optimized by harnessing staff potential in order to increase the success of the entire enterprise. www.wupperinst.org/safe
EMAS Tool Kit for SMEs	A step-by-step guide to assist small companies to implement an environmental management system that meets the requirements of EMAS. www.inem.org/emas-toolkit
Environmental Management Tools for SMEs – A Handbook	The Handbook looks at how SMEs can use environmental management to improve business performance. It focuses on three questions: What is environmental management? Why should SMEs use it? How is the tool used? http://reports.eea.eu.int/GH-14-98-065-EN-C/en
SIGMA toolkit	The SIGMA toolkit consists of a range of supporting tools, guides and case studies to support implementation of the SIGMA Guidelines and to address specific sustainability challenges. Some of the tools in the toolkit were developed specifically for SIGMA. Others, such as GRI and environmental accounting, have been taken from external sources as they present the best current approach. www.projectsigma.com/Toolkit/default.asp
Eco-Mapping	A simple visual and practical tool for analyzing and managing SMEs' environmental performance www.inem.org/htdocs/toolkit/tools2_4_1_1.html
INEM Sustainability Reporting Guide	The INEM Sustainability Reporting Guide – A Manual on Practical and Convincing Communication for Future-Oriented Companies – gives advice on how to draw up a good sustainability report. Focusing on companies' economic interests as well as on reliable and convincing communication, it tells about target groups and their interests in information, outlines the principles of reporting, lists the elements of the Sustainability Report, and gives numerous practical examples for the presentation of company performance and the design of such reports. www.inem.org/free_downloads/index.html#Anchor-The-49575
Environmental Good Housekeeping Guide for Small and Medium-Sized Enterprises	The objective of the Guide is to enable SMEs to identify simple, practical, common sense good housekeeping measures that can reduce the costs of production, enhance the company's overall productivity and mitigate environmental impact. www.inem.org/htdocs/inem_tools.html#Anchor-Environmental-51548
Design for Environment Guide	Design for Environment (DFE) is the systematic integration of environmental considerations into product and process design. It offers new perspectives, with a product and business focus, and is designed to make a company more competitive, innovative and environmentally responsible. http://dfe-sce.nrc-cnrc.gc.ca

s'intéresser à la gestion de leurs déchets car ils réclament depuis des années des panneaux de signalisation de qualité de leur site et leur mise à jour. La gestion des déchets devient alors un moyen de pression sur les pouvoirs publics locaux et le refus d'engager des actions un moyen clair d'exprimer leur mécontentement.

La gestion environnementale permet aussi de réfléchir à des aménagements des zones plus respectueux de l'environnement, comme l'aménagement de pistes cyclables, la construction de réseaux de pipeline pour favoriser l'échange de matières entre les entreprises ou de voies ferrées pour favoriser le transport multimodal.

Une zone d'activités dotée de services performants pour les entreprises permet de réduire certains impacts liés à leurs activités. La simple présence d'un distributeur d'argent, d'un restaurant inter-entreprises ou encore d'un service de transport en commun contribue à limiter les déplacements. D'autres services proposés aux entreprises

sont plus complexes. Par exemple, le Parc industriel de la plaine de l'Ain propose aux entreprises de se brancher sur une chaudière collective fonctionnant au bois pour leur chauffage, la vapeur et l'eau chaude. Cette dernière est alimentée par les déchets de certaines entreprises.

Le gestionnaire d'une zone d'activités peut faciliter le contact entre les entreprises par l'organisation de différentes manifestations : petits déjeuners, clubs de travail ou soirées culturelles ou divertissantes. De nombreuses zones d'activités ont créé des lettres internes afin de favoriser l'échange d'informations. Ce contact entre les chefs d'entreprises est une étape primordiale pour aboutir à des opérations de gestion collective de l'environnement. La zone d'activités ZISRT de Grenoble a bien perçu cet enjeu et propose un éventail d'actions, notamment un journal trimestriel (*Infozirst*), une plaquette de présentation bilingue, un annuaire papier des entreprises et un site internet. Elle organise même, une fois par an,

une soirée musicale gratuite et une course à pied de 7 km à la périphérie de la zone.

Une recherche collective de solutions

Les principaux handicaps des PME sont liés à leur taille : pas assez de personnel, pas assez de rejets ou pas assez de moyens. Afin de pallier ces handicaps, des solutions collectives peuvent être recherchées. Elles nécessitent des regroupements par secteur d'activité, par lieu géographique ou par impact spécifique. De même que les entreprises se regroupent pour conquérir de nouveaux marchés, elles peuvent collectivement trouver des solutions à leurs impacts sur l'environnement.

La prise en compte de l'environnement au sein d'une entreprise nécessite un regard expert en raison d'une quantité florissante de textes de loi et de solutions techniques. Certaines PME réussissent à pourvoir à ce besoin en employant des responsables en charge de la qualité, de l'hygiène, de la sécurité et de l'environnement. Cette solution pré-

Increasing environmental performance in SMEs with environmental product declaration (EPD) indicators

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In scientific and policy discussions on improving the environment, one of the topics most often discussed is how to involve small and medium-sized enterprises. We have identified six core environmental issues that need to be addressed globally: global warming, ozone depletion, acidification, ground-level ozone, eutrophication, and hazardous waste.

The issue of SME involvement has implications in all six of these areas. However, there appears to be a gap between policy-makers and their environmental objectives on one hand, and SMEs' achievements on the other. We mention here various approaches and experiences related to stimulating environmental performance improvements in SMEs. In particular, we suggest a possible way to establish cooperation among countries, with the aim of improving the environmental performance of SMEs through using an environmental accounting system that incorporates tax reductions.

Sustainable entrepreneurship

SMEs are widely recognized as an important source of economic growth and of employment. Collectively, these enterprises exert significant pressures on the environment, as detailed in the final report of a project on environmental management systems in SMEs recently completed for the European Commission.¹ When SMEs implement such systems, internal barriers (e.g. lack of human resources, frequent interruptions in the system's implementation, lack of information on good practices and the benefits of EMS) are more important than external barriers such as high implementation costs, insufficient drivers, uncertainty about market benefits, and lack of good quality consultants and sector-specific guidance.² Nevertheless, SMEs can reap benefits from an EMS, including organizational improvements, financial savings, meeting customer requirements, and better environmental performance.³

Companies working with integrated management systems, rather than just EMS, are closer to the idea of sustainable entrepreneurship. A pilot study in Sweden found that using integrated management systems or triple certificates benefited SMEs.⁴ (An organization with a triple certificate is in compliance with the international ISO 14001 standards for environmental management, ISO 9001 standards for quality management, and OHSAS 18001 standards for occupational health and safety management.) Robert

Isaak's article "The Making of the Ecopreneur"⁵ also discusses benefits that can accrue to sustainable enterprises through such activities as green brainstorming, cost reduction, stimulation of innovation through green design, and networking and green marketing. Growth and benefits for a specific company depend on how the company manages its decisions and resource allocation, based on significant environmental, occupational health and safety, and quality performance indicators for its products and services.

Measuring environmental performance

An environmental product declaration (EPD) describes the environmental performance of a product or service in a way that is standardized and comparable with other products or services in a product and service category. It is based on the six core environmental issues listed above.

The benefit of working with an EPD is that the company focuses on analyzing environmental performance from a life-cycle management (LCM) perspective,⁶ and life-cycle assessments (LCAs) are used to identify key areas for environmental improvements in product development. Since the overall objective in establishing an EMS is to improve the organization's environmental performance, the EPD system can serve as an effective way for SMEs to enter an EMS.⁷ This strategy was recognized in a pilot project by NUTEK, the Swedish Business Development Agency, which involved preparation of EPDs by five SMEs. It was found that SMEs can prepare EPDs in a resource-effective way. Moreover, focusing on environmental performance encouraged a life-cycle management approach to improving environmental performance in products or services.

To assess the life-cycle environmental impact of a product's components, all the SMEs in the NUTEK project had to do was keep track of each component's volume, weight and transport distance to obtain information on the impact with respect to each core environmental issue. The process of calculation, estimation and information flow was carried out automatically, using a specially prepared Excel database for EPDs.

A conclusion of the project, and a prerequisite for SMEs working with EPDs, is that accessible national and international quality data are needed on the environmental performance of products, substances, materials, transportation, and energy use. If the EPD system were more widely imple-

sente certains avantages, mais la multiplication des tâches n'est pas propice à un travail de fond.

En se calquant sur des structures développées pour gérer les saisonniers dans les régions agricoles, certaines entreprises mettent en place des groupements d'employeurs. Ces structures juridiques, proche des associations, permettent aux entreprises de se partager un responsable environnement. Afin de favoriser le développement du travail en temps partagé, l'Association Orée a lancé en 1998 l'opération 101 PMI. Cette opération consistait à mettre à disposition des entreprises des stagiaires en environnement en temps partagé. Après des réticences plus ou moins fondées, les opérations se développent lentement. Mais elles rencontrent un franc succès en Bretagne où de nombreux responsables environnement travaillent pour deux ou trois entreprises. Ce succès est lié au travail de fond réalisé par les différents acteurs, dont la Chambre régionale de commerce et d'industrie, pour sensibiliser les entreprises à

travers le programme Bretagne Environnement +.

Parallèlement à ces emplois en temps partagé, les PME recherchent aussi de manière conjointe des solutions à leurs impacts. En se regroupant, elles réussissent à augmenter les quantités à traiter et peuvent ainsi mettre en place des solutions le plus en amont possible. Cette approche collective peut se faire par branche d'activité, comme par exemple les *Relais verts autos*, campagne de gestion des déchets des garages organisée par le Conseil national des professions de l'automobile.

Elle peut aussi se mettre en place à l'échelle d'un territoire comme une zone d'activités. En Moselle, dans la zone d'activités de Faulquemont, une vingtaine d'entreprises se sont regroupées pour mettre en place une gestion collective des déchets. Cette dernière porte sur différents déchets comme les papiers, les cartons et les plastiques. Elle a permis de réduire de 50 % les déchets mis en décharge et de 15 à 40 % les coûts de traitement. Cette opération a débuté par des petits-déjeuners thématiques

organisés par la ville de Faulquemont pour les chefs d'entreprises. Les questions abordées étaient d'ordre économique, social ou environnemental.

On dénombre environ une centaine d'opérations de ce type plus ou moins abouties en France. Elles permettent aux entreprises d'avoir les moyens de ne pas mélanger leurs déchets et d'obtenir ainsi une meilleure valorisation.

Cette approche collective permet de trouver de nouvelles solutions avec des opérations d'écologie industrielle. Du simple échange de palettes usées à la récupération de vapeur, des entreprises développent de nouvelles synergies. Les matières considérées hier comme des déchets deviennent des sous-produits de production valorisables. Afin de favoriser le développement de ces nouvelles synergies, l'association réfléchit avec ses adhérents, au sein du Club écologie industrielle, aux besoins en méthodes et en outils.

L'organisation de ces approches collectives se développe plus facilement dans les zones d'acti-

mented, it would focus more on benchmarking for products and services based on their environmental performance.

Tax reductions for sustainable entrepreneurship

In a study by the Royal Institute of Technology in Stockholm, three factors were identified as crucial for SME decision-making when a voluntary approach to improving the enterprise's environmental performance is used. First, the customer must be willing to pay for improved environmental performance; second, the customer must be involved in follow-up actions concerning environmental performance; third, the customer must have concrete and implemented criteria for the environmental performance in its acquisition and tendering processes.⁸ These three factors may be independent of each other, and each may be a strong driver for prompting SMEs to make a decision on improving their environmental performance.

From the producers' point of view, they should be paid for the extra effort it takes to reduce their products' environmental impact. Consumers want to pay the same or less for more environmentally friendly products. Producers therefore need to develop methods that lead to products that are both cheaper and more environmentally friendly. However, in the short term society may need to subsidize development of environmentally more friendly products using various tax mechanisms.

Potentially, a good way to motivate SMEs to address their environmental performance would be to integrate an environmental accounting system into their normal bookkeeping systems, and to couple this with the creation of the necessary tax related drivers.

One approach would be to differentiate the VAT on eco-labelled products and services from that on conventional products and services. Another might be to promote products with a lower environmental impact than comparable products through tax reductions based on declared environmental performance. Measures and follow-up environmental performance in companies, products and services should be as natural as bookkeeping and the provision of economic reports.

Technically, that could be brought about by using the EPD system and its indicators, based on the six core environmental issues already mentioned. If a company can provide a third-party audited EPD of a product or service showing improved environmental performance with respect to one or more of these environmental issues over a given period, this could lead to a lower VAT. The likely long-term economic effects would be the internalization of external environmental effects not now included in the pricing of goods and services, leading to more environmentally friendly goods and services becoming cheaper than conventional products and services.

The need for international cooperation

While there is some knowledge of the barriers and drivers encountered by SMEs in industrialized countries when an EMS and/or EPD is established, there is little information on the drivers and barriers for enterprises in developing countries. It is reasonable to suggest that the conditions will be a mix of issues for companies that want to improve their environmental performance in both industrialized and developing countries.

The main issue regarding the engagement of SMEs is identification of the structural frameworks needed to stimulate companies to improve their environmental performance. Immediate efforts should be made in the areas of research and joint projects involving SMEs, NGOs, government agencies and other interested parties in order to produce good examples of tax systems in different countries that stimulate improved environmental performance.⁹

Notes

1. Ruth Hillary and Scott Wilson, *Best Project 2003. Best project on environmental management systems in small and medium-sized enterprises*. Final report prepared for DG Enterprise. London, 2003.
2. Ruth Hillary, *Evaluation of Study Reports on the Barriers, Opportunities and Drivers for Small and Medium Sized Enterprises in the Adoption of Environmental Management Systems*. Study carried out for the UK Department of Trade and Industry. 1999.
3. Hillary and Wilson, *op. cit.*; Hillary, *op. cit.*; Robert Isaak, "The Making of the Ecopreneur." In: *Greener Management International: The Journal of Corporate Environmental Strategy and Practice*, No. 38. Greenleaf Publishing, GMI, Sheffield, 2002; Lennart Piper, Mikael Stenius and Johan Törnberg, *Certified Environmental Product Declarations in SMEs as a Tool for Business Driven Development (NUTEK-EPD 2003)*, 2003.
4. Hillary and Wilson, *op. cit.*
5. Robert Isaak, *op. cit.*
6. See www.uneptie.org/pc/sustain/lcinitiative/home.htm.
7. See the international EPD website (www.environdec.com).
8. KTH 2001 (M. Stenius, F. Burström), *Om offentlig-provat aktörs-samverkan I regionlat miljö- och utvecklingsarbete*, TRITA-KET-IM 2001:17.
9. See the site for the international conference and workshops on environmental product information (how to develop the use of environmental declarations on product and services), which took place on 29-30 September 2003 in Stockholm (www.sinf-mk.se/stockholm/index.htm).

tés où le gestionnaire et les pouvoirs publics locaux peuvent faciliter leur émergence. Les opérations mises en place sont très variées. Elles peuvent porter sur l'environnement avec la gestion collective de stations d'épuration ou de chaudières à bois, mais aussi sur le risque avec le partage de matériels de défense incendie, de bassins de rétention ou de services de sécurité. Mais elles peuvent aussi permettre d'améliorer le quotidien des employés avec des crèches mutualisées, de restaurants inter-entreprises, de transports en commun ou des manifestations culturelles et sportives.

Des zones d'activités commencent à proposer des services très spécialisés comme CHEMPARC, dans le sud de la France. Dédié à la chimie fine

CHEMPARC propose un système de réseau pour fournir aux entreprises certaines matières premières et évacuer leurs déchets liquides toxiques vers des points de traitement. D'autres services sont proposés à prix coûtant comme l'entretien, la comptabilité, le secrétariat ou la sécurité.

Mais cette approche nécessite du temps, car elle repose essentiellement sur l'homme et sa volonté de travailler avec ce voisin que l'on ne connaît pas. Un travail de préparation est donc nécessaire pour développer une culture du collectif. Le gestionnaire de zone d'activités peut avoir un rôle prépondérant pour faciliter la rencontre entre les chefs d'entreprises. Il n'est pas souhaitable de commencer à faire travailler ensemble les entreprises

sur des sujets aussi complexes que la gestion des déchets ou des rejets liquides. Par contre, une approche progressive permet de s'assurer de la réussite future des opérations plus complexes. Les gestions collectives des déchets qui fonctionnent ont souvent commencé autour d'un barbecue.

Une approche partenariale entre les donneurs d'ordres et les fournisseurs

Nombre de PME sont des fournisseurs de grands groupes. Ces derniers ont bien souvent mis en place depuis plusieurs années une politique environnementale, voire de développement durable.

Aujourd'hui, ils cherchent à élargir cette prise de conscience à leurs fournisseurs, souvent des PME,

Environmental risk considerations for commercial lenders working with SMEs

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Environmental considerations are not yet regarded as mainstream business issues by a majority of commercial concerns. However, the trend appears to be encouraging. Growing appreciation of "environment" by banks providing debt capital to SMEs, as reflected in their credit appraisal processes, may not necessarily be matched by potential borrowers.

For instance, within the United Kingdom the government environmental regulator, the Environment Agency, recently suggested that in the SME market sector some two-thirds of businesses were not familiar with the extent of their environmental "footprint". Even the implications of legislation relating to high-profile environmental hazards such as asbestos may be poorly understood. A leading provider of environmental insurance estimated that up to three-quarters of businesses in the UK SME market did not fully appreciate their obligations under emerging asbestos regulations. Yet the risks associated with the environment will continue to represent a key component of the lending decision of commercial banks.

From a banker's perspective, environmental risks in lending can arise in a variety of ways. Broadly, they can be classified under one of the headings: direct or indirect risk.

Direct risk

Direct risks arise when the lender, in certain circumstances, can be held responsible for the environmental liabilities associated with customers' operations. Typically such a scenario may arise when the bank, as collateral for a loan, holds a mortgage over the customer's operating site. These commercial premises can be the most significant tangible asset in a business's balance sheet. They are frequently the principal component of the bank's security, particularly in the SME sector.

One of the lender's questions, then, has to relate to the value of the site if the land is being offered as collateral. To what extent are the potential environmental liabilities associated with the site reflected in the assumed value?

In a worst-case scenario, a lender should be cautious about enforcing a mortgage over the site without understanding its environmental status. Previously unidentified liabilities may erode, or even extinguish, the assumed value. In many jurisdictions the bank assuming ownership (as a step towards selling the site to secure repayment) will also be assuming those environmental liabilities relating to the site. Such an onerous prospect is compounded because not only is the bank seeking recovery of a bad debt, but the security on which it was relying as a contingent source of repayment may be worth significantly less than anticipated. Further, potential environmental liabilities that could accrue to the bank might exceed both the original level of borrowing and the previously assumed value of the site itself.

This risk is one of the reasons that banks, as part of their procedure for taking commercial land as security, often require some form of environmental screening of the site. Not only would such screening be more likely if the current operations on-site were perceived to be more environmentally sensitive, but for a commercial site being purchased its previous uses should also be considered. This is to establish whether any previously unidentified, historic contamination is present that might trigger a future call for clean-up or need to be remediated as a part of any redevelopment scheme.

Such considerations are sometimes perceived as an unnecessary additional cost of borrowing. However, addressing the possibility of environmental degradation, possibly involving some form of site investigation by an environmental specialist (particularly where commercial land is being purchased), will also help protect the interests of the business acquiring the site. As outlined above, assuming ownership may include assuming responsibility for any associated environmental liabilities. It would be as well to ensure that if such liabilities do exist, they are identified ahead of the transaction and preferably quantified. Then, if appropriate, they can be reflected in the purchase consideration.

Indirect risk

The second category of environmental risks, indirect or credit risks, might arise if a business buys a site and then faces unanticipated costs. This would impact budgets and cash flow. In the SME sector such costs may represent a significant reduction in the liquidity of the business, even to the extent of threatening its viability. There may be the prospect of the local environmental regulator identifying the site as one requiring clean-up even if its current use continues.

Similarly, if contaminants have been washed off the site or have migrated by other means, the business could potentially face third-party claims for damages. It may be that some contamination had been identified, but that the scale or cost of remediation was significantly higher than anticipated.

In essence, if a business with bank lendings faces unanticipated environmental costs or liabilities, the resulting drain on liquidity can impact its ability to meet its obligations under the loan agreement. Such risks might arise from a variety of sources.

For instance, inadequate management of storage and use of fuels or chemicals used in the business can lead to contamination of the soil, the groundwater or sensitive watercourses. If spillage occurred because storage facilities were not to the standard specified in the operating permit or licence, this could prompt a fine from the environmental regulator.

Additional costs will also be incurred in bringing storage facilities up to the required standard, possibly necessitating specific training for site oper-

en les aidant à intégrer à leur tour les composantes du développement durable. Cette démarche n'est pas simple. Tout d'abord, elle fait appel à de nombreux acteurs au sein de l'entreprise qui ne sont pas obligatoirement sensibles à cette problématique, comme les responsables achats ou les concepteurs de produits. Ensuite, les donneurs d'ordre ont de la difficulté à bien cerner les impacts des activités de leurs fournisseurs qu'ils connaissent souvent mal en raison de leur nombre parfois élevé, de la démultiplication des intermédiaires et de la localisation géographique. Subsiste enfin la crainte que les fournisseurs voient en cette démarche une contrainte économique supplémentaire.

Néanmoins, certains grands groupes s'attachent

à franchir ces barrières et essayent de mettre en place des actions constructives avec leurs fournisseurs. Les plus simples reposent sur la sensibilisation des fournisseurs et l'obligation de respecter certaines règles du cahier des charges (certification ISO 14001, pas d'emploi d'enfants, etc...). D'autres essaient d'aller plus loin, comme 3M par la mise à disposition de spécialistes auprès des fournisseurs comme 3M, ou ST Microelectronics avec l'organisation de séminaires de formation animés par ses cadres pour ses fournisseurs comme ST Microelectronics. Ces opérations permettent à certaines PME de bénéficier d'un véritable soutien technique indispensable.

Pour accompagner ces précurseurs, l'Association Orée

anime depuis peu un groupe de travail sur ce sujet. Ce groupe permet de faire le point sur les actions entreprises et d'aider à la réalisation d'outils de sensibilisation et d'accompagnement.

Les PME ne pourront intégrer une démarche de développement durable qu'à travers une ouverture sur d'autres entreprises, des partenariats avec leurs clients et un soutien des pouvoirs publics locaux. Cette approche n'est pas simple car elle va à l'encontre des pratiques actuelles de cloisonnement. Mais les premiers résultats démontrent la pertinence de cette recherche et la nécessité de repenser la façon d'aborder la PME. ◆

atives in their use as well as training to deal with any future accidental spills. There is also the cost of cleaning up contaminated soils and water.

If it is perceived that damage has occurred off-site, third-party claims may arise, along with associated legal costs, possibly in challenging the claim but certainly in agreeing the level of any settlement. If it is accepted that in smaller businesses one of the most limited resources is often the available management expertise, what business opportunities will be foregone if management time is devoted to contesting third-party claims and arranging clean-up instead of marketing?

In addition, opportunity costs will be incurred if "business as usual" operations are interrupted to allow specialists on-site to undertake the clean-up of any contaminated soils. A further potential consequence may arise if there are residual levels of contamination, which may be acceptable for the site's continued use but nevertheless impact the value of the site (e.g. restricting potential redevelopment for higher value use, such as residential).

As stated previously, for many SMEs the operating premises will represent the most significant tangible asset in the balance sheet. If the value of that asset is impaired, the balance sheet may be weakened to such an extent that access to debt capital is restricted or an increase in borrowing costs is justified.

All the cost consequences condensed into this somewhat doom-laden example should be considered as environmental risks that may have an immediate and direct impact on the business. They also represent indirect risks to the lender, the likelihood and impacts of which should therefore be a consideration in the lending decision.

Reducing environmental impacts

If an SME can demonstrate a resilient approach to environmental management, this can provide an encouraging signal to a lender. For instance, resource efficiency not only helps reduce any adverse environmental impact of the business but can have a significant benefit for the business in avoiding unnecessary costs through wasteful working practices. Similarly, an appreciation of the need for robust environmental management practices to help protect the company's assets (e.g. the premises) is an important source of comfort to a bank.

But environmental risks can also arise at a strategic level, by virtue of changes in market dynamics associated with environmental pressures. To what extent will the environmental market influences be on the proprietor's agenda? For instance, a manufacturer of PVC packaging materials might see its market move away if concerns regarding use or disposal of such materials prompts customers to consider adopting different materials in response to consumer pressures further along the supply chain. Changing consumer tastes that arise from perceived environmental sensitivities represent a further

valid environmental indirect risk for lenders to consider.

In short, a lender is likely to be looking within the borrower for appreciation of the consequences of the environment, coupled with the ability and the preparedness to address these business drivers.

That said, a banker is not an environmental specialist. Neither should the bank be perceived as some form of surrogate environmental regulator. It should not hold itself out as knowing all the answers in identifying and assessing appropriate environmental benchmarks and thresholds. However, in reaching a lending decision the bank should at least be aware of relevant questions to be addressed with regard to pertinent environmental business drivers. Where there are environmental concerns, the bank should appreciate when to seek technical input from environmental specialists.

Environmental management at its primary level is a means of minimizing risks, for the business itself and for investors and lenders to the business. However, significant benefits can also arise. An example above raised the potential risk of supply chain pressures working against a business, but the converse can also apply. With greater awareness of sustainability among consumers, many larger businesses recognize the competitive advantages of demonstrating their environmental credentials. While such drivers may be more evident among larger corporates, a recurring theme is for those businesses to require their own suppliers to exhibit environmentally sound management practices. SMEs, as potential suppliers to larger corporates, may find significant competitive advantage by demonstrating adherence to recognized environmental management systems. There are instances where more lucrative markets may be opened to those SMEs able to show that their procedures and processes compliment and support the environmental aspirations of major players in their market.

This is not intended to be an exhaustive account of the potential environmental impacts and considerations for SMEs. Neither is it possible to draw on detailed examples of the advantages, and occasional shortcomings, witnessed through a lender's assessment of specific clients. It is recognized that there are many examples of environmental best practice in the SME community. Without attaching the "environmental" label, many businesses have been managing such matters as part of their scrutiny of costs, or protection of their assets, while others have endeavoured to manage their impact on the environment because they have sensed that "it's the right thing to do".

There remains a need for many in the SME sector to recognize environmental impacts as mainstream business issues. These need to be integrated into "business as usual" strategies and tactics, as banks are increasingly developing both the awareness and the tools to evaluate environmental performance as a part of their assessment of the quality of business management when making lending decisions. Environmental consciousness in the market is very much here to stay.

A business model for clean-energy SMEs: small companies' role in eradicating energy waste and energy poverty

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Summary

SME initiatives are a widely ignored – but potentially very effective – way to tackle energy waste and energy poverty. It is time to stop thinking of SMEs as relatively unimportant local enterprises that might contribute to an overall energy solution. Working with specialized intermediaries, they represent the point at which the objectives of funders, policy makers and large corporations can be addressed, together with the needs of hundreds of millions of citizen customers. SMEs are the untapped resource that needs to be brought to centre stage if the G8 task force energy provision target is to be met. The enterprise-centred model of modern energy production and use described in this article is market-driven and (within the broad category of clean energy) “technology neutral”.

Résumé

Les initiatives des PME sont un moyen, généralement ignoré mais potentiellement très efficace, de remédier au gaspillage et au manque d'énergie. Il est temps d'arrêter de considérer les PME comme des entreprises locales relativement peu importantes qui pourraient éventuellement contribuer à une solution énergétique globale. Travaillant avec des intermédiaires spécialisés, elles occupent une position charnière pour prendre en compte les objectifs des bailleurs de fonds, des responsables politiques et des grandes entreprises et satisfaire les besoins de centaines de millions de citoyens clients. Les PME sont une ressource inexploitée qui doit être mise sur le devant de la scène si l'on veut atteindre l'objectif de fourniture d'énergie fixé par le groupe spécial du G8. Le modèle moderne (centré sur l'entreprise) de production et d'utilisation de l'énergie décrit dans l'article est soumis aux forces du marché et (au sein de la vaste catégorie des énergies propres) « technologiquement neutre ».

Resumen

Las iniciativas de las pymes constituyen un método frecuentemente pasado por alto (pero con un gran potencial de efectividad) para combatir el desperdicio y la escasez de energía. Ya es hora de dejar de pensar en las pymes como empresas locales de relativa o poca importancia que quizá podrían contribuir a una solución general en cuestión de energía. Al trabajar con intermediarios especializados, representan la oportunidad de atender los objetivos de los proveedores de financiamiento, de los responsables de la formulación de políticas y de las grandes corporaciones, así como las necesidades de cientos de millones de consumidores. Las pymes son un recurso desaprovechado que debe recibir la mayor atención posible si se quiere cumplir la meta de abastecimiento energético del Grupo de Trabajo del G8. El modelo para la generación y el uso modernos de energía que se presenta en este artículo está centrado en las empresas y orientado al mercado, además de ser (dentro de la amplia categoría de la energía limpia) “neutral en un sentido tecnológico”.

The two great energy challenges of our time are energy waste and energy poverty. Waste patterns resulting from 150 years of industrialization have brought about unhealthy air, water and soil, climate-changing greenhouse gas emissions, and losses from inefficient fuel conversion, transmission, distribution and end-use. Equally daunting is the need to deliver modern energy to those who live in energy poverty: 1.6 billion people in the world do not have electricity; 2.4 billion depend on traditional fuels for cooking.¹

Given the magnitude of these challenges, it may seem ironic that one of the best hopes of eradicating energy poverty – and, in the process, providing a

model for ending energy waste – is to tap the potential of small and medium-sized enterprises (SMEs).

Modern energy is a condition for development. It is a tool that can be used to reduce health and environmental threats, and it is an essential ingredient of quality-of-life improvements for the poorest of the poor. Energy poverty is the tie that binds together the issues of environment, development and quality of life.

In 2001 a task force led by Sir Mark Moody-Stuart of the United Kingdom, then chairman of Royal Dutch/Shell, and Corrado Clini of Italy responded to the G8 countries' request for recommendations on how renewable energy use

could be encouraged in developing countries. The task force's report provides a prudent assessment concerning a way forward with respect to eliminating both energy waste and energy poverty.² Most important, the report proposes a practical target: provision of clean energy to 800 million people over ten years (non-electricity improvements for 200 million people, off-grid electricity for 300 million, and on-grid clean energy for another 300 million).

SMEs are the untapped reserve that can make this target practical, through people and institutions combining resources and ever-growing experience.

Small firms with a big impact

For most of us, the term “SME” conjures up a picture of tiny firms doing small local things with a few employees and a weak set of financial statements. When we think about clean energy initiatives (on-grid or off-grid electricity, waste-to-energy conversion), the image likely to come to mind is one of big companies, “deep pockets”, and strong balance sheets and banking relationships. However, big impact begins with small firms, not big ones. SMEs may have few employees and assets, but they are anything but small in their ambitions. These companies originate and develop clean energy initiatives to the point where others can become involved. Without SMEs, most energy waste and energy poverty elimination projects would never get beyond the idea stage.

For example:

◆ Arturo and Marta Rivera, a husband-and-wife team, are the core of a small Guatemalan company bringing to market run-of-river hydroelectric projects generating over 40,000 kilowatts – enough clean energy to serve a thousand households.

◆ Rural Area Power Solutions (RAPS), a South African company formed by the brothers Marius and Jurie Willemse, has been the driving force behind the organization of a programme to electrify 50,000 households in Kwa Zulu Natal.

◆ In Thailand a small business headed by David Donnelly, a transplanted American and former banker, has carved out a market niche for conversion of agricultural waste to biogas which is equivalent to millions of barrels of liquid fossil fuel.

◆ In Zambia, where charcoal production is a serious threat to natural resources, Frederick Musonda has organized the use of waste wood (slated for

open-air burning) to produce market-grade charcoal and eliminate use of virgin wood.

All these companies are small *by definition*. However, they have a substantial impact on energy waste and energy poverty. The trick is to provide the services and early-stage capital (which conventional financing sources and development programmes tend to ignore) that allow a small company to mature a high-impact idea.

The Riveras, the Willemses, David Donnelly, Frederick Musonda and many others illustrate an approach to SME business development that is getting (and requires) more attention. This approach recognizes the potential of small businesses. It bridges the gaps that tend to keep SMEs from carrying through initiatives with substantial and sustainable impact. (For the main barriers faced by such SMEs, see **Figure 1**.)

These examples can be imitated and adapted to local circumstances. The critical element is not the local setting, or a country's macroeconomic circumstances, or the policy environment, or a big company ready to step in. It is the entrepreneur – the man or woman who decides to make his or her living organizing clean energy initiatives.

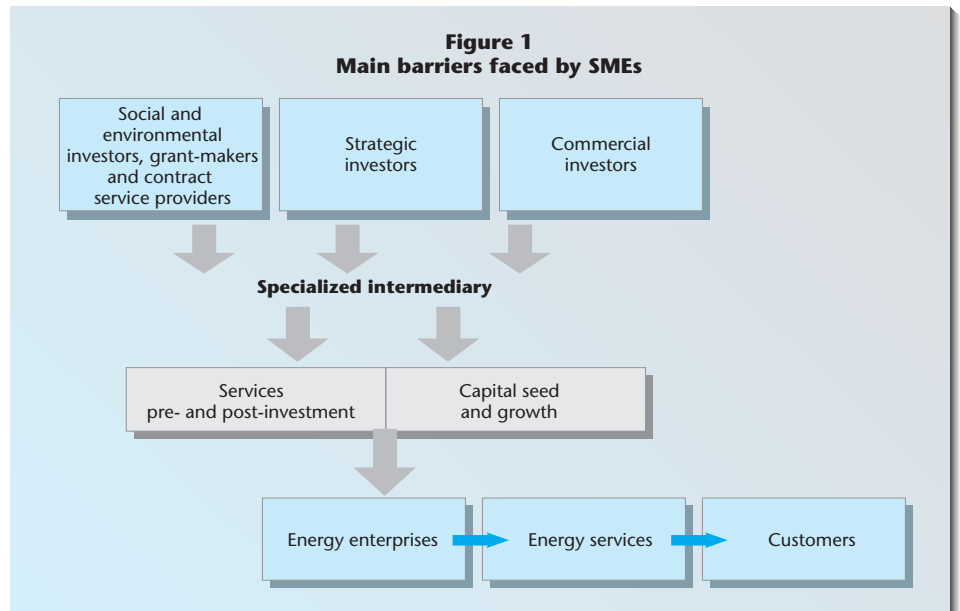
Some SMEs (and programmes that support them) specialize in renewable energy technologies, others in “modern energy” (i.e. technologies that move the local market “up the modern energy ladder”). Still others focus on “least-cost” or “best available” technologies. Thus some may shun liquid petroleum gas because it is a liquefied, non-renewable petroleum product, while others may embrace LPG since it moves the local market from dirty, dangerous, locally irreplaceable fuels to something cleaner and more protective of the local environment. Still others may not understand what the fuss is about, as long as the market wants LPG and it can be delivered profitably. In the final analysis the enterprise-centred model is indifferent to the technology employed, as long as the model is market-driven.

The role of intermediaries: services and capital

To assist SMEs, this business model depends on specialized service and capital providers (sometimes called “intermediary organizations”). E+Co is such an organization. Successful implementation of the energy-centred model depends on “blending,” “balancing” and “adapting”. That is:

- ◆ blending resources (grants, contracts, loans) from various sources to provide services and capital to companies;
- ◆ balancing the mix of services and capital to enable a small company to succeed;
- ◆ adapting as experience in local markets increases.

The role of an intermediary organization is illustrated in **Figure 2**. The enterprise-centred business model is not a cookie-cutter formula. It depends on a combination of services and capital. A centralized programme



from a national or international development organization or funder, with pre-set formulae and no intermediary, is unlikely to succeed.³

Another characteristic involves partnerships. Intermediary organizations like E+Co cannot do everything, nor can they influence all the dimensions that could contribute to success. However, they can work with international organizations that have invaluable expertise in policy formation, training, capacity-building, government communications, programme management and problem solving. By definition, intermediary organizations are specialists. They are task and implementation driven, just as the energy enterprises they assist are revenue, profit, service and product delivery driven.

However, there is more to success than X number of companies, Y households to which modern energy has been brought, and Z amount of services delivered. To build a sustainable future, someone has to worry about the policy environment, about building local capacity to sustain the business model, and about bringing and promoting lessons learned to other members of the international community. In the enterprise-centred business model, the organizations that take this

role are called “programme partners”.⁴

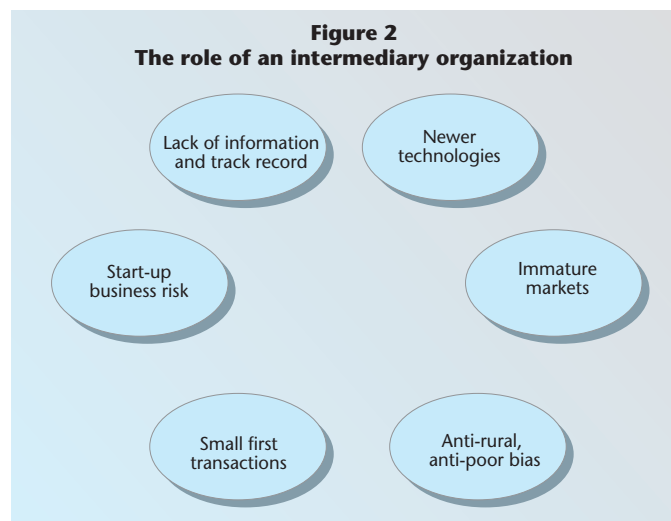
Local presence is another essential feature of the business model. Companies cannot be served from afar. It is essential – not important, not helpful, but *essential* – for service delivery to be locally grounded and personal, whether through an implementation partnership with a local NGO committed to this business model⁵ or through a local representative of the intermediary. This holds true before an investment is made as well as during follow-up. There are no exceptions to this rule.

Training and tools

One more characteristic must be addressed before the types of investment made in this business model are reviewed. This characteristic involves both a process and a product, i.e. training and tools.

Through training, the intermediary organization that provides services and capital to energy entrepreneurs can identify the truly serious entrepreneurs. Training in this business model is a two-way street. The intermediary provides information and shares experience, but the entrepreneur must produce critical analyses, verified facts and clear documentation leading to an investment proposal and a business plan. Training eliminates those who are not serious, as this process involves substantial work and commitment. It quickly turns off opportunists who think all they need to do is fill out some paperwork to receive funding.

The product that enables this work to be done is a toolkit of building-block exercises that convert an entrepreneur's core idea to a work programme: gathering all that he or she must learn (fact-finding); converting this information to an analysis of conditions under which the core idea does or doesn't make sense (feasibility analysis); and then, if the idea is feasible, organizing the information into a document for presentation to others (business plan or



investment proposal).

To summarize, key characteristics of the enterprise-centred model are:

- ◆ It is technologically neutral (within the broad category of clean energy, technology choices are driven by local market conditions).
- ◆ Specialized intermediary organizations provide services and capital to entrepreneurs before and after investments are made.
- ◆ Implementation partnerships address policy, sustainability and expansion issues.
- ◆ Local presence assures hands-on implementation.
- ◆ Tools and training cost-effectively identify entrepreneurs and allow them to draw up a business plan or investment proposal at their own pace.

The intermediary organization, acting for a group of funders, does not simply write a check in response to a well-written business plan. First, the business plan or investment proposal needs approvals and documentation. A professional investment committee, independent of the project manager within the intermediary organization, must review and approve the proposed investment. Then legally binding contracts and registrations are put into place.

Rarely are all the financial resources a company needs covered by the first investment. This investment typically covers a pilot approach to a new market, or the detailed planning and engineering needed to bring a larger project forward. Only occasionally does the initial investment involve over US\$ 250,000. Early-stage investments involve considerable risk. Since the intention is to pave the way for later investment by others, these early investments need to be documented and organized as professionally as possible.⁶

An investment portfolio created using this business model will consist in a number of types of investment. A certain percentage of the investments will begin small and stay small (e.g. US\$ 25,000–40,000 worth of time and US\$ 75,000 in investment capital provided to a company that will supply cleaner fuel to a group of villages or to a town). Over a certain period the \$75,000 can be recovered from the company, with interest, from cash flow through debt-like instruments (pure equity investments prove too difficult to exit). However, up-front investment of time by the intermediary organization cannot be recovered on a cash basis. The substantial health, environmental and development benefits, combined with the learning that can be applied elsewhere, will need to compensate for the time invested to launch this enterprise.

Within the investment portfolio of investments, a certain percentage will grow and will need additional resources. These resources can come from the same source as the first investments or from others. Because they will grow, it is possible to recover both the first direct investment and (through subsequent investments over time) the cost of the time and services provided in establishing the investment.

An intermediary organization therefore needs to have both *start-up* and *growth* capital at its disposal. Moreover, providers of growth capital

should be willing to bear part of the burden of providing proportionately smaller amounts of start-up capital.

Consider, for example, the case of investment of US\$ 185,000 in cash and US\$ 75,000 in time in XYZ company. This company has a specific project to convert agro-industrial waste to a sustainable fuel that would substitute for fossil fuel. A reasonable return to expect on the cash infusion would probably be around 10%, while the predictable return on the US\$ 75,000 is zero. Thus the investor could receive an overall return of 7% on the total investment (US\$ 185,000 at 10%, and US\$ 75,000 at zero).

The intermediary may be able to generate a better return if it can also participate in the later stages of investment in XYZ's development – say, by putting up US\$ 250,000 of the US\$ 1.4 million the company will need to build the waste conversion plant. A reasonable assumption is that this later round of investment would bring a return of over 15%, in which case the intermediary's total return would be a very acceptable 11% (US\$ 185,000 at 10%, US\$ 75,000 at zero, and US\$ 250,000 at 15%).⁷

In addition to these two types of investment – an SME destined to stay small, and an SME destined to grow – there is a third type, which is often the most difficult for some funders to accept. A certain portion of these investments will fail. Fortunately, though, even first-stage investments can be divided (“tranching”) and these amounts can be closely monitored and controlled. Of the 88 investments made by E+Co, 12 have been written off, accounting for 14% of the *number* of investments but less than 9% of the *amount* invested.

Combining resources to spread benefits

A few other elements that round out this business and investment model should be noted. As experience is gathered in a market, the involvement of local financial institutions and programmes becomes crucial for long-term success since conventional finance is not available to these SMEs. While returns on such investments are not commensurate with the risks involved (single-digit internal rates of return are the norm, after losses and taking into account grant and contract subsidies for services), the environmental, developmental and long-term market maturity benefits are more than commensurate. What is important is to combine resources – or rather commingle them – so that “layered” benefits will be received by all.

For example, if pure financial investors can accept a base return of, say, 5%, returns above that on a portfolio basis can be shared with social investors and funders (keeping in mind that grant makers and contract providers must defray a significant portion of the cost of services). Experience to date suggests that you cannot compartmentalize these activities, giving financial returns to financial investors and depending on grant makers for preparatory work and losses. At that stage of this business model's implementation, combining funds in “one big boat” and holding the intermediary organization responsible seems

to have the highest likelihood of success.

Experience is also being gained with diversifying the product offerings of energy enterprises. This is especially important when there is an opportunity for these enterprises to offer products and services that increase the incomes of their customers. While much has been learned in the last decade regarding the establishment of energy enterprises and investment in small companies, the market will really grow only when these enterprises offer products that make their customers richer.

For instance, a local producer of nutmeats who has always removed the husks from the nuts by hand can become more efficient and profitable if an energy enterprise offers biomass-based power to run a small husking machine. The energy enterprise might also make it possible for the producer to operate a heat-based packaging machine, adding value and further profit.

A village could combine various services – tailor, barber, communications kiosk, crafts production and packaging – at a single location, served by a mini-utility. A solar-powered unit of this type, based on a cargo container and photovoltaic panels, was showcased at the Johannesburg summit last year. It is now being tested under real conditions in South Africa. The result of offering productive use and income-generating applications to customers will be market deepening, meaning that small energy enterprises can sell more products in already established markets, harvesting the benefits of prior work.

The final point to mention is consumer finance, which is particularly critical to eliminating energy poverty. Many households could afford modern energy today if they were able to finance it over periods ranging from a few months to a few years. It is a myth – and a dangerous one – that the poor cannot afford modern energy. They already pay dearly in time, health and cash for dirty, dangerous and inefficient energy sources (e.g. look at the cost per kWh of the batteries used in a home radio). Methods of delivering consumer finance to poor communities are known. In fact, they have advanced in parallel with the knowledge described in this article concerning investment in SMEs. To eliminate energy poverty, these two paths need to converge.⁸

Eight intermediaries, 800 million served

It has been stated (somewhat glibly) by far-thinking experts that the way to clean up our energy mess and eradicate energy poverty is *clear*. All that remains, say some of these experts, is “50 years of implementation.” While we agree that the way forward is a lot clearer in 2003 than it was in 1993, we tend to listen to other experts who point out that “the devil is in the details.”

Just how much needs to be done? An organization such as E+Co and its local partners, properly capitalized and organized, could provide services to between 1600 and 2000 companies over the next decade. These companies would serve 10 to 20 million people in 2.5 million to 5 million households. To meet the G8 task force's goal of 800 million, something like 16,000 small compa-

nies (some of them possibly units or “franchises” of larger companies) are needed.⁹ This means that eight to ten full-scale intermediary organizations like E+Co are also needed, with about US\$ 4 billion in funding for services and capital (over half of which would be fully recovered with interest) and related consumer finance (which would also be recovered with interest).

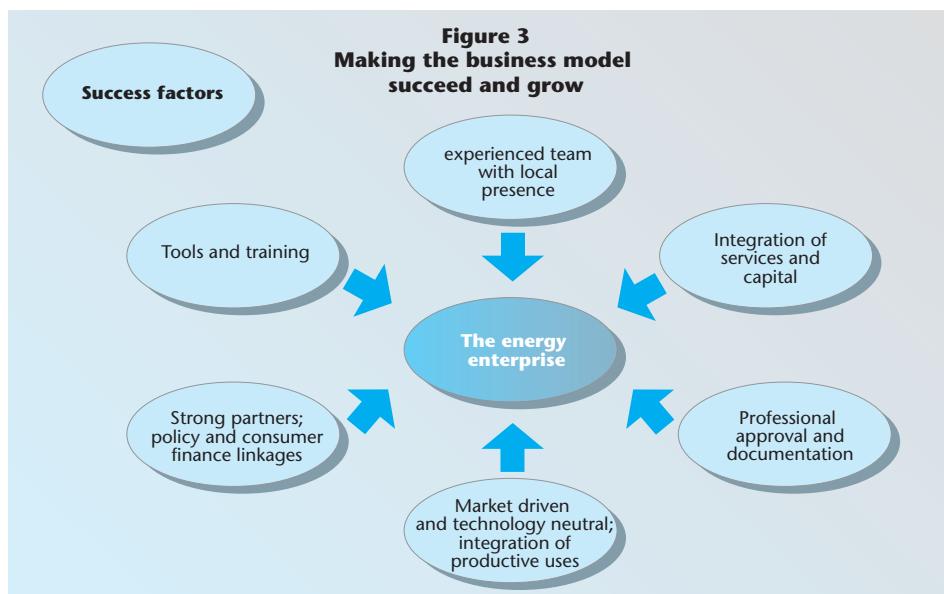
The “details” that need attention if this business model is to succeed and grow (Figure 3) involve a four-part approach:

- ◆ increase the combined and coordinated services and capital resources available for investment in energy enterprises;¹⁰
- ◆ increase the number and size of intermediary organizations providing specialized services and capital to this sector;
- ◆ strengthen the link between enterprise development and consumer finance;
- ◆ support activities and organizations that are already working (rather than pursuing whatever is new this month or year, a distracting tendency in the world of international development activities).

The summary point is this: whether they are called SMEs or small businesses or small companies with big ambitions, these men and women represent (properly prepared) a largely ignored and potentially potent weapon to successfully attack the twin problems of energy waste and energy poverty. We have to stop thinking of them as some tiny little local activity that may be a small part of the solution, and realize that these entrepreneurs (working with specialized intermediaries) are the linchpin that can connect the objectives of funders, policy makers and large corporations with the hundreds of millions of citizen customers who will benefit from the elimination of energy waste and energy poverty.

Notes

1. International Energy Agency (IEA) (2002) *IEA World Energy Outlook 2002*, pp. 32-33 and Chapter 13, “Energy and Poverty”. OECD, Paris.
2. Clini, Corrado, and Mark Moody-Stuart (2001) *Renewable Energy: Development That Lasts*. G8 Renewable Energy Task Force.
3. The United Nations Foundation has been a



major supporter of this business model. It has advanced the thinking on establishment of more intermediary organizations as a condition for growth. In other words, to reach the G8 task force’s target of 800 million involves not only starting some 16,000 enterprises but also founding at least eight to ten specialized intermediary organizations to expand the experience and knowledge base.

4. A notable example is UNEP and its Rural Energy Enterprise Development (REED) programme, developed in partnership with the United Nations Foundation and E+Co. There are three “REEDs” so far: AREED in Africa (five countries), B-REED in northeastern Brazil, and CREED in western China. See *Open for Business: Entrepreneurs, Clean Energy and Sustainable Development* (UNEP/United Nations Foundation, 2003; reviewed in *Industry and Environment*, Vol. 26, No. 1).

5. Examples include ENDA in Senegal, KITE in Ghana, BUN-CA in Central America and CEEZ in Zambia.

6. This does not mean that all the requirements of conventional banks or international financial institutions are met. Such conditions are met to the degree practical, given the newness of the

activity.

7. Based on an actual E+Co case. The actual return on the US\$ 1.4 million portion of the project was more than 15%. Unfortunately, E+Co did not have at its disposal the US\$ 250,000 needed to participate in that tranche and was unable to take advantage of the opportunity to recover its earlier costs.

8. This is one of the important policy issues that organizations such as UNEP can grapple with, while intermediary organizations like E+Co and individual companies can have only a slight impact. Why is it that national policy in most countries is to finance – and subsidize! – the cost of connecting the grid to a poor household, but not offer the same terms to households off the grid? Shouldn’t the policy on how much society is willing to finance and subsidize be neutral, rather than biased towards energy by wires?

9. 4000 non-electricity enterprises, such as stove manufacturers, each eventually with 10,000 customers; 12,000 off-grid energy service companies, each with 5000 customers; and 500 on-grid clean energy project developers with 50 MW each.

10. Through programmes such as the United Nations Foundation-UNEP REED initiative. ◆

How chemical industry initiatives contribute to environmental, safety and health protection in SMEs: an example from BASF

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As a chemical company, BASF has a special responsibility for its own products. The company can also promote compliance with its high standards among suppliers, which are often SMEs.

BASF manufactures and sells over 8000 products worldwide to customers in 170 countries. Its product portfolio includes chemicals, plastics, coatings systems, dispersions, agricultural products and fine chemicals, as well as crude oil and natural gas. To reduce the impacts on humans and the environment from production, storage, transportation, distribution, use and disposal of our products, we have implemented globally valid standards – together with an environmental management system that applies far beyond our factory gates.

We expect our suppliers to comply with these standards within the framework of Responsible Care®. We joined the global chemical industry's initiative over ten years ago and are committed to its goals and principles. These include continuous improvement in:

- ◆ environmental protection;
- ◆ product stewardship;
- ◆ occupational safety;
- ◆ occupational health;
- ◆ process safety;
- ◆ emergency response;
- ◆ distribution safety;
- ◆ dialogue.

Our efforts as a member of this initiative focus first and foremost on our own company. For example, we install wastewater plants and filter systems to reduce environmental emissions. We build ultra-efficient power plants that help conserve natural resources and reduce CO₂ emissions. And we have occupational safety programmes in place to further reduce accident rates and promote workplace safety.

Responsible Care also plays an important role in shaping our business relationships with, for example, our logistics service providers (who transport our products to customers), employees of contract companies who work on our sites, and suppliers who produce our input materials. It is initially up to these business partners to define the standards they use. However, to promote our high Responsible Care standards, we work closely with our business partners using a number of different tools.

Using Responsible Care to assure safe deliveries to our customers

Maintaining high safety standards for transportation of our products is a top priority. Our logistics partners are assessed by independent third parties using the Safety and Quality Assessment System (SQAS), a key element of Responsible Care. Jointly developed by chemical companies in the early 1990s, SQAS uses standardized assessment criteria. It provides us with information on service providers' management systems, how staff are trained, response times in the event of an emergency, how vehicles are equipped, and whether safety plans are in place.

Not until we have ensured that carriers meet our safety requirements do we entrust them with our products. Whether transport is by rail, barge or tank trucks, SQAS-assessed haulers already transport almost 100% of our products from our Ludwigshafen site.

Bonus system for safe working practices for contractors

Whether it concerns repair work, transportation or installation, much of the work at BASF's Ludwigshafen site is done by contract workers. Around 4000 people work on-site every day, all employed by SMEs. To enhance occupational safety among contract staff, we recently started to award bonuses for safe working practices. All agreements BASF signs with contractors now include a bonus clause. If an employee of a contract company breaches one of BASF's safety regulations, the bonus will fall by a certain predetermined percentage.

Forgetting to wear safety gloves, for example, costs 2.5% of the contractual sum. A lost-time accident exceeding three days lowers the bonus by 30% and the sum is credited to BASF. This means the higher contractors' safety levels, the more bonus is left for them to collect at the end of the project.

We are convinced that this new system will help us achieve our target for the Ludwigshafen site of "zero accidents by 2010", while enhancing the safety and health awareness of our contract partners.

Responsible Care in raw material purchasing

In 2002 BASF bought over 10,000 different raw materials (worth several billion euros) from about 5000 different suppliers worldwide. The share of

raw materials coming from non-OECD countries has been increasing, largely reflecting economic growth in Asia.

In addition to price, quality and supply security, compliance with specific environmental, safety and health standards is a precondition for business partnerships with raw materials suppliers. Our purchasers negotiate terms, but they also evaluate the risk associated with each product and supplier. For this purpose we have developed a safety matrix (Figure 1).

According to this matrix, all the raw materials we purchase are classified into one of three hazard categories according to their environmental, toxicological and safety properties, i.e. A (safe), B (harmful) and C (e.g. toxic). Sodium chloride, or table salt, would be in category A. Ethanol, the alcohol in alcoholic beverages, is classified as highly flammable and would therefore be in category B. Methanol, a highly toxic type of alcohol, would be in category C.

Suppliers and potential suppliers are initially classified according to whether they are located in OECD or non-OECD countries. The reason for this is that, as a first approach, the risk of non-compliance with environmental and safety standards is expected to be higher in non-OECD countries. However, a final decision depends on an actual plant audit.

Products/producers assigned a C3 rating are potentially high-risk and therefore subject to particularly careful scrutiny. This means BASF employees from our purchasing organization, along with environmental health and safety (EHS) experts, visit the supplier and carry out an EHS assessment to determine whether the supplier's plant operates according to Responsible Care standards (e.g. regarding wastewater treatment, maintenance, safety equipment, quality control).

If a potential supplier's facilities meet our requirements, the product/producer is upgraded to a C2 rating, which means we can begin regular purchasing of raw materials from this supplier.

We set great value on fairness and a long-term business relationship. If it turns out that certain suppliers do not meet our EHS requirements, we support them in solving the problems by developing a joint action plan. Once the improvements called for in the action plan have been put into practice, regular purchasing of raw materials can commence.

A good example of this practice is provided by one of our suppliers, audited for the first time in 2000. While the audit revealed good performance overall, the supplier failed to meet certain EHS requirements (e.g. toxic

Figure 1
Safety matrix for raw materials purchasing

		Supplier risk		
		1	2	3
Product risk	A	Safe region I		
	B		Safe region II	Minor risk
	C			Potentially elevated risk

products were handled in open systems without proper personal protection equipment and workers were exposed to dangerous fumes). We did not accept this company as a supplier until its production processes had been switched from open to closed systems and adequate safety equipment for its employees had been introduced.

Other typical measures implemented by suppliers are:

- ◆ installation of emergency showers (body or eye showers);
- ◆ installation of sprinkler systems;
- ◆ use of personal protection equipment (e.g. hard hats, safety glasses, appropriate boots, gloves, masks, respirators with external oxygen tanks);
- ◆ an action plan in case of an emergency.

Thus we try to convince our suppliers that compliance with international standards is essential and of benefit to them. This procedure is part of risk management. We are convinced that it represents a competitive advantage for BASF.

These three examples – logistic partners, contractors and suppliers – demonstrate that our commitment to Responsible Care's impact on our business environment transcends our direct activities. We can help carriers, contractors and raw materials suppliers adopt the standards we aim to put into place. Since so many of our partners are SMEs, our commitment to Responsible Care means we are not only making progress within our own company but also promoting environmental, safety and health protection, particularly in SMEs.

Cleaner production challenges in Brazilian SMEs

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Summary

Micro, small and medium-sized enterprises are the basis resource generation in Brazil. Such companies have difficulty responding to environmental legislation. In this context cleaner production has great significance; it can allow application of simpler, cheaper and continuous solutions to help smaller businesses reduce the environmental impacts of their activities as well as risks to employees' health and safety. Cleaner production strategies improve environmental conditions while focusing on the reduction of waste and losses. In applying cleaner production measures, several measures are evaluated for environmental effectiveness and economic feasibility. Simple measures like good housekeeping are most often adopted. Good housekeeping includes optimization of operational parameters, standardization of procedures, improvement of purchasing and sales systems, and optimization of maintenance, information and training procedures. The predominance of good housekeeping strategies in Brazil indicates a preference for low-cost solutions.

Résumé

Les micro-entreprises et les PME sont à l'origine des ressources produites par le Brésil. Or il est difficile pour ces entreprises de se conformer à la législation relative à l'environnement. Dans ce contexte, la production plus propre prend une importance particulière : elle permet d'employer des solutions plus simples, moins onéreuses et permanentes qui aident les petites entreprises à réduire les effets de leurs activités sur l'environnement ainsi que les risques pour la santé et la sécurité de leur personnel. En mettant l'accent sur la réduction des déchets et des pertes, les stratégies de production plus propre améliorent l'état de l'environnement. Avant de les mettre en œuvre, il convient d'évaluer plusieurs mesures afin de déterminer leur efficacité environnementale et leur faisabilité économique. Ce sont des mesures simples, comme une bonne gestion, qui sont le plus souvent adoptées. Une bonne gestion consiste par exemple à optimiser les paramètres d'exploitation, à normaliser les procédures, à améliorer les systèmes d'achat et de vente, à optimiser les procédures d'entretien, d'information et de formation. La prédominance des stratégies de bonne gestion est, au Brésil, le signe d'une préférence pour les solutions à faible coût.

Resumen

Las micro, pequeñas y medianas empresas constituyen la base de la generación de recursos en Brasil. No es fácil para este tipo de negocios cumplir con la legislación ambiental. En este contexto, la producción más limpia adquiere una mayor relevancia, pues permite la aplicación de soluciones menos costosas, más sencillas y continuas para ayudar a las empresas más pequeñas a reducir los impactos ambientales de sus actividades y los riesgos para la salud y la seguridad de sus empleados. Las estrategias de producción más limpia mejoran las condiciones ambientales al concentrarse en la reducción de desperdicios y pérdidas. La aplicación de medidas de producción más limpia va acompañada de la evaluación de diversas medidas para asegurar su efectividad ambiental y su factibilidad económica. Con frecuencia, se adoptan medidas sencillas, como la buena administración interna. Esta medida incluye la optimización de parámetros operativos, la estandarización de procedimientos, el uso de mejores sistemas de compras y ventas, y la optimización de los procedimientos de mantenimiento, información y capacitación. El predominio de estrategias para la buena administración interna en Brasil es un indicador de la preferencia por soluciones de bajo costo.

Brazil covers an area of 8.5 million km² and has a population of over 170 million. Rio de Janeiro and São Paulo are two of the world's largest cities. According to the IBGE (Brazilian Geography and Statistics Bureau (Instituto Brasileiro de Geografia e Estatística), Brazil's GNP has reached R\$ 570 billion.¹ Its main industrial activities are the production of consumer goods and

of agricultural and mineral products for export.

The mining, chemical, petrochemical, metal-mechanical, non-metal minerals, paper and cellulose sectors have some of the greatest environmental impacts. Brazil's most significant environmental problems are associated with surface water contamination, mainly reflecting lack of treatment of untreated industrial discharges and inadequate dis-

posal of solid industrial waste (which is usually sent to open dumps).

Groundwater contamination is increasingly frequent, presenting risks to the environment and to human health. Soil contamination has also become a critical problem. In the past, large quantities of industrial waste from production processes were stored or buried on-site, resulting in the contamination of large underground areas.

The worst impacts of air pollution generated by industry in Brazil are associated with emissions from stationary sources. By contrast, many of the world's more developed countries are no longer looking for end-of-pipe solutions but have turned their attention to diffuse pollution (e.g. from transport).

Brazil's environmental legislation has progressed in many ways. There is a strong tendency towards even stricter controls. The Law Against Environmental Crimes establishes severe penalties and assigns administrative, criminal and civil charges not only for the owners concerned, but also directors and other parties considered to share the responsibility. It also establishes that, in almost all cases, failing to take environmental protection measures is a crime.²

Brazil's micro and small enterprises

There are about 4 million micro and small enterprises in Brazil. The vast majority are in the services and commercial (retail) sector. Most are based in the South-East region (55.5%), followed by the South (22.4%), North-East (14.3%), Central-West (6.5%) and North (1.3%). The government has defined a micro enterprise as one with up to 19 employees; a small enterprise has between 20 and 99 employees. Under a 1999 law, micro and small enterprises have under R\$ 1.5 million in gross income.

The IBGE reports that micro and small enterprises are choosing to locate in the South-East region in order to benefit from its wider market variety, better urban infrastructure, more qualified workforce and larger consumer market (43% of the population lives in this region). In so doing, they are following the same trend as medium and large companies.

In many cases micro and small enterprises depend on or are complementary to medium and large businesses; that is, they supply goods and services to larger companies or serve niche markets. They are usually subcontractors, operating in networks consisting of the main large and medium companies and their clients, suppliers, subcontractors and competitors.

SMEs and the service and commercial (retail) sectors

Business generated in the service and retail sectors represents around 80% of the total activities of Brazil's micro and small enterprises, according to an IBGE report based on 2001 data. This report found that 2 million enterprises of that size in the service and retail sectors hired 7.3 million people in the study year, representing 9.7% of Brazil's total employed population.

The share of micro and small enterprises in total income from Brazil's service and retail sector grew from 19 to 22.3% between 1985 and 2001. An even more remarkable increase occurred with respect to job creation: these enterprises employed 3.5 million people in 1985, or 50.7% of the total employed in this sector; by 2001 this number had more than doubled, to 7.3 million or 60.8% of the sector's workforce.

The report also found that areas strongly represented among micro and small retail businesses included textiles and clothing, jewellery-making, watch-making and construction materials. While companies selling fuels represented 1.2% of all micro and small enterprises in 2001, they were responsible for 11.2% of total income produced by companies in this size category (Figure 2).

The Cleaner Production Network

The reference point for cleaner production in Brazil is the setting up of the UNIDO/UNEP National Cleaner Production Centre (Centro Nacional de Tecnologias Limpas, CNTL), which began in 1996. Among its objectives has been the transfer of technical skills to Brazilian experts in industry, environmental consulting companies and government agencies to further the creation of a network of institutions and trained individuals committed to promoting CP.

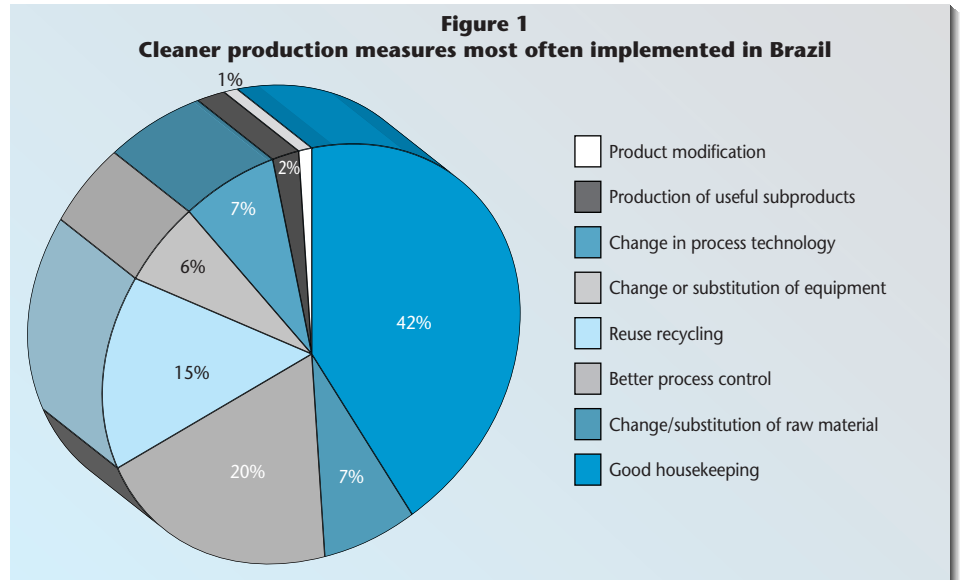
Established in late 1999, the Brazilian Cleaner Production Network is coordinated by the Brazilian Business Council for Sustainable Development (Conselho Empresarial Brasileiro para o Desenvolvimento Sustentável, CEBDS) and supported by a partnership of seven bodies.³

The network consists of the CNTL, located in Rio Grande do Sul, and seven regional state centres in Minas Gerais, Bahia, Santa Catarina, Mato Grosso, Rio de Janeiro, Ceará and Pernambuco.⁴ State centres are responsible for multiplying the knowledge transferred to them by the national centre. To establish the state centres, the CNTL has trained professionals drawn from Brazilian industrial federations and experts from environmental control agencies, universities and private consulting companies.

The Cleaner Production Network promotes sustainable development in micro and small businesses. It is dedicated to disseminating the concept of eco-efficiency and the cleaner production methodology as tools with which to increase competitiveness, innovation and environmental responsibility.

Initial investments and results

The partner institutions invested R\$ 3.3 million in forming the network between 1999 and 2002. The 76 companies of all sizes that were chosen to take



part in the pilot phase invested R\$ 2.8 million to implement measures recommended by the experts. Following the pilot phase, 77 companies eventually committed to apply cleaner production. Up to 2002, these companies had invested R\$ 1.1 million in making the recommended improvements. The projects are still ongoing; this amount represents only part of the total investment required.

As a result of these investments, participating companies have saved R\$ 18 million per year on input materials, water and energy (amounting to annual reductions of 6 million tonnes of raw materials, 350 million m³ of water, 3 million kWh of electricity and 1 million m³ of natural gas). Their abatement of atmospheric emissions totalled 5500 tonnes per year. Other direct environmental and economic benefits have stemmed from companies not having to treat and/or dispose of 167,000 m³ per year of industrial discharges to water, 911,000 tonnes per year of solid waste, and 3500 tonnes per year of hazardous waste. External recycling initiatives have made possible the recovery of 230 tonnes per year of various other types of waste.

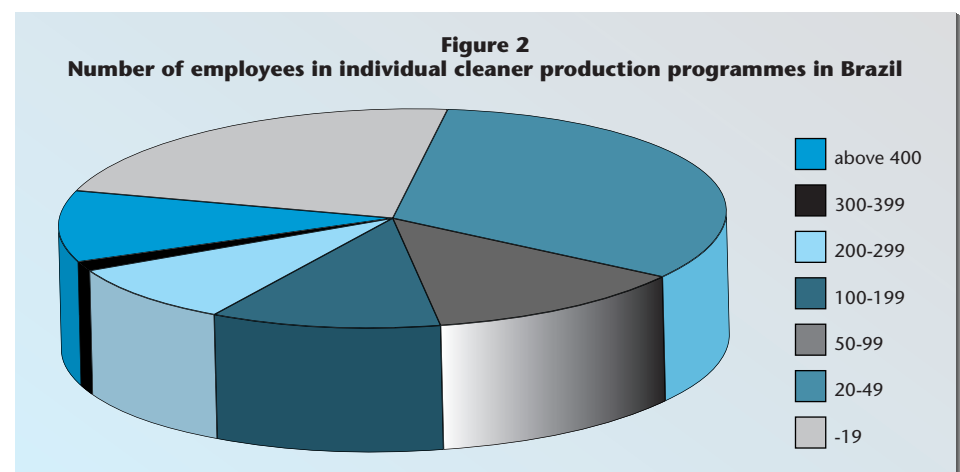
Between 1999 and 2003, participants came from 33 participating segments of the Brazilian production community; the number of micro and small enterprises gradually increased in this peri-

od. The largest industry branch involved was electrical-electronics, with 14% of the total, reflecting the strong demand for environmental standards in this area. Other major branches were tanning (12%) and footwear (8%), both with great potential to damage the environment. Significant growth has been seen each year in the number of firms in the building and construction (7%), metallurgy, (6%), metal-mechanical (6%), food (4%) and hotels (3%) areas.

Also participating were logging, printing and graphics, welding, packaging, organization of events (business, commercial, social), auto parts and electricity distribution, at around 1% each. Others (e.g. non-metal minerals, furniture-making, petrochemicals, pharmaceuticals, chemicals, animal feed, ornamental rocks, environmental services, textiles, steel production, ceramic finishes and medical/hospital materials) have growth of less than 1% individually but represent 27% in all. The importance and diversity they give to the cleaner production programme should be noted.

Simple solutions, low costs, large benefits

In the application of cleaner production measures, several measures are evaluated for environmental effectiveness and economic feasibility. Simpler



measures like good housekeeping are those most often adopted (Figure 1). Good housekeeping is the term used internationally to refer to "organization, cleanliness and good practices in quality and/or product processes." Besides housekeeping solutions, this methodology includes optimizing operational parameters, standardizing procedures, improving purchase and sales systems, and optimizing maintenance, information and training procedures. In Brazil the predominance of good housekeeping strategies demonstrates the preference for low-cost solutions.

On average, pilot companies and those that contracted to form the CP network are medium-sized, with about 30 employees and annual gross income of around R\$ 10 million.

Environmental management in micro and small enterprises: concerns and motivation

Micro and small enterprises usually have the greatest difficulty dealing with environmental issues. Normally they need to use scarce financial, technical and human resources to implement adequate environmental control measures.

While they are often able to recognize the importance of environmental issues, most of those responsible for micro and small enterprises have little knowledge of environmental management and have never introduced environmental control practices in their production processes. Environmental problems in these companies are usually handled by a manager responsible for several other activities, who does not have time to dedicate to environmental issues, lacks adequate understanding, and above all attaches little economic significance to environmental opportunities.

For the most part, public opinion pays substantially less attention to the environmental, health and safety issues of micro and small enterprises than to those of larger companies. In addition, many small businesses do not consider their environmental impacts significant compared to those of large companies.

According to the Brazilian Industry Competitiveness Report, prepared in 2002 by the Brazilian National Development Bank (Banco Nacional de Desenvolvimento), the Brazilian Association of Industries (Confederação Nacional das Indústrias) and the Brazilian Support Services for Micro and Small Enterprises (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas, SEBRAE), compliance with legal requirements is the main motivation for investing in the environment for micro (56.9%) and medium-sized (65.3%) enterprises, while for small enterprises (65.3%) the main motive is improving their image.⁵ Many of these companies are part of the supply chain of larger clients, but there little environmental concern has been stimulated through stakeholder pressure. However, large companies are beginning to require their chain of suppliers to meet the same environmental requirements they do.

Needed: better financing and understanding of the barriers

The reality of Brazilian industry indicates a situation that could benefit from the implementation of cleaner production programmes in micro and small enterprises. According to the Brazilian Industry Competitiveness report, 57.5% of the country's micro enterprises have not yet adopted any environmental management practice, compared with only 5% of large companies.

The same report indicates that large companies are better at accepting suggestions from their employees than micro, small and medium ones. Since a key element of cleaner production is employee participation, this attitude can be considered one of the barriers to the success of cleaner production measures.

In 2000-01 the main environment-related investment by micro enterprises concerned reducing financial losses and waste, while small enterprises invested in training for environmental management and medium ones in energy conservation.

The vast majority of SMEs in Brazil use their own resources for such investment (amounting to about 0.9% of net operational income in micro and small enterprises and 1.4% in medium ones). A larger allocation of financial resources would certainly constitute a great incentive for implementation and maintenance of cleaner production programmes in these companies.

Brazilian micro and small enterprises can use a programme from the Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (Sebrae) for technological consulting (Sebraetec).⁶ Its objective is to create financial and technical conditions giving these companies access to technological innovations. The programme, coordinated by the Innovation and Technology Access Unit, includes consulting services concerned with technology, technical and economic feasibility, design and preparation of business plans.

Despite the many benefits of cleaner production, especially for Brazil's micro and small companies, technical and financial factors can impede success and make implementation of these programmes very difficult.

Besides technical and financial barriers, there is a need for better marketing with respect to environmental management in Brazil, as knowledge of this field is still limited. Because of this lack of information, owners of businesses are often complacent and would rather adopt end-of-pipe solutions to solve problems than to prevent the problems. Another common phenomenon is entrepreneurs' resistance to sharing information about their companies and to reviewing operational procedures.

Due to a general lack of trust on the part of entrepreneurs and the need for short-term solutions, many owners find themselves uncomfortable with the idea of implementing changes – or even with simply acknowledging that changes are needed.

The future: expansion of the Brazilian Cleaner Production Network

The CNTL is currently carrying out training mainly for the Sebrae, which has created Ecoefficiency Centres in 10 of the 23 Brazilian states – with the goal of changing the culture in micro and small enterprises to make it possible for them to produce more while spending less and reducing environmental impacts of the production process.

At the end of the training programme (estimated as December 2003) several case studies of micro and small enterprises, which are serving as pilot companies, will be available to demonstrate the main cleaner production practices adopted. Sebrae centres are being developed in the states of Rio de Janeiro, Espírito Santo, Rio Grande do Norte, Amazonas, Pará, Amapá, Mato Grosso do Sul, Distrito Federal, Sergipe and Alagoas.

Summing up, it is worth pointing out that further development of cleaner production programmes in micro and small enterprises in Brazil requires (in addition to the need for improved marketing and education concerning benefits, human resources training, adequacy of procedures compared with the reality of the small company and the breakdown of cultural barriers) more incentive from financing entities.

Notes

1. See www.ibge.gov.br and IBGE, "Cresce a participação das Micro e Pequenas Empresas no Setor de Comércio e Serviços," *Comunicação Social*, 11 September 2003. (As of November 2003, the US dollar was worth 2.86 Brazilian reals.)
2. Law 9.605 of 30 March 1998.
3. Conselho Empresarial Brasileiro para o Desenvolvimento Sustentável (Cebds); Banco do Nordeste (BN); Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (Sebrae); Confederação Nacional das Indústrias (CNI); Financiadora de Estudos e Projetos (Finep); UNEP; United Nations Industrial Development Organization (UNIDO).
4. State centres are hosted by the local industry federations or universities: Fiemg (Federação das Indústrias de Minas Gerais); Fieba (Federação das Indústrias do Estado da Bahia); Fiesc (Federação das Indústrias do Estado de Santa Catarina); Fiemt (Federação das Indústrias do Estado do Mato Grosso); Firjan (Federação das Indústrias do Estado do Rio de Janeiro); Universidade Federal do Ceará (UFC); and Universidade Federal de Pernambuco (UFPE).
5. Banco Nacional de Desenvolvimento, Confederação Nacional das Indústrias, and Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (2001) *Relatório da Competitividade da Indústria Brasileira*. See also: Conselho Empresarial Brasileiro para o Desenvolvimento Sustentável (Cebds) (2003), *Relatório de Atividades da Rede Brasileira de Produção Mais Limpa (1999-2002)*, Rio de Janeiro. www.ibge.gov.br
6. See www.sebrae.br. ◆

SMEs and the environment in Hungary

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Summary

Hungarian SMEs' overall environmental performance is improving. Awareness of the importance of environmental management is promoted by environmental authorities and by other businesses (e.g. important customers). However, there are a number of barriers to the implementation of environmental management systems by SMEs in Hungary, and many of these companies still give low priority to environmental issues. In this article recommendations are made for improving the situation. Several relevant cleaner production initiatives have been taken by the Hungarian Cleaner Production Centre (HCPC) in cooperation with other organizations.

Résumé

Dans l'ensemble, le comportement des PME hongroises dans le domaine de l'environnement s'améliore. Les autorités responsables de l'environnement et les autres entreprises (par ex. les clients importants) favorisent la prise de conscience de l'importance de la gestion environnementale. Mais la mise en œuvre de systèmes de gestion de l'environnement par les PME hongroises se heurte à plusieurs obstacles et beaucoup de ces entreprises continuent de reléguer les problèmes d'environnement au second plan. L'article fait des recommandations pour changer cet état de choses. Plusieurs initiatives intéressantes de production plus propre ont été prises par le Centre hongrois de production plus propre (HCPC) en coopération avec d'autres organisations.

Resumen

El desempeño ambiental general de las pymes húngaras está mejorando. Tanto las autoridades ambientales como otras empresas (grandes consumidores) están promoviendo la importancia de la gestión ambiental. Sin embargo, hay una serie de barreras que obstaculizan la aplicación de sistemas para la gestión ambiental en las pymes húngaras, y muchas de estas empresas todavía consideran la cuestión ambiental como una prioridad menor. Este artículo ofrece algunas recomendaciones para mejorar la situación. El Centro de Producción más Limpia de Hungría (CPMLH) ha adoptado diversas iniciativas importantes de producción más limpia en forma conjunta con otras organizaciones.

Transition to a market economy in Hungary began over a decade ago. The transition period will be completed with accession to the European Union in 2004. Significant changes in the country's corporate sector have taken place during this period, including privatization of state-owned enterprises.

In an economy dominated by oversized state-owned companies, the scope for privately owned enterprises was very limited until the 1990s. However, some forms of private business ownership were tolerated in the 1980s (e.g. joint ventures and very small enterprises). Once the transition process began, the SME sector grew much more rapidly in Hungary than in most of the other central and eastern European countries.

Multinational organizations began to build up their regional strongholds after 1990, investing heavily in newly emerging markets. However, SMEs provided a fragile but still important livelihood in a period of high unemployment and very low incomes.

After 1990, multinational organizations started to build up their regional strongholds and invested heavily in the newly emerging markets of

the region. At the same time SMEs provided a fragile but still important livelihood in an era of high unemployment and very low incomes. Their role in the economy is still quite significant in a business environment where the number of enterprises with more than 500 employees is only about 1% of the total (Table 1).

At the same time the environmental expenditures of SMEs are low relative to their number and importance (Table 2).

Environmental regulations were implemented in Hungary as early as the first half of the 1970s, though compliance remained at a very low level. As public environmental awareness grew in the 1990s, environmental issues started to play an

important role on the political scene. While the number of environmental regulations increased, compliance was still low compared with that in more developed countries.

In the first half of the 1990s new SMEs – or those resulting from privatization of state-owned companies – had few resources with which to address long-term environmental problems. To a certain extent, this is still the case. Together with poor environmental performance, SMEs must address inherited poor environmental quality, necessitating expensive clean-up operations. Thus newly established and financially weak SMEs are overburdened.

The business environment is gradually changing. EU accession requires adoption of a vast body of legislation, including legislation concerned with the environment. Especially for multinational organizations, environmental considerations are becoming more important all the time. These organizations have started to establish environmental criteria for their suppliers, many of which are SMEs (in Hungary and other countries). An example of this phenomenon is the increasingly apparent need for SMEs to implement environmental management systems.

Environmental NGOs have traditionally been weak in this region, but there has been an upsurge in environmentally related activities since the transition process began. Local initiatives (e.g. those related to investment in waste management infrastructure) can no longer be neglected by the corporate sector.

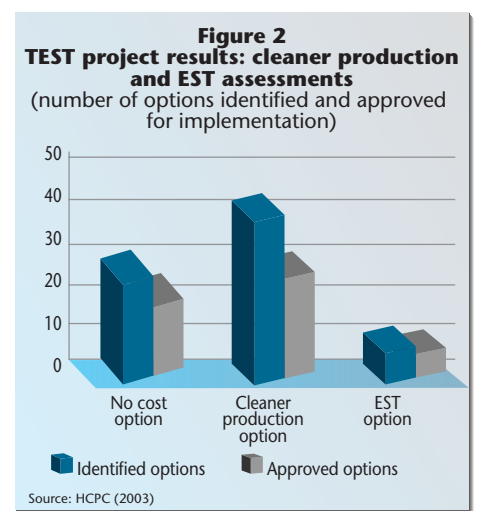
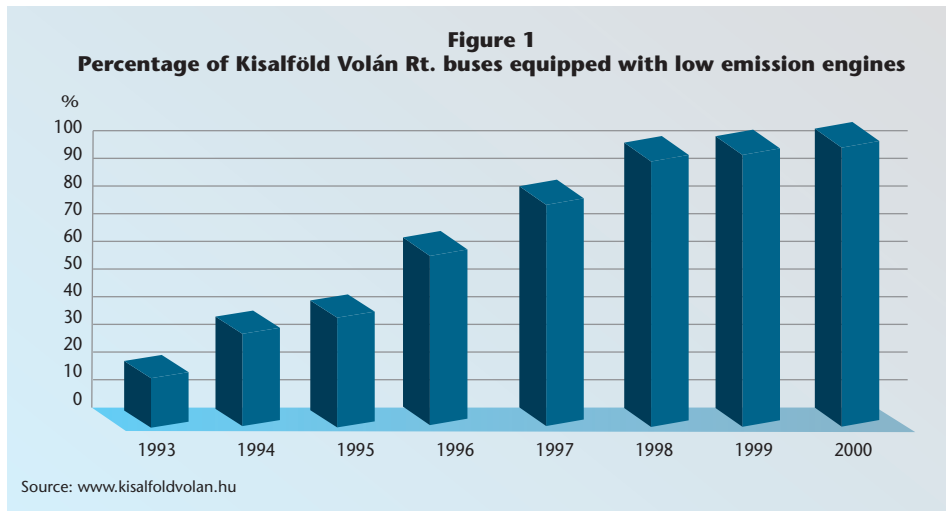
Approaches to environmental protection at the corporate level

Cleaner production and other preventive approaches have a number of advantages over end-of-pipe approaches. Awareness of the various approaches to environmental protection is still low in the region, but there have been positive trends in the last decade. Foreign and – increasingly frequently – Hungarian investors often prefer to replace obsolete equipment rather than continuing to repair it. Whether or not investment in new equipment is considered a cleaner production initiative, this trend has contributed

Table 1
Number of enterprises by staff size, third quarter 2003

	0 or unknown	1-9	10-19	20-49	50-249	250-499	500+	Totals
Manufacturing enterprises	10,578	23,643	3704	2993	1981	321	242	43,462
All enterprises	152,187	216,881	15,590	9408	4856	540	438	399,900

Source: Hungarian Statistical Office



to a much more environmentally friendly economy compared with 15 or 20 years ago.

Nevertheless, much remains to be done. SMEs have great environmental protection potential, in that their development has been slower than that of larger companies and no-regrets environmental options still abound.

Initiatives by the Hungarian Cleaner Production Centre: an emphasis on SMEs

The Hungarian Cleaner Production Centre coordinates a country-wide network of information centres, educational and research institutions, and consultants in the field of cleaner production and preventive environmental management.¹

The HCPC's mission is to promote preventive environmental practices and improvements in corporate environmental management using the principles of cleaner production, and consequently to improve the environment in Hungary. HCPC activities include consulting; organization of corporate sector training, with a focus on SMEs; provision of policy advice on corporate environmental management and performance, with an emphasis on EU environmental regulations; and other forms of information dissemination, including conferences and workshops.

The work of the centre in Budapest is assisted by regional cleaner production centres.

To integrate the principles of prevention into higher education, and thereby educate the decision-makers of tomorrow, the HCPC is also involved in education.

By participating in international projects, the HCPC has succeeded in implementing the principles of cleaner production at a number of SMEs. Implementation of ECOPROFIT, a programme for sustainable economic development that entails cooperation between local authorities and companies (as well as networking by participating companies), has occurred at a number of Hungarian manufacturing companies since the late 1990s.² Kisalföld Volán Rt., the regional public transport company for north-western Hungary, has implemented a number of measures including replacement of its buses'

engines (Figure 1). In recognition of the company's achievements in the environmental protection field, it was awarded the ECOPROFIT prize, which it has continued to hold ever since. It is currently rationalizing its energy use and considering further vehicle modernisation vehicles.²

Training sessions in the Pollution Prevention and Environmental Management System (POEMS) project, offered by the HCPC and Követ-INEM Hungária, respond to the needs of the corporate sector. They incorporate topics related to the principles and practical implementation of environmental management systems. Offered to SMEs whose financial resources are inadequate to cover the high costs of private consulting, this project has played an important role in the development of the environmental management systems at several dozen organizations. For example, Guardian Hunguard, part of the multinational Guardian Industries group (a major player in the world glass industry) has implemented an environmental management system that complies with ISO 14001. Similar systems are to be set up in other countries, based on the Hungarian experience.

The recent Transfer of Environmentally Sound Technologies (TEST) project, run by the HCPC and coordinated by the UN Industrial Development Organization (UNIDO), emphasizes the importance of an integrated approach to using environmental management tools at the compa-

ny level. This project incorporates management tools such as cleaner production and environmentally sound technology assessments, the implementation of environmental management systems and environmental accounting, and the establishment of a sustainable enterprise strategy at participating organizations. Originally intended for use at pollution hot spots in the Danube, the Hungarian project mainly involves SMEs that were not active in environmental protection before it started. Since 2001 a number of important measures have been undertaken at participating organizations, whose environmental performance has improved significantly (Figures 2 and 3).

In the framework of the TEST project, Nitrokémia 2000 Rt., a medium-sized chemical company, adopted an environmental management accounting (EMA) system. With its obsolete production facilities located in a fragile natural environment, the company decided it was imperative to be able to measure and monitor its environmental performance. Data from environmental assessments carried out at the company in the 1990s (e.g. on emissions, resource use) were readily available, but the link needed to associate these data with the decision-making process was missing. The new system is intended to correct this deficiency, so that investment decisions will be more precise in the future. At the same time, EMA assists communications within different parts of the organization. Table 3 shows environmental costs identified and considered during the project.

Barriers to environmental management in SMEs

While good examples of environmental management practices at Hungarian SMEs exist, there is still a lot to be done. A number of factors hinder implementation of more elaborate tools and their wider dissemination.

In general, the technological background for enhancing the environmental performance of SMEs is readily available, as is information concerning potential solutions. Domestic and foreign suppliers of environmentally sound technology solutions offer a

Table 2
Environmental investment and expenditure by enterprise size, 2001

Number of employees	% end-of-pipe environmental investment	% integrated environmental investment	% current environmental expenditure
20-49	0.2	0.5	2.0
50-99	4.5	2.9	4.2
100-249	8.4	21.3	10.5
250-499	20.2	17.2	21.3
500-999	16.4	18.6	25.4
1000-1999	10.6	9.3	14.0
2000	39.7	30.1	22.6
Total	100	100	100

Source: Hungarian Statistical Office

Table 3
Environmental costs identified and calculated at Nitrokémia 2000 Rt.
in the framework of the TEST project

Costs used before the TEST EMA project	Costs included in the new environmental management accounting (EMA) system	Costs to be added in the longer term
waste and emissions treatment: hazardous waste incineration wastewater treatment	occasional wastewater treatment costs incineration of non-hazardous waste treatment of sludge	material and labour for waste treatment (e.g. filter)
	depreciation of environmental equipment	energy costs for non-product output
	work by environmental personnel; environmental work by non-environmental personnel	water costs for non-product output
	material costs of waste treatment	
	environmental fines	
	processing of non-product output	
	auxiliary materials	

Source: HCPC, 2003

wide variety of products and services.

The organizational factors influencing companies' environmental performance remain to be addressed. They include aspects of company operations specific to a certain organization, such as its financial and market situation, its awareness of environmental problems, the priority it gives to other issues, and resistance to change.

These factors exist in all organizations, but they may be particularly evident at SMEs. Coupled with a much lower level of external pressure, they can result in less favourable environmental performance than that of, for example, organizations with greater public exposure.

HCPC experience demonstrates that Hungarian SMEs continue to give relatively low priority to environmental issues. More conscious environmental management occurs only when there is pressure from environmental authorities or significant customers. Market opportunities may also provide environmental benefits to SMEs (e.g. in the case of ecotourism or health products), but the number so affected is relatively low.

In some economic sectors (e.g. the textile industry) companies have taken only very basic environmental measures or none at all. In others, characterized by higher environmental risks, there is greater awareness of environmental considerations and more environmental management tools are used, even by SMEs.

Many SMEs continuously struggle to survive

economically, which is reflected in short-term thinking and ignoring of environmental issues. In these enterprises production has a very high priority; quality issues have much lower priority, and environmental issues are perceived as a luxury and are not taken into account at all.

These problems are compounded by weak enforcement by environmental inspectorates, which do not have adequate financial or human resources. A number of SMEs still see "getting away with" poor environmental performance as a

possible strategy. Fortunately, the number of such enterprises is gradually decreasing.

Conclusions and recommendations

The environmental performance of SMEs in Hungary is generally improving, but a lot more needs to be done.

One way to improve this situation is to raise awareness. This can produce significant results in the long term. In the short term, however, other incentives should be implemented and presented to these companies.

A national cleaner production programme, similar to those in some other transition countries in central and eastern Europe, should be agreed and put into effect. Such a programme should include promotion of preventive environmental practices not only through distribution of information, but also using financial incentives.

At the same time, new environmental regulations should consider pollution prevention in the corporate sector not just in terms of the principles involved, but also in terms of practical implementation of these principles.

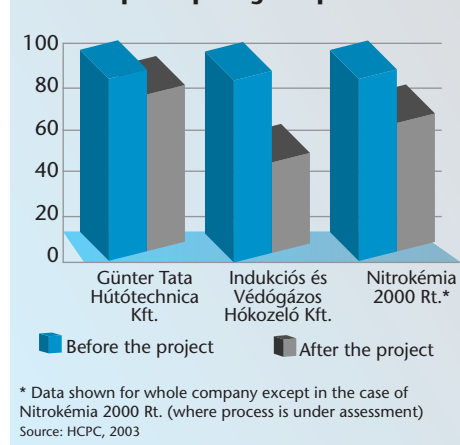
Notes

1. The HCPC was established in 1997 in the Department of Environmental Economics and Technology at the Budapest University of Economic Sciences and Public Administration.
2. ECOPROFIT, the Ecological Project For Integrated Environmental Technology, was established by the city of Graz (Austria) in 1991. The name was subsequently trademarked.

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- Kerekes, S. and K. Kiss (1998) Hungary's Accession to the EU: Environmental requirements and strategies. In: *European Environment*, Vol. 8, No. 5 (Sept.-Oct.), pp. 161-170.
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Figure 3
Water consumption at participating companies



Sustainable development: improving community relations

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Summary

An organization conducting day-to-day business has social impacts on the local community. Poor relations with neighbours can result in significant problems for business, often relating to comparatively minor and easily resolved issues such as parking, noise or perceived lack of consideration by the company. A recently completed BRE project investigated these impacts, with a view to improving relationships between the construction industry and local communities. While research focused on construction projects, the lessons learned are relevant to any type and size of organization (in any sector). In particular, research demonstrated that ongoing communication and information provision is a key to improving community relations.

Résumé

Dans la conduite de ses activités quotidiennes, l'entreprise a des impacts sociaux sur la population locale. De mauvaises relations avec le voisinage peuvent être une source de problèmes majeurs, souvent liés à des questions relativement mineures et faciles à régler comme le stationnement, le bruit ou une impression de manque de considération de la part de l'entreprise. Un projet du BRE récemment mené à terme s'est intéressé à ces impacts dans le but d'améliorer les relations entre le secteur du bâtiment et les populations locales. Bien que centré sur les chantiers de construction, il a permis de tirer des enseignements qui sont valables pour n'importe quelle entreprise (de n'importe quel secteur), quels que soient son type et sa taille. L'analyse a montré, en particulier, qu'une communication et une information permanentes sont primordiales pour améliorer les relations avec la population.

Resumen

Toda organización que realiza actividades comerciales en forma cotidiana tiene impactos sociales en la comunidad local. Las malas relaciones con los vecinos pueden causar problemas importantes para los negocios, problemas casi siempre relacionados con cuestiones relativamente menores y fáciles de resolver, como dificultades de estacionamiento, ruido o la percepción de que la empresa no muestra consideración por la comunidad. Un reciente estudio del Building Research Establishment investigó estos impactos a fin de mejorar las relaciones entre la industria de la construcción y las comunidades locales. Aunque la investigación se concentró en los proyectos de construcción, las lecciones aprendidas son útiles para todo tipo y tamaño de organización en cualquier sector. De manera específica, los resultados de la investigación demostraron que la comunicación continua y el constante intercambio de información son esenciales para mejorar las relaciones comunitarias.

Corporate social responsibility is becoming a major issue for an increasing number of companies of all sizes in the UK. According to UK Department of Trade and Industry figures, approximately 80% of FTSE 100 companies now provide information about their performance on social responsibility matters, demonstrating a growing recognition of the importance to core business of such issues as protection of the environment, use of natural resources and their impact on society as a whole. (See the "Developing Corporate Social Responsibility in the UK DTT" Web site, www.societyandbusiness.gov.uk.)

Within the context of CSR, sustainable development underpins many of these issues, balancing the three elements of the triple bottom line – environmental, social and economic components – and helping organizations to move towards business viability in the long term.

There has been growing corporate interest in environmental issues. However, an organization carrying out its day-to-day business can also have substantial social impacts on employees, suppliers, customers, and particularly on the local community within which it operates. Poor relationships with local people may create significant problems for businesses. They are often caused by comparatively minor and easily resolved issues such as parking, noise, or perceived lack of consideration by the company in general.

A recently completed BRE project, "Working with the Community", investigated these impacts with a view to enhancing relationships between the construction industry and local communities. Although research focused on construction projects, the lessons learned are relevant to any type and size of organization in any sector.

Background

Better consideration of the needs of local communities is being seen as increasingly important in the construction industry. As well as reinforcing the social dimension of sustainable construction by demonstrating a commitment to corporate social responsibility, improved relationships with the local community can bring substantial business benefits both in the short and long term. Examples of these include:

- ◆ time and cost savings resulting from a smoother planning process;
- ◆ increased goodwill towards a construction project, both during and post construction;
- ◆ reduction of the time and money spent dealing with complaints;
- ◆ a greater sense of ownership of the project among local people, leading to less vandalism and improved security;
- ◆ enhanced PR for the client and contractor;
- ◆ increased potential for repeat construction business in the locality;
- ◆ improved job satisfaction and motivation among the workforce on-site.

"Working with the Community" was commissioned by the DTI under its policy of improving the industry's performance on people issues and increasing "respect for people". The project's objectives were to identify the impacts of major developments on local communities both during and after construction, and to develop guidance for the industry in addressing the concerns of local people and businesses.

Methodology

The study began in July 2000 with initial research based on five major construction projects around the UK. Chosen to provide variety in the type of project and location, so as to eliminate any source of bias in the type of impacts reported, the projects were:

- ◆ a junior school in the south of England;
- ◆ a leisure facility in the Midlands;
- ◆ a supermarket development in east London;
- ◆ a hospital in the north-east of England;
- ◆ a major housing development in the north-west.

A series of focus groups and interviews were held with a variety of stakeholders concerned with the case study projects.

Key personnel from each project, including representatives from the main contractor, client, architect, project manager, site manager and local authority, were interviewed about the perceived impacts of their project on the local community both during construction and post completion,

what measures were taken to address these impacts, and how successful they were. The interview with the main contractor concentrated on impacts during the construction phase, while those with the designer/developer and client covered impacts during and post construction.

In addition to the interviews, two focus groups of local community members including residents and local business representatives were organized for each project. The focus groups were designed to initiate discussion on impacts the projects were having on local residents and businesses, measures taken to address their concerns, and what suggestions they could make for improvement. The relationships between the local community and the industry throughout the whole construction process were also covered.

The case study consultation was complemented by interviews with additional industry representatives – architects, engineers, local authorities and contractors – in order to identify their awareness of (and opinions about) existing best practice initiatives and guidelines for considering local communities, and what additional guidance they needed.

Attitudes to the construction phase

Although each case study was very different, research results highlighted similar concerns among the local communities during the construction phase. These included: noise; dust and dirt; increased traffic, congestion and parking problems; access restrictions; health and safety issues; and the attitudes of some of the workmen. Neighbouring businesses had particular problems in connection with restricted access and inconvenience for their staff and customers.

Interestingly, despite the efforts made by developers to mitigate many of these problems, the local people often felt the measures taken were inadequate. This feedback enabled BRE to highlight a number of good practice measures that would benefit both the construction companies and local communities in future developments, such as:

- ◆ planned measures to control dust, noise and traffic;
- ◆ use of local labour, involvement in local labour schemes and sponsoring of traineeships;
- ◆ good site security, 24-hour security guards and secure site hoardings;
- ◆ highlighting opportunities for local businesses, (e.g. provision of a site canteen and use of local suppliers);
- ◆ establishing good relationships with the local community, including visits to schools, charity events, and invitations to view the site.

Attitudes to the completed developments

The completed developments were generally welcomed as an improvement to the local area, as old, dilapidated buildings were replaced with a new and visually pleasing amenity that regenerated and increased the status of the area. The new developments were also seen to benefit local businesses and increase job opportunities.

However, there were some common issues about the new buildings that caused concern:

- ◆ parking problems for residents and local businesses;
- ◆ reduced access to bus stops, shops, etc., particularly affecting the elderly;
- ◆ an increase in traffic;
- ◆ loss of facilities for the community, particularly for children;
- ◆ an increase in noise and disturbance;
- ◆ an increase in crime due to changes in the local area;
- ◆ obstruction of views;
- ◆ final plans or development usage being different from what was expected.

Communication and information

Construction of a new development in a neighbourhood may often cause problems for local residents and businesses. The construction process itself can be noisy, dirty and lengthy and the finished building can also bring changes to the area that may be unwelcome. However, the study found that it is not necessarily the obvious physical problems that cause irritation, but the perceived lack of information.

In all the case studies, most of the local people felt that they would have been prepared to put up with the majority of the problems if there had been better communication and consideration throughout from the client organization, construction companies, local councils and developers. Although communication was seen to be essential to the success of a development by all parties, and all case study projects tried to involve the local community, lack of information was still a major issue.

There appeared to be a gap in the perception of what constitutes adequate communication between the developers and construction companies and local communities. For example, companies reported that they had displayed telephone numbers or sent out letters, while the local communities said that they had not seen any of these. The local communities also felt that provision of complaints procedures was inadequate. It was often so difficult and time consuming to make a complaint that most people did not bother; and when they did, they felt that little action was taken.

There could be a number of reasons for these differences in perception:

- ◆ People often do not read written materials that are delivered to their homes and even ignore notices unless they are drawn to their attention. They do, however, remember visits and meetings.
- ◆ The discrepancy could partly arise from the fact that much communication activity was limited to the immediate vicinity of the site rather than the wider neighbourhood.
- ◆ There could be differences in expectations of the amount and type of communication used. For example, on a long-term project lasting a number of years, local people expected continuing involvement and often preferred face-to-face methods, while the companies often relied on a single initial meeting and subsequently on written communication, e.g. letters, posters. Communication should therefore take place at all stages of a devel-

opment and a variety of methods should be used to capture different audiences.

New guidance

The case study consultation highlighted areas where there appeared to be gaps in the provision of advice, guidance, etc. to support the work of project teams in terms of considering the local communities where new developments are situated. In particular, there was felt to be little guidance in the area of communication and provision of information – despite the fact that both local people and the industry regarded this as critical.

The BRE team therefore developed a package of communication guidance and supporting tools that could be used by the construction industry to deliver better community relations. These tools included:

- ◆ awareness-raising workshops for site personnel;
- ◆ information leaflets for the local community;
- ◆ questionnaires to monitor the attitudes of the local community towards the development and provide feedback on the success of measures to involve local people and businesses.

A large retail development in Yorkshire was chosen as a test bed for the new guidance. Both the client and the main contractor were very happy to support the initiative, which reinforced their customer-focused approach.

The development was ideal for the needs of the BRE research team. It was a town centre site, surrounded by homes and existing retail and commercial properties. The pilot study hosts, a major supermarket, had already done a considerable amount of work in terms of community liaison. This included:

- ◆ an introductory letter to 80 local residents informing them of the works and introducing the site manager together with his photograph and contact details;
- ◆ the appointment of a dedicated public relations consultant to oversee relations with the community during the planning stages;
- ◆ the establishment of monthly liaison meetings between the project team and the council and local community representatives;
- ◆ an established complaints procedure including the logging of complaints;
- ◆ additional traffic light pedestrian crossings manned by project staff;
- ◆ provision of escorts for school children around areas adjacent to the site

The start of the BRE pilot study coincided with the first stages of construction of the new supermarket in January 2002.

Workshops for site personnel

In the course of the case studies the researchers found that the personnel working on a construction site were the main focal point for the local community, as they tend to be the visible face of the development. However, those personnel felt they did not necessarily have the skills to deal with the concerns of the general public. To address this, the project team developed a programme of workshops on “Dealing with the Public”, and delivered two half-day workshops on the test site.

The objectives of the workshops were:

- ◆ to raise awareness of the impacts of a site on the local community and the issues that concern local people;
- ◆ to encourage the development of the communication skills needed to address these issues by providing participants with strategies for dealing with the public.

The course content focused on both technical issues, with examples of best practice, and communication skills, using role-play exercises. Participants were encouraged to share experiences and make suggestions for improvement.

Participants were nominated by the construction company. They represented a variety of roles on site from site manager, foreman and engineer to drivers and security staff. Their reactions to the sessions were very favourable both immediately after the sessions and later on, during follow-up.

Information for the local community

The initial research had shown that local communities felt they would benefit from guidance on what is involved at all stages of a construction project. As well as developing their understanding, it would help them cope better with issues that might arise. They also reported frequent difficulties in tracking down the appropriate person to deal with any problems or complaints.

The research team therefore produced a short information leaflet for local residents and businesses written in clear, non-technical language. The leaflet included:

- ◆ general information about what to expect when a new development takes place in a neighbourhood, including a construction timeline and a glossary of terms;
- ◆ site-specific information, including timescales and names and contact details of key personnel (e.g. site manager, building control) and a short description of their roles.

The leaflet was designed to be widely distributed at an early stage so that local people could keep it for reference. The draft leaflet was piloted on a sample of local residents via face-to-face interviews and refined in the light of their comments and suggestions.

Performance feedback questionnaire

The research team had found that although there was much good practice in working with the community on individual sites, there was little monitoring or feedback on the success of these measures. A performance feedback questionnaire was developed to provide a method of independently monitoring the impacts of construction site operation, the success of mitigation measures and the satisfaction of local residents and businesses. The questionnaire focused on general issues derived from the earlier research findings, including:

- ◆ communication;
- ◆ impacts of the site in general;
- ◆ specific impacts on local businesses;
- ◆ dealing with complaints.

Site personnel distributed the questionnaire to 200 local residents and business premises at an early stage of the development to provide a baseline measure of local attitudes and opinions. It was distributed again upon completion of the project to monitor any changes. To encourage participation, all respondents were given the opportunity to enter a prize draw. The results were reported to the project sponsors, together with recommendations and suggestions. The main findings were that:

- ◆ the most commonly used source of information about the development was the local paper;
- ◆ awareness of information about the development increased considerably between the beginning and end of the project;
- ◆ perceived helpfulness of people on site in dealing with concerns rose by more than 20% over the same period, possibly as a result of the increased efforts of site personnel;
- ◆ if people had any concerns, they tended to take them to the site manager, who was the focus for the local community;
- ◆ there were many positive messages (behaviour of workmen, security and access factors were very highly rated).

The results of such surveys can be used in two ways. During the course of a long-term project the questionnaire raises awareness of issues that are causing concern within the local community and enables an effective response. At the end of a pro-

ject it can be used to provide feedback for the client and construction company to gather learning points for future developments and to support a system of continuous improvement via benchmarking.

The way forward

Good community relations are an important element in developing long-term sustainability, not only for construction companies and their clients but for any organization. The "Working with the Community" project has demonstrated that one of the keys to building better relationships with local residents and businesses lies in improved communication and more effective information provision. The guidance and tools that have been piloted on the test bed project, and that will be published shortly, provide a framework for a communication strategy. However, to be successful the communication process must be ongoing. This requires a commitment from all parties involved.

The test bed project provided an excellent example. From the outset the client, contractor and the rest of the project team placed great emphasis on providing a coordinated approach to maintaining good relations with local people that benefited all concerned. This model can be successfully followed by any company contemplating making changes that will affect the neighbourhood to a greater or lesser degree – for example, a chemical company deciding to produce a new product, the opening of a new waste disposal facility or an increase in hours of operation. There are many instances of "scare stories" in the press that have been built up as a result of local speculation which could have been avoided through careful communication planning.

For further information on *Working with the Community* or the forthcoming guidance, please contact Mindy Hadi at BRE or visit the project Web site: http://projects.bre.co.uk/productive_workplace/improve_relations.html.

Also see *Industry and Environment*, Vol. 26, No. 2-3, the sustainable building and construction issue (www.uneptie.org/media/review/ie_home.htm). ◆

World News



Huge investment in world energy supply will probably be required

Over the next 30 years, US\$ 16 trillion will need to be invested in maintaining and expanding the world energy supply if present trends continue. This is the conclusion of *World Energy Investment Outlook*, a new report by the International Energy Agency (IEA) that predicts a two-thirds increase in world energy demand by 2030 if new policy actions are not taken. This level of investment (equivalent to 1% of annual global GDP) would greatly surpass the comparable figure for the past 30 years in real terms.

World Energy Investment Outlook is the latest report in the IEA's World Energy Outlook series. It is the product of a collaborative effort involving experts, organizations including OPEC and the World Bank, and major energy companies and financial institutions. Energy investment needs are broken down by fuel sector and region, and obstacles to mobilization of capital on the required scale are identified.

"To the best of my knowledge," says Claude Mandil, Executive Director of the Paris-based agency, "no previous attempt has been made to build such a comprehensive picture of future energy investment, worldwide, in all parts of the energy supply chain."

Some of the findings were unexpected. For example:

- ◆ Power generation, transmission and distribution will absorb almost 60% of global energy investment (over 70% if investment in the fuel chain to meet power station fuel requirements is included).
- ◆ Transmission and distribution will account for more than half of global electricity sector investment.
- ◆ The bulk of US\$ 4 trillion in upstream investment in the oil and gas sectors will be required just to maintain production capacity at current levels.
- ◆ The coal industry will require only US\$ 400 billion (2% of total global energy investment).

The IEA report, published following major blackouts in North America, Italy and the UK in the summer of 2003, points out that OECD countries face challenges in financing electricity investments as transition to competitive markets has introduced new risks. Liberalization can have many benefits, but it increases risks for investors, especially with respect to peaking capacity. Other problems include public resistance to expansion of transmission networks.

In Iraq alone almost US\$ 5 billion will be need-

ed in order to increase the country's oil production capacity to a projected level of almost 4 million barrels a day by 2010.

Investment in liquefied natural gas chains worldwide must increase to meet sixfold growth in LNG trade.

Financing investment in developing countries and transition economies is the greatest and most pressing challenge. Russia's investment requirement will amount to 5% of its GDP and Africa's to 4%, compared with 0.5% in OECD countries. Investment risks are generally greater in non-OECD than in OECD countries.

Investment at the projected rate would leave 1.4 billion people without access to electricity in 2030 (only 200 million fewer than today). Providing a minimal level of supply to the world's poorest areas would require investing an additional US\$ 665 billion in regions that are already struggling to raise capital.

New technology, such as carbon sequestration and use of hydrogen fuel cells and advanced nuclear reactors, could dramatically alter energy investment patterns and requirements in the longer term. Technology deployment depends on fiscal and regulatory incentives to accelerate commercial viability.

The IEA report emphasizes that governments will increasingly need to abandon state-financed investment or ownership, to and adopt policies and create conditions that promote private investment.

For more information, contact: *Fiona Davies*, Tel: +33 1 40 57 65 50, E-mail: fiona.davies@iea.org.

Energy efficiency in industry increases competitiveness

Manufacturers can boost competitiveness and guard against fuel supply problems through energy efficiency, according to a new report that provides guidance to US plant managers and energy programme officials.

Motivating Business Leaders to Improve Profitability through Energy Efficiency, produced by the Alliance to Save Energy and its Executives for Energy Efficiency programme, stresses that industrial energy efficiency could help offset potential winter shortages of natural gas supply.

"Energy efficiency's benefits only begin with reduced utility bills," says Christopher Russell, who wrote the report. "Plant managers also can reduce raw material waste, offset energy supply risks, avoid emission penalties, and even build new

revenues through better utilizing existing assets. Smaller manufacturers, in particular, have yet to fully grasp this opportunity."

A companion report, *Strategic Energy Efficiency: Reduce Expenses, Build Revenues, and Control Risks*, elaborates on the relationship between energy efficiency and business performance.

Both reports are available at www.ase.org/programs/industrial/e4ee.

For more information, contact: *The Alliance to Save Energy*, 1200 18th Street, NW, Suite 900, Washington, DC 20036, USA, Tel: +1 202 857 0666, Fax: +1 202 331 9588, E-mail: info@ase.org, Internet: www.ase.org.

Winners of China's green business competition

An organic food company, a manufacturer of testing kits to detect genetically modified organisms, and the country's first producer of organic honey have won the first green business competition in China. Chosen from among ten finalists, the winners were announced at the end of China's first New Ventures Investor Forum in Shanghai.

Products from Beijing Organic Foods Co., a pioneer in China's organic foods market, are for sale in 60 supermarkets located in 12 Chinese cities. The ChongQing Jinbiao Biotechnology Company manufactures and markets testing kits that can detect GMOs in one minute. The kits cost 25% less than the industry average. The Nanjing Ruikang Agriculture Company produces and exports organic honey to the United States, Japan and Europe. It supplies 66% of the global market for organic royal jelly.

The New Ventures Investor Forum is sponsored by the Sustainable Enterprise Program of the World Resources Institute and by Citigroup. New Ventures has hosted three investor forums in Latin America since September 2000, facilitating investments of US\$ 6.4 million in sustainable businesses. WRI and Citigroup brought New Ventures to China in 2002.

At the Shanghai Forum, the International Finance Corporation signed an agreement to expand the New Ventures programme to Indonesia.

For more information, contact: *Virginia Barreiro*, World Resources Institute, 10 G Street, NE, Suite 800, Washington, DC 20002, USA, Tel: +1 202 729 7700, Fax: +1 202 729 7610, E-mail: virginia@wri.org, Internet: www.new-ventures.org.

New European Commission strategy for resource use

The European Commission has introduced a new strategy intended to assure sustainable use of natural resources. The EC says this is the first EU initiative to address resource use in a truly comprehensive way.

The strategy is based on three core tasks:

- ◆ gathering information and keeping it updated;

- ◆ assessing policies that directly or indirectly affect resources;
- ◆ identifying measures (which will primarily be integrated with other policies).

“Natural resources ensure our economic and social development,” says Environment Commissioner Margot Wallström, “but the ways in which we use them create waste, emissions and effluents which affect water, air and soil. We have to utilize resources differently – more efficiently and with less damage to the environment and human health.”

According to the Commission, adverse effects on the environment (e.g. air pollution and global warming) are the most pressing problem with respect to resource use. The strategy will focus on reducing environmental impacts and on enabling growing economies to use resources efficiently, both environmentally and economically. Its overall goal is to decouple economic growth from environmental degradation. The strategy will examine the entire life cycle of natural resources.

The Commission has announced that it will finalize the strategy via stakeholder consultation in the next 18 months. This is one of the seven thematic strategies called for in the Sixth Environment Action Plan adopted in 2002, which will guide EU environmental policy priorities until 2010.

For more information, see: <http://europa.eu.int/comm/environment/natres/index.htm>. ◆

Corporate responsibility in Europe: teaching and research

Teaching programmes and research on corporate responsibility are increasing at European academic institutions, according to a study described by its sponsors as the most comprehensive ever carried out on the subject.

The study, by the European Academy of Business in Society (EABIS) and the International Centre for Corporate Responsibility (ICCSR) of the Business School of Nottingham University, also indicates that there is a greater focus on environmental issues and sustainability at such institutions in Europe than in the US. The study covered 600 institutions in 20 countries.

In addition, a report by the Aspen Institute and the World Resources Institute says North American business schools need to better equip graduate students with environmental and social management skills. *Beyond Gray Pinstripes 2003: Preparing MBAs for Social and Environmental Stewardship*, which includes data from 100 business schools, also in 20 countries, highlights six top schools that give future executives solid training in environmental and social impact management: George Washington University’s School of Business and Public Management in Washington, DC; the University of Michigan Business School in Ann Arbor; the University of North Carolina Kenan-Flagler Business School in Chapel Hill; the Stanford Graduate School of Business in Stanford, California; the Yale School of Management in New Haven, Connecticut,

and York University’s Schulich School of Business in Toronto, Canada.

The report says these are among the few schools that focus on relationships among social, environmental and financial factors.

For more information, see: www.csrcampaign.org/initiatives/EuropeanAcademy_page96.aspx and www.beyondgreypinstripes.org. ◆

WWF reports on water quality and quantity

A WWF report on water management in 23 European countries says efforts to maintain or improve water quality in lakes, rivers and seas are failing in nearly two-thirds of these countries due to agriculture, urban sprawl and lack of political will. It points out that over-consumption of water is a problem throughout Europe.

The second study, carried out by the WWF and the World Bank, reports major cities could save billions of dollars in water treatment facilities investment by focusing on forest conservation. Forests naturally purify drinking water. One-third of the 105 large cities studied, including New York, Tokyo, Barcelona, and Melbourne, receive much of their drinking water via protected forests.

The WWF studies can be downloaded at www.panda.org/downloads/europe/wwireport.pdf and www.panda.org/downloads/freshwater/runningpurereport.pdf.

Another study on US cities, presented at the National Urban Forest Conference, reports that cities are rapidly losing trees that could be cooling buildings, cleansing polluted runoff and filtering city air. Satellite images of 448 US urban areas revealed that these areas lost over 20% of their trees in the last decade. American Forests, the organization commissioning the study, estimates the value of the ecosystem services provided by these trees at US\$ 234 billion.

For more information, contact: WWF Interna-

tional, Av. du Mont-Blanc, 1196 Gland, Switzerland, Tel: +41 22 364 91 11, Fax: +41 22 364 88 36; www.americanforests.org/graytoreen. ◆

Proposed EU legislation on chemicals control

Sweeping new European Commission chemicals control legislation would oblige manufacturers to disclose the hazards of tens of thousands of chemical products that are on the market but have not been subjected to safety tests. Under the proposed regulation, any company that manufactures or imports over 1 tonne of a chemical substance per year will be required to register the substance in a central database.

The EU executive body has worked on this legislation for something like five years. Reflecting vigorous chemical industry lobbying, Germany, France and the UK successfully urged the Commission to modify the initial draft.

The Commission has legalized use of one controversial substance, the herbicide paraquat, based on advice received from European scientists. Paraquat use was previously authorized in only ten EU countries. Commission officials say conditions for its use will be strict and sale to the general public is unlikely.

For more information, see: <http://europa.eu.int/comm/enterprise/chemicals/chempoll/whitepaper/reach.htm>. ◆

Investors’ summit on climate change

Eight US state and city treasurers and comptrollers, and the heads of two major trade union pension funds, have issued a ten-point “call for action”. It requests that the US Securities and Exchange Commission (SEC), corporate boards and Wall



Efforts to maintain or improve water quality in lakes, rivers and seas are failing

Street firms take strong measures to increase corporate disclosure of the risks of climate change.

The call for action was announced at the first Institutional Investor Summit on Climate Risk, which took place at UN Headquarters in New York in mid-November. There were plans to petition the SEC immediately to enforce environmental risk disclosure requirements, seek climate risk disclosure by companies in the oil and gas, electricity, automobile and other industries, and create an Investor Network on Climate Risk to follow through on the action plan.

The founders of the network and those who signed the call for action are the state treasurers of California, Connecticut, Maine, New Mexico, Oregon and Vermont, the comptrollers of New York City and the State of New York, and the directors of the pension funds of the Service Employees International Union and Communication Workers of America.

"In global warming," says California State Treasurer Phil Angelides, "we are facing an enormous risk to the US economy and to retirement funds that Wall Street has so far chosen to ignore. The corporate scandals over the last couple of years have made it clear that investors need to pay more attention to corporate practices that affect long-term value. As fiduciaries, we must take it upon ourselves to identify the emerging environmental challenges facing the companies in which we are shareholders, to demand more information, and to spur needed actions to respond to those challenges."

This is the first time major pension funds and other institutional investors have met to consider the risks of climate change to portfolios. Also attending were senior executives of Bank of America, Bank of New York, Goldman Sachs, Lazard Asset Management, Lehman Brothers, Marsh and McLennan, Morgan Stanley, Moody's and Standard and Poor's, as well as other state, city and pension fund representatives.

The summit was organized by the CERES coalition, which is co-chaired by Connecticut State Treasurer Denise Nappier and UN Foundation President Timothy Wirth. The CERES coalition is supported by UNEP, the UN Fund for International Partnerships and other UN agencies.

For more information, see: www.incr.com. ♦

Other climate change news

In a report for WWF, Innovest Strategic Value Advisors estimates that many of the world's largest power companies could face costs equivalent to over 10% of their 2002 earnings if they do not adequately prepare for regulations associated with global warming. *Power Switch: Impacts of Climate Policy on the Power Sector* analyzes the financial risks and opportunities of existing and expected climate policies for 14 major international electric utilities. Key findings include:

- ♦ The general effect of global and national policies will be internalization of the costs of utilities' CO₂ emissions for the first time.
- ♦ At companies that have switched to cleaner nat-

ural gas and renewables (and that have maximized efficiency or plan to do so in the near future) not only can costs be reduced, but profits can be made.

♦ The sooner companies switch to cleaner fuels and increase efficiency, the more cost-effectively can CO₂ emissions be reduced.

For more information, see: www.innovestgroup.com/publications.htm.



Glaciers in the Alps, Africa and parts of Asia are melting due to climate change. This will have significant effects on water supply, according to reports presented at the annual conference of the Royal Geographical Society and the Institute of British Geographers in London. Research in the northern Tien Shan mountains of Kazakhstan, where glacier-fed rivers are a source of irrigation water, indicates that the 416 glaciers had lost nearly two cubic metres of ice per year between 1955 and 2000. There were also reports on Switzerland, New Zealand, Uganda's Rwenzori Mountains and the Himalayas.

For more information, see: www.rgs.org.



The World Resources Institute is the first NGO to become a charter member of the Chicago Climate Exchange (CCX). Jonathan Lash, the president of WRI, says this will "strengthen a pioneering effort to create market-based solutions to the problem of climate change...CCX helps us maintain our own organizational commitment to keep our net carbon dioxide emissions at zero." CCX began its market operations on 30 September 2003.

For more information, see: <http://newsroom.wri.org>. ♦

High returns on green buildings investment

Investment in green buildings will be repaid ten times over, according to what participants consider the most definitive cost-benefit analysis of such buildings. The study was conducted for 40 California government agencies by the Capital E group, the Lawrence Berkley Laboratory and participating agencies. Its findings, drawing on national data concerning 100 green buildings and a review of hundreds of earlier studies, has led the California Department of Finance to acknowledge for the first time the existence of financial benefits associated with green buildings' improved health and productivity and lower operational and maintenance costs. Based on early findings, the California Board of Regents supports the concept that all new construction in higher education should be green.

The California study concluded that in a building certified by the US LEED system, the financial benefits of green design and construction amount to over ten times the additional costs involved. "Energy savings alone exceed the aver-

age increased cost associated with building green," say the authors.

The California Energy Commission has also adopted new standards for energy efficiency in buildings, to take effect in 2005. These standards are expected to reduce the state's peak energy use by over 180 MW a year, enough electricity for 180,000 average homes.

In New York City a sustainable building design competition has been announced. Its purpose is to demonstrate how the principles of green building principles can be incorporated into existing and new buildings. The US Environmental Protection Agency (USEPA), the American Institute of Architects (AIA), Earthpledge, the Department of Environmental Protection of the State of New York and the Museum of the City of New York are sponsoring the competition.



For more information, see: www.cap-e.com (California government agencies report), www.energy.ca.gov/2005_standards/rulemaking/index.html (California Energy Commission) and www.nyc.gov/html/moec/html/competition.html (New York sustainable building competition). ♦

Phasing out leaded petrol in Africa

An international effort to phase out lead in petrol in Africa has gained momentum since last year's World Summit on Sustainable Development in South Africa (where it received strong support). According to a report issued at a recent meeting of the Partnership for Clean Fuels and Vehicles in Nairobi, Kenya, a growing number of countries are developing and implementing action plans for switching to unleaded petrol.

The Partnership is a new alliance of the fuel and vehicle industries, African and international NGOs, the United Nations (including UNEP) and other international organizations, and governments. Ethiopia, Ghana and Mauritania, which are among the most recent countries to join the effort, have set a date of January 2004 for removing lead from road vehicle fuels, participants at the Nairobi meeting were told.

Southern African countries are expected to announce similar national strategies following a workshop in Cape Town. Such phase-out workshops have been a key part of the lead phase-out campaign. Central African countries are expected to participate following a workshop planned for early 2004.

The report says Africa is on track for complete phase-out of leaded petrol by early 2006. In the longer term, the Partnership is working to improve air quality generally in the developing world by encouraging the use of cleaner fuels and improved technologies.

For more information, see: www.unep.org/pcf. ♦

Tighter transport pollution measures in India and China

The Government of India has announced a national motor fuel policy to reduce increasing air pollution. Ram Naik, the federal minister for petroleum and natural gas, says the goal is to meet Euro-III vehicle emission norms by 2010. This policy will require India's mostly state-run oil refineries to invest up to 300 billion rupees (US\$

6.7 billion) and automakers to invest 250 billion rupees. Sales of vehicles that do not meet these EU norms will be banned by April 2005 in 11 major cities, including New Delhi, and countrywide by April 2010. Cities will be required to meet the more stringent Euro-IV norms by 2010.

In China the city of Shanghai, working with the World Resources Institute and the Shell Foundation, has announced new measures to reduce traffic congestion and air pollution. Under the Shanghai Sustainable Transport Partnership, a set

of indicators will be developed to provide an overview of the condition of the city's transport system. The next step will be to establish a "bus rapid transit system" as an alternative to individual vehicle use. The WRI's Center for Transport and Environment, EMBARQ, is to undertake a feasibility study for the project.

For more information, see: <http://pib.nic.in/feature/fevr2003/fnov2003/f031120031.html> (India) and <http://embarq.wri.org> (Shanghai). ◆

Industry Updates



"Virtual university" for the steel industry

Amid growing concern among members of the International Iron and Steel Institute (IISI) about steel companies' ability to recruit high-calibre metallurgists, its board has approved a package of sophisticated e-learning resources concerned with steel processes and applications.

Citing the success of a pilot project begun in 2002 that involved two demonstration modules, the board authorized spending EUR 2.5 million on additional modules covering all aspects of steel-making (e.g. raw materials, properties, applications and manufacturing). The modules will address underlying scientific principles and the issues of recycling, environmental management and sustainability. Each module is to be developed by leading academics and steel industry experts.

Modules will be reviewed by panels of experts before they are integrated into a virtual "steel university." The steel university Web site (www.steeluniversity.org) will include directories of lecturers and researchers in academic institutions, research institutes and the steel industry.

The IISI is a non-profit research group. Members are steel-producing companies, national and regional federations, and steel research organizations in over 50 countries. These countries account for more than 75% of world steel production. The board met in Chicago during the IISI Annual Conference, which was attended by over 200 top executives of the world's major steel companies.

The board also reviewed progress on a steel sub-

sidy agreement being negotiated by the principal steel producing countries under the auspices of the Organisation for Economic Co-operation and Development (OECD). IISI member companies have been asked to make their host governments aware of the importance of respecting the timetable for achieving a full negotiating text of this agreement by the end of February 2004. IISI directors said the agreement should ban all subsidies for new capacity and for maintaining existing operations, while allowing those for social and environmental purposes associated with permanent plant closure.

In addition, the IISI has announced a global initiative called the "CO₂ Breakthrough Programme" to explore opportunities for radical reduction of carbon dioxide emissions in the steel industry.

For more information, contact: John Fawcett, General Manager, Communications, IISI, 120 rue Colonel Bourg, B-1140, Brussels, Belgium, Tel: +32 2 702 89 13, E-mail: press@iisi.be, Internet: www.worldsteel.org. ◆

European steel packaging industry meets 2005 recycling goal

The European steel packaging industry has announced an 8% increase in recycling between 2001 and 2002. It has already met its voluntary target of recycling an average 60% of materials in Europe by 2005.

Recycling rates in individual countries are: Belgium (93%), Austria, the Netherlands, Switzerland, Sweden and Luxembourg (70-80%), Norway (60%), France (57%), Italy (55%), Spain and Ireland (51%), the UK (42%), Finland (39%) and Portugal (28%). This sector has established a mandatory minimum recycling rate of 15% for 2005.

In Belgium's steel packaging recycling system there is a high rate of coverage for household collection services, with 90% of the population able to participate (100% participation is expected by the end of 2004).

For more information, see: www.apeal.org. ◆

Sustainable companies perform better

Recent studies by Innovest Strategic Value Advisors show that environmental leaders in the global food and drug retailing, food products, and computer industries are outperforming other companies in their sectors financially.

During the three-year period ending June 2003, global food and drug retail companies with above average Innovest environmental ratings had financial results some 22% higher (as a group) than those with below average ratings. Innovest relied on two rating tool. The EcoValue'21 analytical platform assesses environmental performance based on 60 indicators, including energy and waste management; the Intangible Value Asset (IVA) rating assesses social performance based on 80 indicators, including labour relations, commitment to fair trade, and use of minority and female suppliers.

Two UK retailers, Sainsbury's and Boots, were awarded the highest EcoValue'21 ranking, AAA (rankings roughly correspond to bond ratings, i.e. AAA to CCC). The two companies also had social ratings of AAA, placing them second and third on the EcoValue'21 list of top companies below Kesko of Finland. The US-based company Wild

Oats, which also received an AAA rating, was ranked fourth. It had an AA EcoValue'21 rating.

Out of 50 companies in the computer industry, the "sustainability leaders" substantially outperformed industry competitors. The report assesses a wide spectrum of key computer industry trends and market activity associated with social, environmental and corporate governance issues and their impacts on financial results and share price. Results for companies with above-average ratings, including the three leaders (HP, IBM and Dell), were around 19% higher than those for companies with below-average ratings. The best performing companies also had better results in other business performance and market valuation categories, including operating profit margin (greener companies averaged 4.3% compared with 1.5% for the others), return on equity (14.6% versus 3.6%) and return on assets (3.6% versus 1.6%).

For more information, see: www.innovestgroup.com. ◆

Tourism increasing in biodiversity "hot spots"

Tourism in the world's biodiversity "hot spots" more than doubled between 1990 and 2000, according to *Tourism and Biodiversity: Mapping Tourism's Global Footprint*, a new report by Conservation International. "Hot spots" are species-rich regions that face extreme threats to their biodiversity. In the decade studied tourism grew over 2000% in Laos and Cambodia, almost 500% in South Africa, over 300% in Brazil, Nicaragua and El Salvador, and 128% in the Dominican Republic.

The travel and tourism industry generates 11% of global GDP, employs some 200 million people and accounts for nearly 700 million international travellers per year. This figure is expected to double by 2020. Nature and adventure travel is one of the most rapidly growing segments within this industry. Most of the expansion is therefore likely to take place in these areas.

"We are at a crossroads in the Earth's last strongholds for biodiversity, where nature, struggling communities and the expanding world of tourism meet," says Costas Christ, Senior Director for Ecotourism at Conservation International and the report's lead author. "By linking tourism development with biodiversity conservation and the well-being of local communities, we can develop strategies that both conserve Earth's most endangered ecosystems and help make a significant contribution to alleviating poverty."

Tourism development is of growing importance to the economies of developing countries, where these high-biodiversity areas are often located. Tourism is a principal export of the world's 49 least developed countries and the number one export of 37. "Integrating biodiversity conservation into tourism planning can result in better business for the industry, while destroying the environment would be considered synonymous with killing the goose that lays the golden egg,"

says Russ Mittermeier, President of Conservation International.

In addition, the Sustainable Tourism Certification Network of the Americas, the first system of its kind, was recently launched in Brazil as part of an international partnership led by the Rainforest Alliance, the World Tourism Organization, The International Ecotourism Society and UNEP. Certification is perceived as a way to help assure that tourism operations accept environmental and social responsibility, particularly in fragile, biodiversity-rich areas. Increased nature tourism has stimulated the development of a growing number of independent certification programmes. The new network is designed to encourage dialogue among programmes and to provide a regional clearinghouse for certification information and technical assistance.

For more information, see: www.conservation.org and www.rainforest-alliance.org. ◆

New offshore wind farm in the Irish Sea

The UK's first major offshore wind farm began to operate in late November. The 30-turbine North Hoyle development, built in just eight months off the coast of northern Wales by National Wind Power, is expected to generate enough clean electricity to supply up to 50,000 homes per year. CO₂ emissions would therefore be reduced by about 160,000 tonnes per year.

National Wind Power is part of RWE Innogy, Britain's largest renewable energy producer. A sister company, npower, recently announced (with Greenpeace) the creation of the "npower Juice Fund" to encourage renewables projects. For every customer of 12 months' standing, npower will contribute £10 to the fund (up to a maximum of £500,000 per year).

For more information, see: www.natwindpower.co.uk. ◆

Corporate social responsibility in central and eastern Europe

A survey of publicly traded countries in central and eastern Europe has found that 22% of the largest firms in six of these countries disclose information about their operations' environmental impact. Carried out by the US-funded Partners for Financial Stability (PFS), the survey analyzed listed companies' disclosures concerning a broad range of corporate social responsibility (CSR) issues.

Reporting on CSR by CEE Listed Companies is based on English-language information available in the 2002 annual reports and on the Web sites of the ten largest listed companies (by market capitalization) in each of six countries scheduled for EU accession in 2004: the Czech Republic, Estonia, Latvia, Lithuania, the Slovak Republic and Slovenia. The PFS analysis includes accounting standards, corporate governance, and environ-

mental and social policies.

Once these countries become Member States, the listed companies will be required to comply with EU disclosure requirements on corporate responsibility issues. The East-West Management Institute, which commissioned the survey, emphasizes that these companies "will face more CSR-conscious investors and consumers, in a more global marketplace."

Of the companies surveyed, 80% have Web sites in English, 72% published their 2002 annual reports in English, 48% mentioned socially related sponsorship or patronage on their Web site or in the 2002 annual report, and 22% presented information on the environmental impact of their operations.

For more information, see: www.ewmi.hulcapitalmarkets_research.php. ◆

International biogas initiative in California

An international team has announced an initiative to explore and support biogas use in California. The California-Sweden Biogas Initiative is a joint effort by CALSTART and Business Region Göteborg, a Swedish industry organization that is one of the partners in that country's biogas programme. The Swedish biogas programme has installed 18 biogas stations supporting 2000 vehicles.

California has limited fuel supplies and some of the worst air pollution in the US. "When we look at the challenges of fuel supply and sources, severe pollution caused mostly by vehicles, and global warming impacts, biogas stands out," says John Boesel, President and CEO of WestStart-CALSTART, North America's largest transportation organization. "We need to focus on those solutions that can help solve multiple problems – not solve one and add to another. We think a fuel that can also turn waste materials from our farms and cities into a clean solution instead of smog – and which reduces global warming impact – needs our attention.

For more information, see: www.calstart.org. ◆

Green Power Market Development Group makes record energy purchases

Members of the World Resources Institute's Green Power Market Development Group purchased 97 MW in green power during the past year. The members of the Group are Alcoa, Cargill Dow, Delphi, Dow Chemical, DuPont, General Motors, IBM, Interface, Johnson & Johnson, Kinko's, Pitney Bowes and Staples. Purchases include:

◆ 36 MW of energy certificates for renewable wind, biomass and landfill gas, the largest such purchase in the US thus far. These certificates represent the amount of pollution avoided when elec-

tricity is generated from renewable resources rather than fossil fuels. (Purchasers: DuPont, Staples, Alcoa, Cargill Dow, Delphi Corporation, Interface, Johnson & Johnson, Kinko's, Pitney Bowes and the WRI.)

◆ 35 MW of hydrogen fuel cells, the world's largest corporate fuel cell purchase to date. (Purchaser: Dow Chemical, from General Motors.)

◆ 11 MW of wind power. (Purchaser: Johnson & Johnson, from sources in Texas and on the East Coast. Johnson & Johnson thus becomes one of the largest corporate wind power users in the US.)

Kinko's and IBM also increased their use of wind power by 4 MW.

The Green Power Market Development Group was convened by the WRI and Business for Social Responsibility in 2000. It is committed to develop 1000 MW of new cost-competitive green power for corporate markets between 2000 and 2010.

For more information, see: www.thegreenpowergroup.org. ◆

E-waste recycling initiatives

Not long before he was voted out of office, California Governor Gray Davis signed an e-waste recycling act intended to eliminate existing stockpiles of the cathode ray tubes found in computer monitors and televisions by the end of 2007.

The California Electronics Waste Recycling Act establishes a management and handling programme. Retailers and manufacturers will finance the programme by charging fees on sales of the electronic devices covered. Fees will be based on actual recycling costs. As of 1 July 2004 they will be US\$ 6-10 per device. The revenue will be paid

into an Electronic Waste Recovery and Recycling Account, which will fund payments to waste collectors and recyclers.

The California Integrated Waste Management Board may impose fines of up to US\$ 5000 for violations. Beginning in July 2005, electronic product manufacturers must report approximate annual sales of covered products.

In addition, the Cellular Telecommunications and Internet Association, a US trade association, has launched an initiative to increase recycling of wireless telephones. There are about 150 million wireless subscribers in the US. On average, they switch to new telephones every 18 months. The CTIA campaign will encourage them to donate old models to charity or recycle them. CTIA members have pledged to enhance existing recycling programmes and to make efforts to limit new products' environmental harm.

For more information, see: www.ciwmb.ca.gov and www.recyclewirelessphones.com. ◆

USEPA creates WasteWise Hall of Fame

The US Environmental Protection Agency's WasteWise programme has established a WasteWise Hall of Fame. The first three inductees will be Eastman Kodak, the Public Service Enterprise Group and Virco Manufacturing. The Hall of Fame will now be the highest honour awarded in the nine-year-old WasteWise voluntary partnership programme.

WasteWise helps over 1300 participants find practical ways to reduce municipal solid waste and improve financial performance. In order to be

inducted into the Hall of Fame, an organization must have been a long-time programme partner and have reported outstanding waste reduction results for many years.

For more information, see: www.epa.gov/epaoswer/non-hw/reduce/wstewise. ◆

Regulation drives environmental technology innovation

A new study reports that regulation is one of the most important drivers of innovation in the environmental technology field. Margaret Taylor, Assistant Professor of Public Policy at the University of California at Berkeley, explains that the six-year study was carried out to assess how government actions are related to innovation in pollution reduction technologies.

"Our findings indicate that government regulation appears to stimulate invention more effectively than government-sponsored research support," says Professor Taylor. "Indeed, even the anticipation of regulation spurs inventive activity."

The study, published in *Environmental Science and Technology*, analyzes the evolution of emission controls for sulphur dioxide (SO₂) from burning of fossil fuels and nitrogen oxide (NO) from vehicles. It concludes that emission control technologies might never have been developed, or would have evolved slowly, without the strict emission limits that created a market for them.

For more information, see: www.nature.com/nsul/030915/030915-4.html#b1 and <http://pubs.acs.org/journals/esthag>. ◆

UNEP Focus



Institute for Training and Research.

Representatives of 150 governments and of NGOs and intergovernmental organizations also attended the meeting. Consultations are expected to lead towards a high-level international conference in late 2005.

In 2001 the OECD estimated that the chemical industry accounts for nearly 10% of international trade and employs over 10 million people, and that global chemical sales increased ninefold between 1970 and 2000 (to US\$ 1.5 trillion). Sales are expected to continue to grow, with production shifting increasingly to developing countries. A 2002 World Bank study emphasized the strong link between exposure to toxic substances and poverty.

One of the main objectives of the SAICM process is to ensure that chemical safety is recognized as intrinsic to sustainable development.

For more information, contact: Tim Higham, Regional Information Officer, UNEP Regional Office for Asia and the Pacific, Bangkok, Tel: +66 2 288 2127, Mobile: +66 9 1283803, E-mail: higham@un.org, Internet: www.chem.unep.ch/saicm. ♦

New television series profits from UNEP's know-how

"EcoWatch," a new environmental television series produced by the Florida-based United Media Communications Group, will use UNEP's knowledge, expertise and scientific resources for story ideas and content. The series, which will focus on some of the greatest threats facing humankind and propose solutions, will reach an estimated 60 million American homes on cable television networks such as the Outdoor Life Channel, as well as through syndication. "EcoWatch" will also be broadcast in some US regional markets on CNN and FOX News. It will reach a worldwide audience through international syndication on WorldNet.

The purpose of the series is to show in a down-to-earth way how everyday decisions by individuals, companies and governments affect the environment today and for future generations.

For more information, contact: Rebecca McKinnon at UMCG, Tel: +1 561 347 0607; or Eric Falt at UNEP, Tel: +254 2 62 3292, E-mail: eric.falt@unep.org. ♦

Strategic international chemicals management: planners meet in Bangkok

A major effort to change the way the world deals with chemicals got under way in Bangkok in mid-November, when over 500 delegates concerned with environment, health, agriculture, industry, labour, foreign affairs and development met in a preparatory committee to develop a "Strategic Approach to International Chemicals Management." The SAICM, initiated by UNEP, was endorsed at last year's World Summit on Sustainable Development in South Africa.

UNEP has brought together a broad range of international organisations to oversee the SAICM process. Represented at the Bangkok "PrepCom" as SAICM steering committee members were UNEP, the Intergovernmental Forum on Chemical Safety, the Food and Agriculture Organization, the International Labour Organization, the Organisation for Economic Co-operation and Development (OECD), the World Health Organization, the World Bank, the UN Industrial Development Organization (UNIDO), the UN Development Programme (UNDP) and the UN

Convention to protect the Caspian Sea signed

Ministers from Azerbaijan, Iran, Kazakhstan, Russia and Turkmenistan met in Tehran in early November to adopt and sign the Framework Convention for the Protection of the Marine Environment of the Caspian Sea. The first legally binding treaty on any subject to be adopted by the five neighbours, it will coordinate regional efforts to reverse an environmental crisis resulting from habitat destruction, pollution, and the overexploitation of fish and other sea life.

The convention was negotiated under UNEP auspices. "By ensuring the sustainable use of the Caspian Sea's valuable living resources," says Shafqat Kakakhel, UNEP Deputy Executive Director, "the convention will contribute enormously to the well-being of millions of people living in this region."

The Caspian Sea is under severe stress from industrial pollution, toxic and radioactive waste, agricultural runoff, sewage, and leaks from oil drilling and refining. Other threats include overfishing of sturgeon for caviar, overexploitation of other sea resources, and destruction of local biodiversity (some 400 species are unique to the Caspian and its surroundings). Moreover, rising water levels threaten coastal communities and ecosystems.

The convention must be ratified by the participating governments (a process that could take a couple of years) before it is legally binding. Once it is in effect, signatory countries will be required to prevent and reduce pollution, restore the environment, use the Caspian's resources sustainably and reasonably, and cooperate with one another and with international organizations.

The Caspian Environment Programme was established in 1995 by the five governments con-

If There Must Be War, There Must Be Environmental Law

The following is an excerpt from UNEP Executive Director Klaus Toepfer's statement on 6 November, the second annual International Day for Preventing Exploitation of the Environment in War and Armed Conflict.

The environment has, since the dawn of time, been one of the casualties of war. In the fifth century BC, the retreating Scythians scorched the earth and polluted drinking water supplies to slow the advancing Persians. During the Vietnam War of the 1970s, the United States used defoliants to expose enemy positions in heavily forested areas. During the first Gulf War of the early 1990s, Iraqi troops deliberately sabotaged oil installations.

While humankind's ability to wage war continues apace, international rules and laws designed to minimize the impact on the Earth's life support systems have lagged far behind. We have the four Geneva Conventions of 1949 that do have environmental implications. However, their primary aims are the protection of civilians, prisoners of war, the sick and wounded and cultural objects.

This does not mean that there have not been attempts to specifically address the environ-

mental aspects of war. But most legal experts have concluded that these fall far short of what is needed.

Civilian casualties, the displaced and the dispossessed, will be and should be the focus of our attention during and immediately after hostilities cease. But the environment, which has a key role in ensuring the stability of a country and its citizens, cannot be ignored.

The world is slowly waking up to the powerful links between a healthy environment and national and regional stability, and there are many ways in which the world can improve the security of natural resources and nature's life support systems during conflict.

Should striking an oil tanker sailing near a coral reef be deemed unacceptable or a legitimate act of war? Does the crippling of an enemy's oil supplies justify the killing of an ecosystem upon which hundreds, maybe thousands, of the poor rely for food in the form of fish? These are the kinds of issues that the world needs to grapple with. International law is in its infancy, war is not. It is time for international law, or at the very least the rules of engagement, to achieve some kind of maturity if not full adulthood.

cerned, following an environmental assessment by UNEP, the UN Development Programme (UNDP) and the World Bank. The convention will strengthen and support this programme.

For more information, contact: Nick Nuttall at UNEP, Tel: +254 2 62 3084, Mobile: +254 733 632 755, E-mail: nick.nuttall@unep.org, Internet: www.caspianenvironment.org. ◆

Winners of the Sasakawa Environment Prize

Xie Zhenhua (China) and Dener Jose Giovanini (Brazil) are co-winners of this year's UNEP Sasakawa Environment Prize.

Mr. Xie, as Executive Vice Chair of the China Council for International Cooperation on Environment and Development and Minister of State Environmental Protection Administration of China, has long worked to steer China on an environmentally friendly path.

Mr. Giovanini, who founded the National Network for Combating Wild Animal Trafficking, developed an innovative approach to curbing illegal traffic in wildlife. It has become a model not only in Latin America, but also in the rest of the developing world. He and Mr. Xie will share the US\$ 200,000 prize.

For more information or to request nomination forms for the 2004 prize, contact: Nick Nuttall (see above). ◆

Environmental project in Afghanistan

At the request of the Transitional Islamic Government of Afghanistan, UNEP, the European Commission and Afghanistan's Ministry of Irrigation, Water Resources and Environment have launched a EUR 4.27 million programme to promote good environmental governance and rehabilitation of the country's environment.

The European Commission is providing EUR 3.75 million for the two-phase project, which will address key priorities in the transitional government's national development budget. These priorities reflect many of the recommendations of UNEP's January 2003 post-conflict environmental assessment, which considered that much of Afghanistan's environment had been degraded to an alarming extent with potentially serious implications for human health.

In the first phase, under the EC's Public Administration Programme, a specialized Afghan environmental administration will be organized and trained. In the second, to begin in 2004, further capacity building will take place in the ministry's Environment Department and other pressing environmental needs will be addressed, such as the development of a protected areas network (and related management plans) and environmental education at the university, secondary, primary and community levels.

The project will involve a team of six Afghan and international experts, supported by a pool of short-term experts.

For more information, contact: Eric Falt, Tel: +254 2 62 3292, Mobile: +254 733 682 656, E-mail: eric.falt@unep.org; or Michael Williams, Tel: +41 22 917 8242/8196/8244, Mobile: +41 79 409 1528, E-mail: michael.williams@unep.ch. ◆

New reports from conservation monitoring centre

UNEP's World Conservation Monitoring Centre (WCMC) has published two new marine-related surveys and announced a strategy to "mobilize and connect networks of data-rich organizations."

The World Atlas of Seagrasses draws on the work of international researchers to produce the first ever global estimate of the extent of the underwater meadows of seagrass that skirt the world's coasts. Their estimate of 177,000 square kilometres is the equivalent of an area just two-thirds the size of the UK. The editors also estimate that this area is 15% smaller than it was ten years ago. Manatees, dugongs, green sea turtles and other species, many already threatened, are at increased risk from the destruction of these unique habitats.

Seagrasses are a mixed group of flowering plants – not seaweed – that grow submerged in large meadows in tropical and temperate seas. Their importance as habitat has previously largely gone unrecognized.

The WCMC's *From Ocean to Aquarium: The Global Trade in Marine Ornamentals*, too, is unprecedented in its comprehensiveness. Over 20 million tropical fish per year, belonging to 1471 species, are harvested to supply the marine aquarium trade in Europe, the US and (to a lesser extent) Japan. A further 9-10 million animals including molluscs, shrimps and anemones, belonging to some 500 species, and up to 12 million stony corals are also harvested for this pur-

pose. Trade in aquarium creatures amounts to US\$ 200-330 million a year, the report says.

From Ocean to Aquarium highlights the environmental risks involved and the economic and conservation opportunities that a well managed aquarium marine trade could represent. Data in the report come from the Global Marine Aquarium Database, a joint UNEP-WCMC effort, the Marine Aquarium Council (MAC), and members of various aquarium trade associations. The database (www.unep-wcmc.org/marine/GMAD) contains over 100,000 records from global aquarium import and export companies. MAC developed the world's first marine life certification system, which enables consumers to select retailers that sell organisms that comply with internationally approved standards.

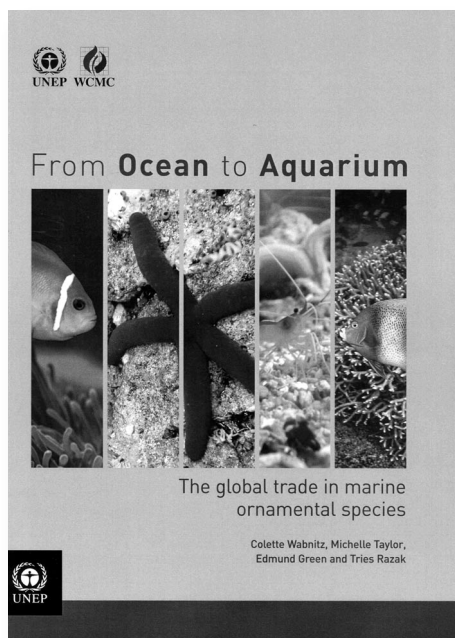
Databases such as GMAD will be reinforced by the WCMC's new Proteus Strategy, the purpose of which is to use the Internet to increase the availability of high-quality conservation information.

GBP 1.2 million has been pledged by Anglo American, BP, Premier Oil, Rio Tinto and Vodafone Group Foundation to get the Proteus Strategy off the ground. The Cooperative Insurance Society, HSBC and the Total Foundation are also collaborating.

For more information about *The World Atlas of Seagrasses*, including maps and photographs, see: www.unep-wcmc.org/marine/seagrassatlas. The atlas is available through www.ucpress.edu/books/pages/10168.html.

From Ocean to Aquarium is available through www.unep-wcmc.org/resources/publications/UNEP_WCMC_bio_series/17.htm.

For more information, contact: Robert Bisset, UNEP Spokesperson for Europe, Tel: +33 1 44 37 76 13, Mobile: +33 6 22 72 58 42, E-mail: robert.bisset@unep.fr; or Will Rogowski, Head of Marketing and Communications, UNEP-WCMC, Tel: +44 1223 277 314, E-mail: will.rogowski@unep-wcmc.org. ◆



State of the environment reports on Bangladesh in local-language versions

UNEP has introduced a local-language version of its state of the environment report on Bangladesh. A similar assessment of the capital, Dhaka, is being prepared. Since the state of the environment report was published in English two years ago, it has been widely used by government agencies, NGOs and research institutes. It identifies land degradation, water quality and quantity, air pollution, biodiversity loss and the threat of natural disasters as key environmental issues (English version available on www.ricap.unep.org/reports/soe/bangladeshoe.cfm).

UNEP Regional Director Surendra Shrestha says it is hoped that translating this report into the Bangla language will increase its value as a tool for environmental action planning, policy-setting and resource allocation. He also says the Dhaka

City state of the environment report, due for completion in March 2004, will build capacity for integrated environmental assessment methodologies at local government level.

Both reports have been prepared with the Ministry of Forest and Environment, the Bangladesh Centre for Advanced Studies and Dhaka Municipality Corporation.

For further information, contact: *Tim Higham* (see above). ◆

Dams and Development Forum to continue discussions

At its second meeting, the UNEP-facilitated forum that seeks to reconcile widely opposing views on balancing the benefits of dams with their risks and drawbacks agreed to continue discussions with stakeholders. The Dams and Development Forum brings together approximately 100 representatives from governments, civil society and industry.

Commenting on the forum's work, Klaus Toepfer (UNEP's Executive Director) says, "It is vital that we learn how to strike a balance between benefits and impacts. New dams will have to build if we are to meet the Millennium Development Goals on access to water and sanitation – but these must be 'good' dams and not 'bad' ones, dams that promote development without damaging the environment. Dialogue amongst key stakeholders is the best path to this goal."

UNEP's Dams and Development Project, which serves as secretariat to the forum, has secured funding and pledges of over US\$ 2.5 million from Germany, the Netherlands, Sweden, Switzerland and the United Kingdom.

For more information, contact: *Michael Williams* (see above). ◆

Further study on Karachi oil spill recommended

The international team assessing environmental damage caused by the oil spill from the Greek-owned tanker *Tasman Spirit* has recommended that Pakistan negotiate with those responsible the financing of further scientific investigation into the extent of damage to ecosystems in the Karachi area, in line with advice from UNEP and the IUCN – World Conservation Union.

The preliminary assessment report estimates that the spill affected at least 40 square kilometres, despite intensive international efforts. Extensive hydrocarbon contamination, fish kills, cell damage in phytoplankton, reduced numbers of marine organisms on Clifton Beach, and possible loss of regeneration in mangroves are documented.

The report recommends that a long-term, three-phase Natural Resource Damage Assessment be coordinated by the Sindh Environmental Protection Agency, with continuing technical advice from IUCN Pakistan and UNEP and the support

of local scientists. It also recommends that Pakistan strengthen its capacity to respond to oil spills.

For more information, contact: *Nick Nuttall* (see above). ◆

UNEP Division of Technology, Industry and Economics (DTIE) HIGHLIGHTS

Sustainable consumption and production forum in China

China's first International Forum on Sustainable Consumption and Production Patterns took place at Changsha, Hunan Province, in December. The meeting was co-sponsored by the State Environmental Protection Administration, the government of Hunan Province, the China Science and Technology Association and UNEP. It focused on:

- ◆ the current global situation regarding sustainable production and consumption;
- ◆ environmentally sound technologies, products and services, and the potential for a new kind of industrialization;
- ◆ ways to promote more sustainable consumption.

For more information, contact: *Ms. Jiang Yanping*, Chinese Society for Environmental Sciences, E-mail: *houxsong@263.net*; or *Mr. Xingji Xiao*, UNEP DTIE, 39-43 quai André Citroën, 75739 Paris Cedex 15, France, Fax: +33 1 44 37 14 74, E-mail: *sc@unep.fr*. ◆

Progress on agricultural trade assessment project

As a follow-up to a February meeting that reviewed the first draft of country projects on the integrated assessment of trade liberalization in the agriculture sector, UNEP convened a second review meeting in November. The meeting's main objectives were to review and comment on the results of country stud-

ies, and on the final draft of a reference manual.

The reference manual on integrated assessment of trade-related policies for the agriculture sector will be published soon. It is intended to be a practical tool for policy-makers and practitioners.

For more information, contact: *Economics and Trade Branch, UNEP DTIE, International Environment House, 15 Chemin des Anémones, CH-1219, Geneva, Switzerland, Tel: +41 22 917 8243, E-mail: *etb@unep.ch*, Internet: *www.unep.ch/letu**. ◆

More pesticides and asbestos added to PIC list

The Intergovernmental Negotiating Committee for the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade has added two pesticides and four forms of asbestos to the PIC list.

The pesticides are DNOC and dustable powder formulations that contain a mixture of certain pesticides, including benomyl at or above 7%, carbofuran at or above 10% and thiram at or above 15%. The four forms of asbestos are amosite, actinolite, anthophyllite and tremolite. Crocidolite, another form, is already on the list.

Delegates postponed a decision on chrysotile asbestos, which represents 94% of world asbestos consumption, until a one-day meeting in Geneva on 18 September 2004. That meeting will be followed immediately by the first session of the Conference of the Parties to the Convention (20-24 September).

The Rotterdam Convention Interim Chemical Review Committee will meet in Geneva in February to consider whether to recommend adding additional chemicals and pesticides to the list. On the committee's agenda are tetraethyl and tetramethyl lead, which are petrol additives, and parathion, a widely used pesticide. The committee's recommendations will be forwarded to the Conference of the Parties for a decision.

For further information, contact: *Michael Williams* (see *UNEP Focus*, above) or see *www.pic.int*. ◆

UNEP opens Beijing office

Speaking at the opening of UNEP's new office in China, Executive Director Klaus Toepfer emphasized that the move was a response to progress being made in meeting environmental challenges in China and to the challenges ahead. "With 1.3 billion people and an official goal to quadruple economic growth by 2020," he said, "China's environmental performance will not only determine the well-being of its own people but will have consequences for the whole planet."

The new office, which is located alongside other UN agencies in Beijing, will work closely with the State Environmental Protection Administration of China, ministries, interna-

tional agencies and NGOs on programmes related to environmental assessment, law, education and training, management, technology transfer, and innovation and natural disaster prevention. It will also develop and support Global Environment Facility projects.

Earlier, Mr. Toepfer and Environment Minister Xie Zhenhua – a co-winner of UNEP's Sasakawa Environment Prize (see above) – chaired the first Asia-Pacific Sub-Regional Environmental Policy Dialogue, a roundtable designed to provide feedback on critical emerging issues and perspectives in the region.

For more information, contact: *Tim Higham* (see above).

Energy initiative launched at Tokyo Roundtable

Citing last summer's deadly European heat wave and recent power failures in North America and Europe, UNEP Executive Director Klaus Toepfer has launched the Sustainable Energy Finance Initiative (SEFI). Its purpose is to engage the financial sector to invest in renewable energy and energy efficiency.

Mr. Toepfer told over 600 bankers, financiers and other members of the financial sector at the UNEP Finance Initiatives Global Roundtable in Tokyo that energy security and climate change are two of the world's most pressing issues and will not be solved "by the mindset that created them."

"Instead of climate change," said Mr. Toepfer, "we need to create the climate for change." While sustainable energy technologies such as solar cells and wind generators have advanced rapidly, the transaction costs and market uncertainty for many renewable energy projects has led most financiers to adopt a "wait and see" attitude, a situation which is compounded by general lack of information, experience and the tools needed to quantify, mitigate and hedge project and financial product risks.

With support from the United Nations Foundation, SEFI will help mainstream financiers overcome these barriers and learn to consider renewable energy and energy efficiency not just as niche investments, but as key components of secure energy systems based on truly sustainable forms of energy.

SEFI builds on efforts by UNEP and the Basel Agency for Sustainable Energy (BASE) to foster new approaches to financing sustainable energy in developing countries. Through various programmes (e.g. see page 24) UNEP has encouraged "financial catalysts" that include seed financing and enterprise development, financing subsidies, guarantee facilities and financier advisory support services.

A statement issued at the end of the Tokyo roundtable also call for development of a UNEP FI Task Force for the Asia Pacific region. The statement contains the "Tokyo Principles Towards A Sustainable Society," outlining actions the financial sector could take to promote sustainable development. The Tokyo Principles urge financial institutions to:

- ◆ give appropriate consideration to the social and/or environmental impacts of their activities;
- ◆ endeavour to actively select businesses that contribute to environmental protection and sustainable development, and support these businesses in their investment, lending or insurance activities;
- ◆ disseminate such activities in the development and sales of insurance, asset management and other financial products;
- ◆ incorporate the most appropriate management policy, reporting guidelines and other governance structures, and be alert to their direct and indirect environmental impact;
- ◆ endeavour to take part in dissemination of information on sustainable development.

For more information, contact: Eric Usher, UNEP DTIE (see address above), E-mail: eric.usher@unep.fr, Internet: <http://sefi.unep.org>. ◆

Summary of African banking report available

The Executive Summary of the forthcoming *Sustainability Banking in Africa* is available on the UNEP Finance Initiatives Web site. The report is being produced by the UNEP FI African Task Force (created in January 2002) and the Centre for Sustainability Investing of the African Institute of Corporate Citizenship. It is intended to serve as a benchmark discussion document outlining challenges and opportunities for developing sustainable banking practices in Africa, as well as to help promote the work of the task force.

For more information, contact: Niambh O'Sullivan, Economics and Trade Branch, UNEP DTIE (see above), E-mail: niambh.osullivan@unep.ch, Internet: <http://unepfi.net>. ◆

Ecoinnovation Week at Mexican university

UNEP, in collaboration with Universidad Iberoamericana of Mexico, organized an "Ecoinnovation Week" as part of recent celebrations of the university's 60th anniversary. The design school of the university worked with UNEP to demonstrate the relevance of eco-design to everyday life.

"Ecoinnovation Week" included conferences on the importance of sustainable development and on how eco-design can be a vehicle for achieving it; eco-design as a lifestyle; Mexican and international eco-design experience; and trends in industry in Latin America and the Caribbean.

There were three workshops and an exhibition where organizations (e.g. Grupo BIO, Bio Design and UNEP) displayed products and reference materials. About 175 people from universities, NGOs and industry attended the event.

For more information, contact: Diego Masera, Industry Officer, UNEP Regional Office for Latin America and the Caribbean, E-mail: diego.masera@pnuma.org. ◆

New Life Cycle Initiative Network newsletter

UNEP has launched a quarterly e-mail and Web-based newsletter called the Life Cycle Initiative Network (LC.net) to keep the interested public informed about the UNEP/SETAC Life Cycle Initiative and related topics.

The first issue contains articles on activities during the year since the Life Cycle Initiative began, including the SETAC-Europe annual meeting in Hamburg last spring, UNEP representatives' par-

ticipation in the UN Expert Meeting at Marrakech, Morocco and LCA tools for SMEs in developing countries. There are several other articles and tutorials.

For more information, or to be put on the mailing list, contact: UNEP Production and Consumption Branch, E-mail: sc@unep.fr, Internet: www.unep.org/pcl/sustain/lcinitiative/LC_net.htm. ◆

Ozone Day 2003

UNEP, the World Health Organization, the World Meteorological Organization and the International Commission for Non-Ionizing Radiation Protection are partners in the Intersun Project. These organizations marked the International Day for the Preservation of the Ozone Layer (16 September) by introducing a set of educational materials for children, families and educators concerned with protecting children from the risks of overexposure to ultraviolet radiation.

There are three booklets in the School Sun Protection Package: a guide for schools and teachers on why and how to develop effective sun education programmes, practical teaching materials for primary school students, and evaluation materials for use in assessing the effectiveness of primary school sun education programmes.

The 2003 International Ozone Day theme was "Save O₃ur Sky: There is a Hole Lot More to Do for Our Children." On UNEP's OzonAction Web site are additional resources for raising awareness among children.

International Ozone Day commemorates signing of the Montreal Protocol on Substances that Deplete the Ozone Layer in 1987. Other 2003 activities to mark the signing included awards to National Ozone Units in China, Fiji, Jamaica and Senegal and distribution of a special video for national television broadcasts in 134 countries.

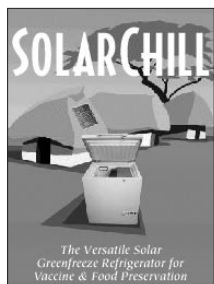
In two related developments:

◆ UNEP Executive Director Klaus Toepfer announced the appointment of Maria Nolan as Chief Officer of the Multilateral Fund for Implementation of the Montreal Protocol, which assists developing countries to comply with the control measures of the Protocol. Previously, Ms. Nolan was head of Stratospheric Ozone Policy in the UK, policy adviser to UNEP's Methyl Bromide Technical Options Committee, president of the Montreal Protocol's Implementation Committee and co-chair of the Protocol's Open Ended Working Group. She was instrumental in developing UK policy on reducing emissions of hydrofluorocarbons, which is now used as a basis for EU-wide measures.

◆ A decision on whether to grant "critical use exemptions" in the developed world for the ozone-depleting substance methyl bromide was deferred until a special meeting in Montreal in March 2004. Delegates at a meeting in Nairobi decided more time was needed to discuss how large such exemptions should be. Under the Montreal Protocol developed countries have agreed to phase out their methyl bromide use by 1 January 2005, but

some farmers in North America and Europe say available alternatives are not technically or economically feasible.

For more information, contact: Rajendra Shende, Energy and Ozone Action Programme Unit, UNEP DTIE (see address above), Tel: +33 1 44 37 14 59, E-mail: Rajendra.Shende@unep.fr, Internet: www.uneptie.org/ozonaction. ◆



SolarChill vaccine coolers to be field tested

Field testing of prototype SolarChill vaccine coolers will begin in Senegal, Indonesia and

Cuba in January 2004, under protocols agreed in Paris at the SolarChill project's fourth planning meeting. The purpose of the project is to deliver vaccines and refrigeration to the rural poor, especially children. This will be accomplished by developing environmentally sound, technologically reliable, affordable devices powered using renewable sources, diesel fuel or grid energy.

The SolarChill technology, which is publicly owned, will be available free to any company interested in producing SolarChill units. It was developed through an unusual partnership involving UN agencies (WHO, UNICEF, UNEP), a German government agency (Deutsche Gesellschaft für Technische Zusammenarbeit, GTZ), NGOs (Greenpeace and the US-based Program for Appropriate Technologies in Health, PATH), a research establishment (the Danish Technological Institute) and private companies (Vestfrost, Danfoss and Vibocold, all Danish).

Participants in the planning meeting also agreed on an outreach and technology transfer strategy and finalized the project partners' cooperation agreement.

For more information, contact: Rajendra Shende, UNEP DTIE (see above). ◆

"youthXchange" project launched in Korea

The Korean Consumer Association, in partnership with UNEP, recently sponsored an international seminar to launch the "youthXchange" project in the Republic of Korea. The Asia-Pacific Regional Youth Environment Camp and Conference, held in Seoul, was aimed at making young people aware of environmental problems in their country associated with emerging mass consumption lifestyles.

This was the first time most of the 60 participants had considered their consumption patterns and related issues. The camp included practical experience, such as making tofu or cooking in a forest in the rain with a fire started using no more than three matches. It is intended that this event will be the first in a series of annual workshops organized for and by youth.

For further information, contact: Isabella Maras, UNEP DTIE (see address above), E-mail: sc@unep.fr. ◆

GRI sector guidelines for telecoms

The Global Reporting Initiative (GRI) has released the pilot version of the Telecommunications Sector Supplement, to be used in conjunc-

Industry association holds 20th annual meeting

UNEP Executive Director Klaus Toepfer and representatives of industry associations from around the world gathered in Paris at DTIE headquarters in October for the 20th annual Consultative Meeting with Industry Associations. UNEP invited industry association representatives who participated in the two-day meeting to follow up on the self-assessment process they began in preparation for the World Summit on Sustainable Development. To this end it was proposed that industry representatives take part in an activity, beginning next year, that will focus on building capacity at regional level, strengthening reporting capabilities, and fostering stakeholder engagement.

For more information, contact: Daniel Puig, UNEP DTIE (see address above), Tel: +33 1 44 37 76 29, E-mail: daniel.puig@unep.fr, Internet: www.uneptie.org/outreach/home.htm.

tion with the GRI 2002 Sustainability Reporting Guidelines. It was developed in cooperation with the Global e-Sustainability Initiative (GeSI), a UNEP-supported information and communications technology industry initiative. The Supplement comprises three sets of documents: the GRI Sustainability Report Guidelines, sector supplements and technical protocols.

The GRI recently reported that the number of companies releasing reports on sustainability has reached 300 and could double by 2005.

For more information, contact: Cornis Van der Lugt, UNEP DTIE (address above), E-mail: cornis.lugt@unep.fr, Internet: www.globalreporting.org. ◆

Books & Reports



General

Intellectual Property Rights and the Environment

Subtitled "The Role of Intellectual Property Rights in Preserving the Spirit of Innovation, Experimentation and the Conservation Ethic at the Grassroots Level," this monograph was produced by UNEP DTIE's Economics and Trade Branch. Intellectual property rights are examined with respect to the need to recognize and reward innovation by small-scale innovators in developing countries.

A.K. Gupta (2003). *UNEP. Available from the Economics and Trade Branch, International Environment House, 15 Chemin des Anémones, CH-1219, Geneva, Switzerland, Tel: +41 22 917 8243, E-mail: etb@unep.ch, Internet: www.unep.ch/etu. Pbk., 48p. ISBN 92-807-2338-3.*

Voluntary Approaches for Environmental Policy: Effectiveness, Efficiency and Usage in Policy Mixes

In members of the Organisation for Economic Co-operation and Development (OECD) as well as in other countries, voluntary approaches to achieving environmental targets increasingly supplement or replace other environmental policy instruments. Opinions differ on the extent to which policy-makers can – or should – rely on voluntary approaches. This OECD report assesses the use of such approaches through case studies and an extensive search of the literature. Case studies in Canada, Denmark, Japan and the United States were carried out especially for the report.

(2003). *OECD Publications, 2 rue André Pascal, 75775 Paris Cedex 16, France, Tel: +33 1 45 24 81 67, Fax: +33 1 45 24 19 50, E-mail: sales@oecd.org, Internet: www.oecd.org/bookshop. Pbk., 143p. ISBN 92-64-10177-2.*

Changing Landscapes

Changing Landscapes tells the history of the International Tropical Timber Organization and reviews the evolution of policies for sustainable use of tropical forests. It introduces ecological, historical and socio-economic trends that have influenced forest management approaches, explores the political forces that shape the timber trade and its regulation, and shows how forests are affected by climate, agriculture, demographics and war. The author closes by arguing that future planning cannot treat forests in isolation but must consider



them as part of an integrated approach.

D. Poore (2003). *Earthscan Publications Ltd., 120 Pentonville Road, London, N1 9JN, UK, Tel: +44 20 7278 0433, Fax: +44 20 7278 1142, E-mail: earthinfo@earthscan.co.uk, Internet: www.earthscan.co.uk. Pbk., 290p. ISBN 1-85383-991-4.*

Environmental Impact Assessment: Practical Solutions to Recurrent Problems

The author identifies eight problems encountered in carrying out environmental impact assessments (EIAs) and proposes practical solutions. Mainly aimed at EIA practitioners, *Environmental Impact Assessment* has chapters on how to make EIAs more rigorous, rational, substantive, practical, democratic, collaborative, ethical and adaptive; each "how to" is divided into sections such as highlights, insights, defining the problem, assessing process effectiveness, and summing up. The final chapter is devoted to connecting and combining the processes discussed in the "how to" chapters.

D.P. Lawrence (2003). *John Wiley & Sons, 1 Oldlands Way, Bognor Regis, West Sussex PO22 9SA, UK, Tel: +44 1243 843291, Fax: +44 1243 843302, E-mail: cs-books@wiley.co.uk, Internet: www.wileyurope.com. Hbk., 562p. ISBN 0-471-45722-1.*

Eco-industrial Strategies: Unleashing Synergy Between Economic Development and the Environment

This collaborative work, with its vision of "eco-industrial parks," introduces a concept still largely in its infancy: linking manufacturers in an industrial ecosystem where economic and environmental excellence can flourish. Inspired in part by eco-parks such as that at Kalundborg, Den-

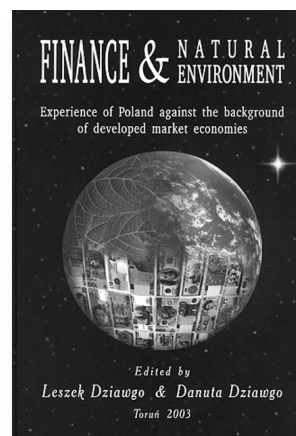
mark, as well as by the development of virtual business networks, *Eco-industrial Strategies* addresses the main issues eco-industrial development issues, identifies stakeholders and their roles, and provides a compendium of case studies. Co-editor Edward Cohen-Rosenthal, who died as this volume was being prepared, was founding director of the Work and Environment Initiative at the Cornell Center for the Environment in Ithaca, New York. Mr. Cohen-Rosenthal was a pioneer in the field of industrial ecology.

E. Cohen-Rosenthal and J. Munikow, eds. (2003). *Greenleaf Publishing Ltd., Aislewood Business Centre, Aislewood's Mill, Nursery Street, Sheffield S3 8GG, UK, Tel: +44 114 282 4375, Fax: +44 114 282 3476, E-mail: info@greenleaf-publishing.com, Internet: www.greenleaf-publishing.com. Hbk., 384p. ISBN 1-874719-62-4.*

Finance and Natural Environment: Experience of Poland against the background of developed market economies^a

Eco-offers of Banks and Investment Funds: Poland and International Trends^b

Two new books by Professor Leszek Dziaigo of Poland's Nicolaus Copernicus University are concerned with the relationship between finance and the environment in that country. *Finance and Natural Environment* is a collection of essays by European and Japanese specialists addressing the adaptation of financial institutions to a society in which environmental protection is given high priority. It is edited by Professor Dziaigo and Danuta Dziaigo, both associated with the university's Economic Sciences and Management Faculty. *Eco-offers of Banks and Investment Funds*, to which Professor Dziaigo brings his experience as a regional director of Raiffeisen Bank Poland, focuses on "pro-ecological behaviour" in banks and investment funds in Poland and elsewhere.



^a L. and D. Dziaigo, eds. (2003). *Scientific Society for Organization and Management, Dom Organizatora, Al. 500-lecia 31, 87-100 Toruń, Poland, Tel: +48 56 622 3807/2898/3342, Fax: +48 56 622 3123, E-mail: tnoik@tnoik.torun.pl, Internet: www.tnoik.torun.pl. Hbk., 701p. ISBN 83-7285-134-4.*

^b L. Działgo (2003). *Nicholas Copernicus University, Ul. Gagarina 39, 87-100 Toruń, Poland, Tel: +48 56 611 4295, Fax: +48 56 611 4705, E-mail: dwyd@uni.torun.pl, Internet: www.wydawnictwo.uni.torun.pl. Hbk., 190p. ISBN 83-231-1534-6.*

Finance, Environment and Sustainable Development: Corporate Responsibility and Capital Markets, Managing Qualitative Risk Issues

This document presents the proceedings of a conference organized in Paris on 10 January 2003 by the Société Générale, the Caisse des dépôts et consignations, Dexia, ORSE (Observatoire de la responsabilité sociétale des entreprises) and UNEP. Presentations focused on four main themes: responsibility and capital markets, financial institution case studies on project and portfolio risk management, integration of sustainability criteria into fund management, and climate change, fiduciary responsibility and disclosure. Also available in French (see Editions françaises, below).

(2003). *UNEP Finance Initiatives. Available from Economics and Trade Branch (see above) or download at http://unepfi.net/socgen/European_Seminar%20Report_Eng_29_09_03.pdf. Pbk., 50p.*

Environmentally Harmful Subsidies: Policy Issues and Challenges

This publication contains the proceedings of a 2002 OECD workshop that brought together experts from a variety of backgrounds to evaluate and share their knowledge of subsidies and their environmental impacts. While reforming environmentally harmful subsidies is a high priority in OECD countries, stakeholders are still seeking agreement on a common definition of subsidies, methods for measuring them, and ways to collect and analyze related data. Experts at the workshop addressed these and other issues in the context of sectors including agriculture, fisheries, energy, industry, transport, forestry and water.

(2003) *OECD (see above). Pbk., 212. ISBN 92-64-10447-X.*

Leading Change Toward Sustainability: A Change-Management Guide for Business, Government and Civil Society

Starting from a seldom-discussed reality – that some sustainability initiatives simply fail – the author has published the results of three years of research on how leaders of organizations that have maintained successful sustainability programmes designed and approached them. His findings are presented in the form of a theoretical framework and methodology that can be used by managers to help their organizations embrace sustainable development. *Leading Change Toward Sustainability* is designed to be used by organizations

thinking about starting a sustainability initiative, and by those that have already begun this type of initiative but are running into possible problems.

B. Doppelt (2003). *Greenleaf (see above). Pbk., 272p. ISBN 1-874719-64-0.*

Implementing Sustainable Development: Integrated Assessment and Participatory Decision-Making Processes

Hussein Abaza, head of UNEP DTIE's Economics and Trade Branch, joins Swiss lecturer and researcher Andrea Baranzini in exploring how to integrate the environmental and social sciences to support participatory policy design and the implementation and assessment of sustainable development policies. In this collection, aimed at providing practical tools and clear methods, both analytical and empirical aspects of decision-making are discussed. The chapters, written by an international group of authors, include geographical and sector-specific case studies.

H. Abaza and A. Baranzini, eds. (2003). *Edward Elgar Publishing, Glensanda House, Montpellier Parade, Cheltenham, Glos, GL50 1UA, UK, Tel: +44 1242 226934, Fax: +44 1242 262111, E-mail: info@e-elgar.co.uk, Internet: www.e-elgar.com. Hbk., 303p. ISBN 1-84064-913-5.*

Business and Human Rights: Dilemmas and Solutions

Human rights is an essential element of sustainability's social pillar. The editor has drawn together essays from leading thinkers and actors in the debate on business, globalization and human rights in an effort to establish how far the debate has evolved and to explore the many complex questions still to be addressed concerning roles, responsibilities and solutions. *Business and Human Rights* discusses how and why human rights has become a business issue. It looks at how selected companies have addressed specific human rights questions with respect to their own operations and those of firms in their supply chains.

R. Sullivan, ed. (2003). *Greenleaf (see above). Hbk., 335. 1-874719-70-5.*

The Environmental Performance of Public Procurement: Issues of Policy Coherence

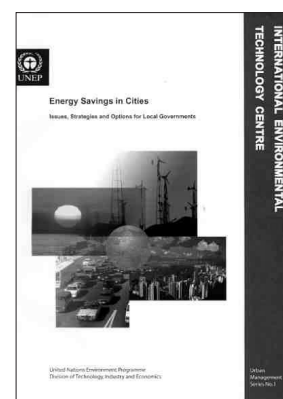
Purchases by governments are a key opportunity to promote environmental responsibility. Many OECD countries have introduced initiatives to reduce environmental damage resulting from public procurement. Since public sector purchases of goods and services account for as much as 18% of GDP in some OECD countries, "green public purchasing" (GPP) can also stimulate new markets. This report reviews the relationships between GPP programmes and other areas of public policy (e.g. environmental policy, public expenditure management and the legal framework).

(2003). *OECD (see above). Pbk., 235p. ISBN 92-64-10155-1.*

Energy

Energy Savings in Cities: Issues, Strategies and Options for Local Governments

The first report in the new Urban Management Series from UNEP DTIE's International Environmental Technology Centre, *Energy Savings in Cities* is intended to give information to city managers in developing countries about how to reduce



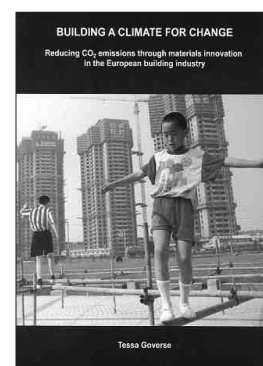
greenhouse gas emissions and reduce budget expenditures. It presents background on energy use patterns and energy savings strategies, then breaks down the various approaches according to sector. The residential, commercial, transport, industry and public sectors are covered. Other sections are devoted to local energy resources, financing energy efficiency, and urban energy planning.

(2003). *UNEP. Available from EarthPrint Ltd., PO Box 119, Stevenage, SG14TP, UK, Tel: +44 1438 748 111, Fax: +44 1438 748 844, E-mail: orders@earthprint.com, Internet: www.earthprint.com. Pbk., 206p. ISBN 92-807-2238-7.*

Climate change/air pollution

Building a Climate for Change

This report on innovation in the Netherlands, the United Kingdom, Spain and Finland is subtitled "Reducing CO₂ emissions through materials innovation in the European building industry." It demonstrates that technological development in the building sector has a national character. This




results from the dynamics of the building industry and its traditions, along with the development of knowledge and industry structures. Other factors are natural conditions such as climate, the availability of resources, waterways and other geophysical factors. Finland, for example, has developed expertise in building quickly in a cold climate. It also has a rich tradition of building in wood.

In Spain, where the innovation climate is particularly suitable for concrete development, there is virtually no infrastructure for construction using wood. The delta area in which the Netherlands is situated is mainly characterized by stony building materials. In the UK, by contrast, a steep increase in demand for office space has mainly encouraged steel construction.

In all four countries greater innovation within the industry together with action by governments could significantly reduce materials-related CO₂ emissions.

T. Gorse (2003). *Vrije Universiteit Amsterdam, De Boelelaan 1105, 1081 HV Amsterdam, The Netherlands, Tel: +31 20 444 5030, Fax: +31 20 444 5059, Internet: www.vu.nl.*

 **Note: Managing Technological Change**, published by UNEP in 2001 and reviewed in *Industry and Environment*, Vol. 24, No. 3-4, has been translated into Arabic, French, Japanese, Russian and Spanish. These versions can be downloaded in PDF form at www.uneptie.org/energy/publ/mantechange1.htm.

Industry sectors

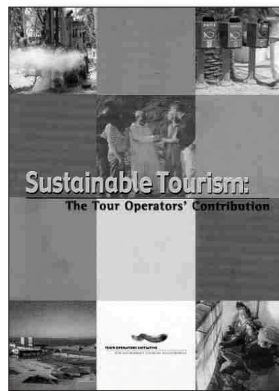
 **A Manual for Water and Waste Management: What the Tourism Industry Can Do to Improve Its Performance**

The main focus of this UNEP Tourism Programme publication is on SMEs in developing countries, including small island states, and in countries that are just beginning to develop as tourism destinations. It was published with the support of Deutsche Gesellschaft für Technische Zusammenarbeit. The manual looks at solid waste and water management. Guidelines and examples show how tourism operations can achieve positive results and minimize harm to a community's ecological and physical systems. Case studies highlight selected hotel chains that are already using environmental management systems.

(2003). *UNEP. Available from EarthPrint (see above) or download at www.uneptie.org/pc/tourism/library/waste_manual.htm. Pbk., 50p. ISBN 92-807-2343-X.*

Sustainable Tourism: The Tour Operators' Contribution

The Tour Operators' Initiative for Sustainable Tourism Development, a diverse group of 25 companies ranging from small, specialized opera-



tors to some of the biggest names in the business, has compiled this collection of case studies that show how holiday packages can be developed on sustainability principles. Sustainable Tourism offers practical ways for tour operators to contribute to sustainable development (through working with suppliers, customers, stakeholders at destinations, and their own staff), using measures such as a green checklist for hotels, a customer education programme on coral reef protection, and financial support to local communities.

Over 30 case studies are grouped according to the key business areas of supply chain management, internal management, product management and development, customer relations, and cooperation with destinations. Each provides an overview of development and implementation, as well as an analysis of benefits for the company, the local community and the environment.

(2003). *Tour Operators' Initiative. Available from EarthPrint (see above) or download individual case studies at www.toinitiative.org/good_practices/introduction.htm. Pbk., 95p.*

Implementation of Policy Response Packages to Promote Sustainable Management of Natural Resources

"Confronting Sustainability in the Mining Sector: Role for a Sustainability Fund" is the subtitle of this study, which was produced under the auspices of UNEP DTIE's Economics and Trade Branch. There is a detailed analysis of proposals to establish a "sustainability fund" in Chile with revenue from a special tax on mine exploitation. Economic, social and environmental sustainability issues associated with mining at national and, especially, local level in Chile are addressed.

(2003). *UNEP. Available from Economics and Trade Branch (see above). Pbk., 120p. ISBN 92-807-2299-9.*

Opportunity Space

Prepared by SustainAbility for the European Association of Communications Agencies (EACA), in cooperation with UNEP, this report was initiated under the umbrella of the UNEP Advertising and Communication Forum. It constitutes a second step following the UNEP/McCann-Erickson joint publication *Can Sustainability Sell*, which was

aimed primarily at companies. *Opportunity Space* is subtitled "How communications agencies can turn corporate responsibility, industry's newest challenge, into business." Ten steps for success, inspired by rules developed by the consultancy Futerra, are presented as ways to promote efficient communication on sustainable development.

A detachable "green office guide for communications agencies" provides guidelines related to supply chain management, good housekeeping and reporting. This publication is being distributed to EACA members (national associations of advertising and communication agencies), as well as to sister associations around the world and to advertising agencies and consulting firms specializing in communication issues.

(2003). *Available from the EACA, 152 Blvd Brand Whitlock, B-1200 Brussels, Belgium, Tel: +32 2 740 0710, Fax: +32 2 740 0717, Internet: www.eaca.be, or can be downloaded at www.uneptie.org/pclustain. Pbk., 32p.*

Chemicals, pollution and accidents

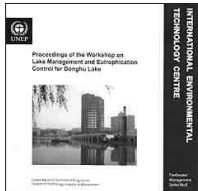
IPCS Environmental Health Criteria: Selected Nitro- and Nitro-oxy-polycyclic Aromatic Hydrocarbons

This is the latest volume in a series produced by the UNEP-WHO-ILO International Programme on Chemical Safety (IPCS) in the framework of the Inter-Organization Programme for the Sound Management of Chemicals, a cooperative agreement involving the three above-mentioned organizations as well as the FAO, UNIDO, UNITAR and the OECD.

(2003). *IPCS/WHO, CH-1211 Geneva 27, Switzerland, Tel: +41 22 791 3592, Fax: +41 22 791 4848, E-mail: ipcsmail@who.int, Internet: www.who.int/pcs. Pbk., 480p. ISBN 92-4-157229-9.*

Water

Proceedings of the Workshop on Lake Management and Eutrophication Control for Donghu Lake

 Published with support from the Wuhan Environmental Protection Bureau in Wuhan, China, this CD-ROM contains the proceedings of a May 2002 workshop held in Wuhan. Donghu Lake is located in the mountainous, 88 square kilometre Donghu scenic area in eastern Wuhan, the capital of Hubei Province. The workshop was organized by UNEP DTIE's International Environmental Technology Centre (IETC).

(2003). *UNEP. Available from IETC, 2-110*



Web Site Highlights

Tradable renewable energy certificates

www.trecnet.org

The International Energy Agency (IEA), in cooperation with the European network TRECKIN, has created a new site that will serve as a forum for developing knowledge on tradable renewable energy certificates, or TRECs. The Renewable Energy Certification Expert Network (TRECNET) contains a broad base of information on trading systems in place and under development. There is also an online expert discussion group for sharing experience. TRECNET is expected to be a catalyst for certificate trading and the development of trade schemes. It will support seminars and conferences addressing TREC issues and establish links among partners internationally. TRECNET is operated by a worldwide network of participants. Membership is open to organizations anywhere.

The triple bottom line on line

www.conversations-with-disbelievers.net

This new site provides news and information from the UK and other countries concerning the commercial rationale for corporate responsibility. It is operated by AccountAbility, an

international corporate responsibility and sustainable development organization, and the Center for Corporate Citizenship at Boston College in the US, in partnership with ten other groups around the world. There are case studies on corporate responsibility best practice from businesses including IBM, Marks & Spencer, National Grid Transco, Suez, Tesco, Timberland, Vauxhall Motors and Unilever. Simon Zadek, chief executive of AccountAbility, says the site "will assist people already working in the corporate responsibility arena and those people who are addressing, for the first time, corporate responsibility issues within their workplace thrown up by the increased expectations of their customers, pressure groups, business partners, government and shareholders."



UNEP site now in French/ Site UNEP en français

www.unep.org/french

Klaus Toepfer, le Directeur exécutif du PNUE, a présenté la version française du site internet du Programme des Nations Unies pour l'environnement à Nairobi, Kenya, devant les Ambassadeurs francophones situés à Nairobi. Le PNUE a son siège à Nairobi et des bureaux dans le monde entier, y compris la division parisienne Technologie, Industrie et Economie.



DTIE Web news: LC.net (see DTIE Highlights, page 46)

www.uneptie.org/pc/sustain/lcinitiative/LC_net.htm

The more user-friendly OzonAction site:

<http://www.uneptie.org/ozonation>

Ryokuchi koen, Tsurumi-ku, Osaka 538-0036, Japan, Tel: +81 6 6915 4581, Fax: +81 6 6915 0304, E-mail: ietc@unep.or.jp, Internet: www.unep.or.jp. ISBN 92-807-2275-1.

National/regional



Desk Study on the Environment in the Occupied Palestinian Territories

Long-term environmental degradation has occurred in recent decades in the area known as the Occupied Palestinian Territories. Following a unanimous request by UNEP's Governing Council in February 2002, a team of UNEP experts carried out a comprehensive desk study on the state

of the environment in this area. The study covers freshwater quality and quantity, wastewater, solid and hazardous waste, and conservation and biodiversity. It includes over 130 recommendations endorsed by the Governing Council after the report was reviewed in 2003.

(2003). UNEP. Available from *EarthPrint* (see above). Pbk., 188p. ISBN 92-1-158618-6.

Radiological Conditions in Areas of Kuwait with Residues of Depleted Uranium: Report by an International Group of Experts

This is the latest in the International Energy Agency's Radiological Assessment Report series. A study was carried out following a request the government of Kuwait. The report includes a detailed description of the IAEA investigation,

the results of the radiological assessment, findings, conclusions and recommendations. There were concerns about possible lingering effects of the depleted uranium (DU) armaments used during the 1991 Gulf War. Not unlike similar UNEP reports (e.g. on the Balkans), this study concludes that DU does not pose a radiological hazard to the population though it urges continued monitoring and restrictions on access to certain areas.

(2003). IAEA, Wagramer Strasse 5, A-1400 Vienna, Austria, Tel: +43 1 2600 22529/22530, Fax: +43 1 2600 29302, E-mail: sales.publications@iaea.org, Internet: www.iaea.org/worldatom.books. Pbk., 73p. ISBN 92-0-106603-1/ISSN 1020-6566.

Editions françaises

Les arbres ne poussent pas jusqu'au ciel... donc il faudra beaucoup de forêts – Faut-il réinventer le progrès ?

« Les hommes sont tenus de poursuivre le développement en le faisant évoluer, sauf à condamner la moitié au moins de l'humanité à la misère et à faire courir à l'autre le risque d'un effondrement », tel est l'un des constats de l'auteur dans l'avant-propos. C'est donc de développement, de progrès et de comportements qu'il s'agit. L'ouvrage s'intéresse tout d'abord à l'histoire du développement, des premiers marchands faisant connaître produits et techniques aux révolutions industrielles des XVI, XIX et XX^e siècles. Un chapitre est consacré à la montée de la mondialisation et à l'avènement du concept du développement durable. Suit un examen des approches proposées pour répondre à la pression des besoins. L'auteur conclut par l'énumération des conditions inhérentes à un développement que l'on veut durable.

M. Drancourt (2003). Editions Village Mondial/Pearson Education, 13 rue de La Grande Chaumière, 75006 Paris, France, Tél. : +33 1 44 32 08 00, Fax : +33 1 43 25 43 37. 248p. ISBN 2-7440-6045-3.





Finance, Environnement et Développement Durable

Ce document est le compte-rendu de la manifestation organisée à Paris le 10 janvier 2003, conjointement par la Société Générale, la Caisse des dépôts et consignations, Dexia, ORSE (Observatoire de la responsabilité sociétale des entreprises) et le Programme des Nations Unies pour l'environnement. Les débats ont porté sur quatre grands thèmes : Responsabilité sociale et marchés de capitaux ; Études de cas d'institutions financières dans la gestion de projet et de portefeuille ; Comment intégrer des critères de développement durable à la gestion de fonds ? ; Changements climatiques, responsabilité fiduciaire et transparence. Le compte-rendu peut être consulté en ligne à l'adresse suivante : <http://unepfi.net/socgen/>

ActesVF-29_09_2003.pdf.

(2003). *PNUE, Initiatives financières, International Environment House, 11-13 Chemin des Anémones, CH-1219 Châtelaine, Genève 10, Suisse, Tél. : +41 22 917 82 98, Fax : +41 22 917 80 76, Courriel : etu@unep.ch. Internet: <http://unepfi.net>. 58p.*

Développement durable en Europe, Amérique du Nord et Asie centrale : Progrès depuis Rio

Répondant à une résolution de l'Assemblée générale des Nations Unies recommandant l'examen décennal des progrès accomplis dans la mise en œuvre des textes issus de la Conférence des Nations Unies sur l'environnement et le développement (CNUCED) en 2002, le rapport

examine certaines des grandes tendances sociales et économiques qui ont des répercussions sur le développement durable dans les régions en question. Il décrit plusieurs secteurs de production moteurs de développement, analyse les transformations récentes intervenues dans l'état de l'environnement et évalue un certain nombre de réponses nationales, sous-régionales et régionales pour essayer de faire progresser le développement durable. Le rapport souligne les problèmes que pose le financement du développement durable, en mettant l'accent sur la gestion de l'environnement.

(2002). *Nations Unies, Commission économique pour l'Europe, Palais des Nations, 1211 Genève 10, Suisse, Tél. : +41 22 917 12 34, Fax : +41 22 917 01 23 76. 198p.*

THE UNEP DIVISION OF TECHNOLOGY, INDUSTRY AND ECONOMICS

Current uses and development of natural resources, technologies and production processes, as well as urbanization patterns, have negative effects on human health and the environment. This is illustrated by unsustainable use of water, land and energy, air and water pollution, persistent and toxic bio-accumulative chemicals in the food chain, and other industry-related problems.

To have a healthy environment, we need to change how we produce and consume goods and services. This change involves revising and developing economic policies and trade practices, so as to integrate environmental issues in the planning and assessment processes.

UNEP's Division of Technology, Industry and Economics (UNEP DTIE) was created in 1998 to help decision-makers in governments, local authorities and industry develop and adopt policies and practices that:

- are cleaner and safer;
- use natural resources efficiently;
- ensure adequate management of chemicals;
- incorporate environmental costs;
- reduce pollution and risks for humans and the environment.

UNEP DTIE, whose main office is in Paris, is composed of:

◆ **The International Environmental Technology Centre (Osaka)**, which promotes the adoption and use of environmentally sound technologies, with a focus on the environmental management of cities and freshwater basins, in developing countries and countries in transition.

◆ **The Production and Consumption Unit (Paris)**, which fosters the development of cleaner and safer production and consumption patterns that lead to increased efficiency in the use of natural resources and reductions in pollution.

◆ **The Chemicals Unit (Geneva)**, which promotes sustainable development by catalyzing global actions and building national capacities for the sound management of chemicals and the improvement of chemical safety world-wide, with a priority on Persistent Organic Pollutants (POPs) and Prior Informed Consent (PIC, jointly with FAO).

◆ **The Energy and OzonAction Unit (Paris)**, which supports the phase-out of ozone depleting substances in developing countries and countries with economies in transition, and promotes good management practices and use of energy, with a focus on atmospheric impacts. The UNEP/RISØ Collaborating Centre on Energy and Environment supports the work of this Unit.

◆ **The Economics and Trade Unit (Geneva)**, which promotes the use and application of assessment and incentive tools for environmental policy, and helps improve the understanding of linkages between trade and environment and the role of financial institutions in promoting sustainable development.



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Industry and Environment

a publication of the United Nations Environment Programme
Division of Technology, Industry and Economics

For over 20 years, the quarterly *Industry and Environment* has provided a forum for exchanging information and experience. Articles are contributed by industry managers, government officials, researchers and others active in the field of sustainable industrial development. Besides reporting on developments of broad international interest, each issue focuses on a particular theme. The themes of recent issues have included the agri-food industry, consumption patterns, urban environmental management, sustainable energy, and mining and sustainable development. Recent issues and archives are available on-line at www.uneptie.org/media/review/ie_home.htm.

The next issue of *Industry and Environment* will focus on water and industry.

Industry and Environment is an English language publication, but it often includes articles in French and Spanish. All contributed articles are accompanied by summaries in English, French and Spanish.



The review is also published in Chinese.

For further details, please contact:

Professor Liu Xiaogwang

Research Center for Eco-Environmental Sciences

Chinese Academy of Sciences, P.O. Box 2871, Beijing 100085, China

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