Greening Supply Chains

Report on Activities and Results

Commission for Environmental Cooperation
March 2008

This report was prepared for the Secretariat of the CEC by Bernhardus van Hoff, principal consultant and trainer of the Greening the Supply Chains Program during its second phase. The information and views contained herein are the responsibility of the author and do not necessarily reflect the views of the CEC, or the governments of Canada, Mexico or the United States of America.

Commission for Environmental Cooperation
393, rue St-Jacques Ouest, Bureau 200
Montréal (Québec) Canada H2Y 1N9
info@cec.org - www.cec.org

Una versión completa está disponible en español
Un résumé est disponible en français

Publication details
Publication type: Background paper
Publication Date: March 2008
Review and quality assurance procedures:
Internal review: July-August 2007
Party review: October-December 2008

Contents

Acronyms

CEC	Commission for Environmental Cooperation
Cespedes	Center of Private Sector Studies for Sustainable Development (*Centro de Estudios del Sector Privado para el Desarrollo Sustentable*)
CO_2	Carbon dioxide
Conae	National Commission for Energy Savings (*Comisión Nacional para el Ahorro de Energía*)
Concamin	Mexico's Confederation of Industrial Chambers (*Confederación de Cámaras Industriales de la República Mexicana*)
Fiprev	Pollution Prevention Fund (*Fondo para Proyectos de Prevención de la Contaminación*)
GEMI	Global Environmental Management Initiative
kWh	Kilowatt hour
m^3	Cubic meter
ODES	Organization for Sustainable Business Performance (*Organización para el Desempeño Empresarial Sostenible*)
Profepa	Federal Attorney for Environmental Protection (*Procuraduría Federal de Protección al Ambiente*)
SMEs	Small and medium-size enterprises
WB	World Bank
WEC	World Environment Center

Tables

Illustrations

Executive Summary

The Commission for Environmental Cooperation (CEC) has obtained significant results from the first stage of the Greening Supply Chains project, which is designed to test an effective, replicable cooperation-based mechanism for promoting pollution prevention in small and medium-size enterprises (SMEs) that supply major companies. This effort is in response to guidelines from the Puebla Declaration, in which the CEC Council of Ministers instructed its Secretariat to work on building capacities for comprehensive environmental management, with emphasis in Mexico, and to carry out its activities more closely with the private sector. The intention is to address the priorities established by the Federal Attorney for Environmental Protection (Profepa) with regard to its Environmental Auditing program. The Greening Supply Chains project is based on a scheme of cooperation with the GEMI-Mexico Initiative and the support of a number of major companies (most of which are also associated with the GEMI initiative) and their supplier chains, plus important collaboration from the Querétaro state government.

In all, 65 supplying companies and six of their clients have developed projects through their participation in this program, during the course of the two stages carried out thus far between August 2005 and December 2006. According to reports from these companies, they anticipate an accumulated savings of P$40,018,697 per year, as well as an annual savings of 70,982 m^3 of water, 599 tonnes of paper and cardboard, and 78 tonnes of plastics. It is also anticipated that the projects will prevent the generation of 14 tonnes of hazardous wastes and the emission of 32.4 m^3 of solvents each year, and that the energy saved will signify that approximately 2,299.1 tonnes of carbon dioxide (CO_2) will not be produced.

The program design combines the best practices learned from prior experiences with mechanisms for training, technical assistance, implementation and financing, oriented toward promoting competitiveness through pollution prevention in productive chains. The initial results not only indicate economic and environmental benefits, but also demonstrate the program's effectiveness in building capacities in companies and cost-effectiveness in achieving the proposed objectives, as well as the acceptance of the program on the part of large companies and their suppliers.

The results obtained thus far indicate it is worth continuing the program and it is important to take advantage of the lessons learned to improve it. To date, there seems to be a certain contagion among participating companies and within Mexico's business sector, sparking interest in learning and applying the methodology. A potential exists to expand the scope of the project, to involve more industrial sectors, while seeking cooperation with other programs aimed at improving the environmental performance of supplier chains in North America. Moreover, a possibility exists to expand collaboration with the Ministry of the Economy through the SME Fund in order to enhance the program's replication, as well as provide institutional backing at the national level, to ensure program continuity..

Introduction

The purpose of this report is to document and analyze the advances made in the Greening Supply Chains program, promoted by the North American Commission for Environmental Cooperation (CEC), in collaboration with the GEMI initiative and the Queretaro state government. The program is aimed at improving the environmental and competitive performance of small and medium-size enterprises (SMEs), by strengthening their capacities for developing pollution prevention programs with a philosophy of ongoing improvement. The program anticipates that enterprises participating in the program form part of the supply chains for major companies operating in Mexico.

The CEC is seeking to develop a new, replicable mechanism for promoting pollution prevention in SMEs that supply large companies, as part of its work to promote cooperation in protecting and improving the environment, in the context of increasing economic and trade links in the North American region. This effort responds to the guidelines in the Puebla Declaration, in which the CEC Council of Ministers instructed its Secretariat to focus on building capacities for comprehensive environmental management, with an emphasis in Mexico, as well as to work more closely with the private sector. The program also seeks to make use of other CEC initiatives in the area of pollution prevention that have demonstrated success, such as the Pollution Prevention Fund (*Fondo para Proyectos de Prevención de la Contaminación*—Fiprev), which offers financing to small enterprises.

Pollution prevention or eco-efficiency offers an alternative for confronting the challenges of competitiveness among companies, through the simultaneous improvement of efficiency in both production and environmental protection. In this case, the focus is on carefully reviewing companies' operational and administrative processes and activities with the aim of identifying solutions for the excessive and unnecessary use of raw materials and energy. Such use translates into the generation of polluting wastes and emissions that result from the inefficient operation of a production plant. The goal is to use less energy and materials, through the way inputs are used in processes, and through the management, treatment and disposal of wastes and emissions. The implementation of a pollution prevention focus introduces companies to the philosophy and principles of ongoing improvement. Whether or not implementation takes place depends primarily on whether company directors and technicians recognize the value of a preventative focus for achieving competitiveness, and whether they prove themselves to be capable of identifying and carrying out projects that respond to the particular context for their companies.

The report presents the proposal and results from a program designed to encourage the adaptation of the eco-efficiency strategies in Mexican SMEs through the development of capacities, abilities and competencies in companies, and the development and implementation of pollution prevention projects. It presents and analyzes the results obtained in the second stage of the program, carried out during the period between September 2006 and January 2007. Participating during this stage were 52 companies belonging to four supply chains for major companies in Mexico.

This report begins with a brief description of the program, including the principles and concepts that form the basis for its design, objectives, components and methodology. It then presents the results obtained in terms of economic and environmental benefits identified in the projects developed by participating companies, as well as the effectiveness of the transfer of capacities to these companies and the assimilation of the cooperation mechanism by the major companies involved. Finally, it concludes with some notes and possible areas for improvement based on the experience obtained through the implementation of the program's second stage.

Program

Background

Since 1995, CEC has worked through various projects to encourage the introduction of measures to prevent pollution in North America. These projects include a diagnostic assessment of the status of pollution prevention activities in the region, as well as case studies to demonstrate the advantages of these initiatives, support for the dissemination of information regarding pollution prevention, and the creation of sources of financing for this type of project. These efforts have been directed primarily at small and medium-size enterprises, which make up the majority of Mexico's productive sector and which, in addition, confront a series of barriers to improving their competitiveness and their environmental performance.

The experiences obtained in the projects carried out have indicated that many of the small and medium-size enterprises, including those supplying products and services to larger enterprises, lack the technical experience and informational and financial resources necessary for achieving efficient production with adequate environmental performance. In this context capacity building for environmental management in the private sector has been an aspect not yet assigned the importance it deserves, especially in small and medium-size enterprises in Mexico.

Among the primary barriers to the implementation of pollution prevention projects are the following: i) the lack of commitment and confidence on the part of management in SMEs; ii) the companies' limited appropriation of concepts and tools that facilitate the implementation of pollution prevention projects and optimize productive processes; and iii) the limited scope and effectiveness of current programs and mechanisms involved in the promotion of pollution prevention in SMEs and the corresponding technical assistance.

In the interest of overcoming these barriers, the CEC is using this program to test a new, replicable mechanism for promoting pollution prevention in SMEs that supply large companies. The design of this mechanism combines the best practices learned in previous experiences with mechanisms for training, technical assistance, implementation and financing, aimed at promoting competitiveness through eco-efficiency in productive chains. Some of these experiences include the World Environment Center (WEC) in Mexico and

other countries, the eco-efficiency program of the Organization for Sustainable Business Performance (*Organización para el Desempeño Empresarial Sostenible*—ODES), the GEMI-Mexico Suppliers Program and the Pollution Prevention Fund (*Fondo para Proyectos de Prevención de la Contaminación*—Fiprev) in Mexico. The following principles were taken into consideration in the mechanism's design:

- Voluntary participation. A basic element of this mechanism is that companies decide whether or not to take advantage of it, and their decision is dependent on whether or not they place value on what the mechanism can offer in improving their productivity and competitiveness. Thus, the mechanism offers environmental authorities a complementary alternative to schemes based on requirements and control.
- Client-supplier cooperation. The mechanism seeks to promote a closer relationship between the client and its suppliers, based on better communication and shared knowledge.
- Company competitiveness. The essence of the program is to improve the competitiveness of companies and productive chains through pollution prevention projects.
- Improved environmental performance. The mechanism promotes pollution prevention programs that facilitate compliance with current environmental legislation, stimulate environmental performance that surpasses legislated norms, and offer a competitive advantage to companies.
- Capacity building. The mechanism generates companies' appropriation of concepts and tools, making it possible to use pollution prevention as a strategy for ongoing improvement.
- Measurable changes. The projects implemented as a result of the program are designed to produce measurable results that are comparable over time, in terms of the economic and environmental benefits obtained.

Program objectives

The overall goal for the program is to:

Improve the environmental performance of small and medium-size enterprises (SMEs) that supply large companies, through a proven mechanism for business environmental management, with an emphasis on pollution prevention.

The specific objectives are to:

- ✓ *Strengthen the technical and financial capacities of SMEs that supply large industries, for developing projects that will improve their environmental and economic performance.*

- ✓ *Test a new, replicable mechanism for promoting pollution prevention in SMEs that supply large companies.*

- ✓ *Promote compliance with environmental standards and facilitate the environmental certification process at both federal and state levels.*

Program stages and activities

The program is divided into three stages: i) the call for participation by companies, ii) strengthening of capacities and development of projects, and iii) follow-up on projects. The first two stages were carried out between July and December 2006, and the third stage is currently in process.

Stage 1: Call for participation and commitments from participating companies

Entities involved in the program have included industrial associations such as Mexico's Confederation of Industrial Chambers (*Confederación de Cámaras Industriales de la República Mexicana*—Concamin), the Center of Private Sector Studies for Sustainable Development (*Centro de Estudios del Sector Privado para el Desarrollo Sustentable*—Cespedes) and the GEMI-Mexico Initiative, which facilitated the presentation of this project to various large companies and the invitation for them to participate. Also participating at this stage were the Federal Attorney for Environmental Protection (*Procuraduría Federal de Protección al Ambiente Procuraduría Federal de Protección al Ambiente*—Profepa), and Querétaro's Department of Sustainable Development, which facilitated the participation of one of the large companies and its suppliers operating in the state.

Criteria for selecting suppliers were agreed upon, and a scheme for inviting suppliers to participate was developed. Among the criteria used for selecting suppliers were the following: the duration of the relationship between supplier and client (at least two years), a commitment from company management to participate in the program, willingness to invest time and resources in projects, geographic location, and the current potential for change in the enterprises (dynamic enterprises). In addition efforts were made in this second stage to involve companies with more than 25 employees; not all the companies involved have this number of employees.

The environment and purchasing departments of participating large companies organized the meetings for introducing the program and held them at their own facilities. Leading business owners who participated successfully in the first stage attended the meetings and offered their comments on the program. The Greening Supply Chains program began its formal activities in August 2006 with participation by 52 enterprises, which are suppliers for Colgate-Palmolive, Bristol-Myers Squibb, JUMEX and SIKA Mexicana.

Stage 2: Strengthening capacities and development of projects

The focus for this stage was for representatives of supplying companies to appropriate the concepts, methodology and tools for developing eco-efficiency projects in their productive processes, and also to facilitate their implementation by providing motivation. To this end processes were initiated in training and project development with companies in four supply chains (three in Mexico City, and one in the city of Querétaro).

The training for each group consisted of two eight-hour workshops, plus eight meetings for group work, held once every two weeks and lasting between three and four hours each. In addition specialized technical consultants made at least one technical field visit to each participating company. Addressed in this process were aspects of eco-efficiency as a strategy for company competitiveness; eco-efficiency tools (such as ecomaps, ecobalances, inefficiency costs, and best practices in the use of energy, water, raw materials, waste management) and clean technologies. In addition to CEC consultants, also participating were representatives from the National Commission for Energy Savings (*Comisión Nacional para el Ahorro de Energía*—Conae) and from the environment and purchasing departments of large companies.

Stage 3: Follow-up and ongoing improvement

The activities carried out in this stage were designed to assist the implementation of projects in the companies and evaluate the results obtained. With the assistance of telephone follow-up and work meetings, the finished projects of participating companies were reviewed, with discussion on some aspects of their implementation, the quantification of benefits (economic and environmental) and the potential for lending continuity to these actions for the future.

The information generated by companies during the project development process has been systematized and documented in order to facilitate its consultation and analysis, as well as to better communicate program results.

Methodology

Preventative focus

In order to promote improved environmental performance and greater competitiveness in companies, the program identifies the strategy of pollution prevention as a guiding focus around which activities revolve. This comprehensive, prevention-oriented strategy is applicable to productive processes, products and services, and its objective is to reduce costs, encourage innovations and reduce risks for humans and the environment.

In the process of developing projects with a pollution prevention focus, analyzing “inefficiency costs” is a fundamental tool for identifying opportunities for improvement. This concept of “inefficiency costs” is based on the fact that in most cases pollution caused by companies stems from inadequate management of raw materials, energy, water, additives, by-products and wastes. This generates unnecessary expenditures that translate into losses for the company, specifically through waste management, payment of fines or charges,

contingency-related expenses, excessive use of raw materials and energy, and payment for extra hours worked, to name some examples.

A comprehensive evaluation of the inefficiency costs assumed by a company makes it possible to directly visualize the cost-effective opportunities for optimizing operational processes and preventing pollution.

Learning by doing and networking

As already mentioned, the methodology used in the program combines the best practices tested in mechanisms for training and technical assistance, as well as for the creation of business groups and company networks.

The purpose of the mechanism used in the program is for professionals in participating companies to develop their own projects applicable in their own facilities, through a system of group-based technical assistance. Experts offer guidance to participants in applying pollution prevention tools in their own companies. This facilitates the transfer of knowledge, while at the same time participants practice using the tools in real-life situations (*learning by doing*). Advances are presented periodically in group meetings in which feedback is obtained, on the basis of the experiences of participants in the group. The program requires each person's participation for 100 hours, divided into ten work sessions. Also required are seven hours of work between each session and the next one, for applying tools and developing projects.

To facilitate participants' work and the development of their projects, a work manual is offered for their use, plus they have access to a web site in which information may be found regarding different aspects addressed in the program. There are links to other sources of information, self-evaluations, work guides and formats, case studies, examples and exercises, as well as a message board for requesting specific information from the group. The program's web page is shown in Illustration 1.

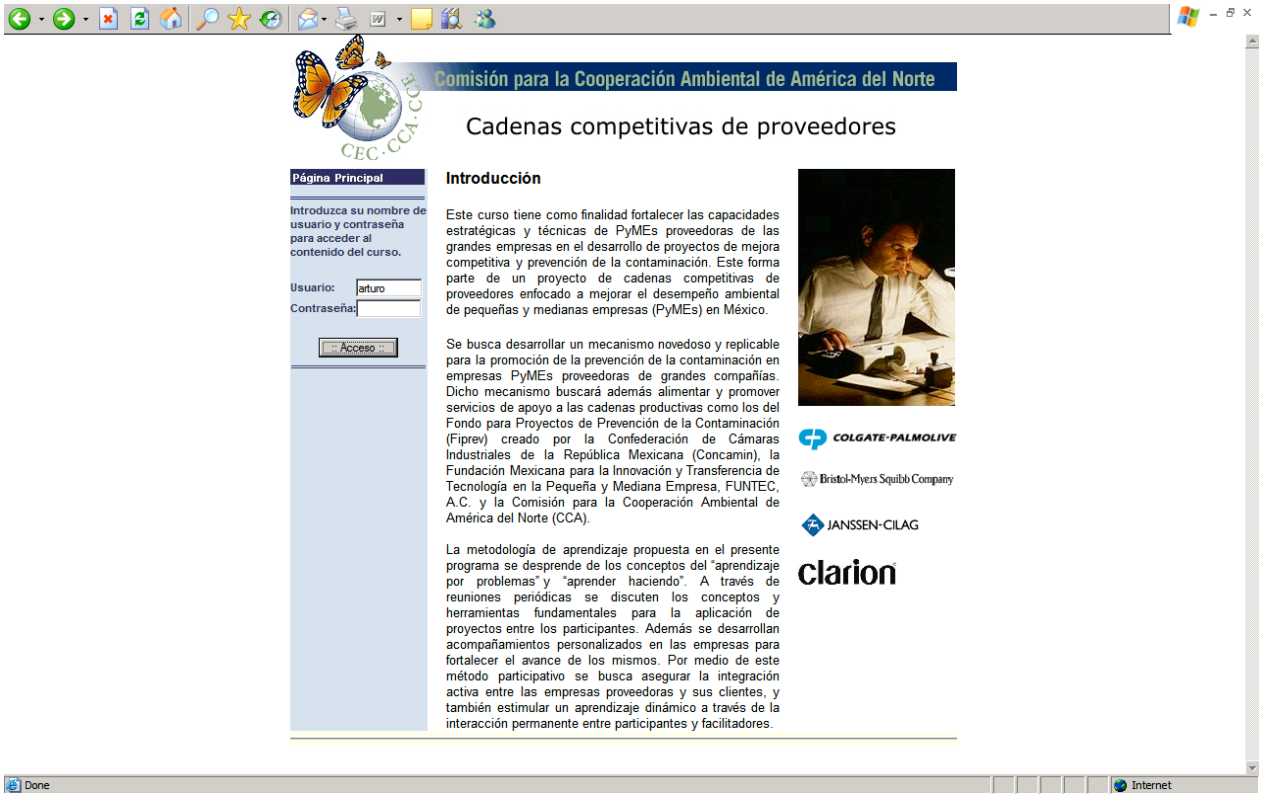

Illustration 1 Page from program's web site

The advantage in the *learning by doing* methodology over traditional schemes of technical assistance lies in the high degree of commitment on the part of participants, both to implementing projects and appropriating work tools, as well as to replicating their experiences in improving performance.

Project development by personnel within the company offers clear advantages over using outside consultants for this purpose, since access to internal knowledge and information regarding the company is much more simple and agile. In addition the man-hour cost is significantly reduced, and this can reduce the cost of technical assistance by as much as five times in comparison to traditional technical assistance schemes.

An additional benefit from this methodology is that group-based learning encourages a networking process. Participants come from companies engaged in a variety of activities, products and processes, and thus feedback from the group makes it possible to draw from valuable, useful experiences in other types of companies, and this facilitates project development and generates complementary learning. Group work promotes integration and the building of trust among companies, facilitating work in business networks and signifying another added value for participants.

Program stages and results

The program is divided into three stages: i) the call for participation by companies, ii) strengthening of capacities and development of projects, and iii) follow-up on projects. This report will cover activities carried out thus far in the two first stages. Also included in this section are changes introduced in relation to the first version, based on experience from the past year and for the purpose of making the program more effective and efficient.

Stage 1 Call for participation and commitments from participating companies

Involved in this part of the program were industrial associations such as Mexico's Concamin, Cespedes and the GEMI-Mexico Initiative, which facilitated the presentation of this project to various large companies and the invitation for them to participate. Also participating at this stage were Profepa, and Querétaro's Department of Sustainable Development, which facilitated the participation of another company in Querétaro.

As a result, the following companies are currently participating in the program:

- **Bristol-Myers Squibb**: a company in the pharmaceutical sector that is dedicated to developing, producing, distributing and marketing medicines. At the international level the company has approximately 42,000 employees, and annual sales of US$19 billion. In Mexico, Bristol-Myers Squibb has two plants dedicated to manufacturing medicines for the regional market.

- **Colgate – Palmolive**: a company in the cosmetics sector, operating in more than 200 countries. Its main business areas are oral hygiene, personal hygiene and cleaning products. The plant in Mexico manufactures soaps and detergents, and has 1,200 employees working in a plant that is 52,000 m^2 in size.

- **SIKA Mexicana**: a subsidiary company with the Sika Group, a world leader in developing and marketing chemical products for construction and industry. The Sika Group has subsidiaries in 70 countries, and approximately 10,000 employees around the world. It is dedicated to producing products and developing new technologies for sealing, bonding, damping and protecting in the construction and industry sectors.

- **JUMEX**: a Mexican company operating in Mexico, the United States and Central America, and dedicated to fruit beverage processing. It has seven production plants in Mexico and approximately 2,500 employees.

Criteria for selecting suppliers were agreed upon, and a scheme for inviting suppliers to participate was developed. Among the criteria used for selecting suppliers were the following: the duration of the relationship between supplier and client (at least two years), a commitment from company management to participate in the program, willingness to invest time and resources in projects, geographic location, and the current potential for change in the enterprises (dynamic enterprises).

The meeting for introducing the program was held on 21 July 2006 at the Bristol-Myers Squibb facilities. Attending the meeting were Environment Minister José Luis Luege Tamargo, authorities from Profepa and Querétaro's Department of Sustainable Development, high-level management personnel from participating companies and representatives from more than 50 supplying companies.

Changes made since 2005

The project has been adapted according to the experience acquired from its implementation. One change has been increased requirements for large companies interested in participating in the program. The intention is to seek a greater level of commitment from these companies in order to assure the participation of their suppliers and their own personnel. To this end each large company was asked to sign a letter of commitment in which it agreed to guarantee:

- Participation by its purchasing department in specific aspects of the program in which its involvement is important
- Logistical support for meetings
- A guided visit to the facilities at one of its production plants
- Development of its own project

Meetings for inviting suppliers to participate were not held this time, and instead suppliers were asked directly to participate in the program. This reduced recruitment time considerably.

Stage 2 Strengthening capacities and development of projects

Beginning on 25 July 2006, four training and project development processes were initiated with four sets of companies grouped together according to their supply chains. Three of them are in Mexico City, and one is in the city of Querétaro. The composition of the groups is as follows:

1. Colgate-Palmolive with 15 of its suppliers
2. Bristol-Myers Squibb with 11 of its suppliers
3. SIKA Mexicana with 11 of its suppliers
4. JUMEX with 15 of its suppliers

The participating companies belong to the following sectors: packaging (injection, packaging systems, boxes), graphic arts companies, chemical inputs, plastic pieces, transportation, fuel distribution, laboratories, manufacture of flavorings and fragrances, and others.

This information is provided in more detail in Table 1.

Table 1 Supplying companies and major industries participating in program

Corporation	Supplier	Activity	Number of employees
COLGATE-PALMOLIVE	CRISA (Corporación y Reproductora Industrial)	Printing and advertising	85
	Elias y Asociados Publicidad	Manufacture of promotional offers	20
	Estudio S	Offset printing	90
	Expectaciones Marcadas	Manufacture of promotional offers for textiles	12
	Grupo Técnico Impresor	Manufacture of labels and continuous forms	150
	Impresos Florida	Printing / Point operating sales	85
	Industrial Gomera	Rubber pieces	150
	Innophos Mexicana	Manufacture of phosphates and phosphoric acid	500
	Promase (Promociones y Asesorías Empresariales)	Distribution of chemical products	26
	Propysol	Manufacture of propellants	57
	Tecnología y Asesorías Alimentarias (TAALI)	Food products and fragrances	11
	Zeller Plastik	Manufacture of plastic items	130
	Ungerer de México	Manufacture of aromatic chemicals, oils, flavorings and fragrances	67
	Folmex	Plastic film, containers and packaging	400
	Nalco de México	Chemical products for water treatment	90
Bristol-Myers Squibb Company	Mallinckrodt Baker	Chemical and reactive products for laboratories	135
	Sentido y Significado	Offset printing	35
	Offset Imprenta	Offset printing	360
	Industrial Dulcera Mexicana	Manufacture of candy	60
	Novapack	Manufacture of plastic products	350
	Plástikos Farma	Manufacture of droppers and dispensers	100
	Interlabel - Imprenta Azteca	Manufacture of labels	80
	Deutsche Química	Pharmaceutical products and food additives	20
	Eurofilter	Distribution of water filters and hoses	6
	Novaprint	Printing and primary packaging material	100
	Micrometrix	Laboratory for natural and pharmaceutical products	85
Sika La Solución Efectiva	Bayer de México	Chemical products	1,700
	Clariant México	Chemical products	7
	CNG de México	Wooden packaging	15
	Envases Industriales Santa Clara	Recycling of industrial containers	11
	Grupo Industrial del Parque	Manufacture of resins	150

	Grupo PERC	Fuel distribution	15
	LEDSA Industrial	Production of calcium carbonate	46
	Polímeros Especiales	Manufacture of resins	140
	Reciclajes Vida	Waste management	10
	Tecnología Química Ambiental	Water treatment	30
	Tresguerras Autotransporte de Carga	Cargo and package transportation	1,500
JUMEX	Tecnopak	Manufacture of packaging	31
	Givaudan	Manufacture of flavorings and fragrances	20
	Empaques de Papel América	Manufacture of paper	60
	Grupak	Semi-kraft paper and corrugated cardboard packaging	600
	Empaques de Madera Tizayuca	Wooden platforms	50
	Industria Plástica	Thermal shrink plastic	25
	Industrias Ragar	Raw materials	35
	Coprobamex	Production of liquid sugar	35
	Alymel	Marketing company	15
	Artes Impresas EON	Offset printing	38
	Editorial de Impresos y Revistas	General printing – labels	100
	Trébol Comercio Internacional	Chemical products	20
	Grupo Gondi	Corrugated cardboard boxes and packaging	350
	Comercial Ferbera	Distribution of specialized ingredients	25
	Plastimex	Manufacture of polyethylene	40

The training materials used the previous year have been reviewed, added to and improved, and the same process has taken place with the program's web page (www.cadenasproductivasverdes.org). All participating individuals have been given special access to the web page, and they have also received a folder with printed materials.

Changes made since 2005

Although the program structure and methodology for capacity building have remained essentially the same as in the initial version of the program, some modifications have been made with the aim of improving it:

- Experiences of businesses: involved in the initial meetings were business leaders who participated successfully in the first stage of the program. They presented the results attained through their participation, and they exchanged experiences with new participants.
- Materials: (i) texts were reviewed and enhanced; (ii) presentations were reviewed and improved in order to make them more effective visually; (iii) new cases and exercises were included; (iv) materials have been enhanced in order to include new functions; (v) the time frame for the second workshop (unit 3) was modified, with new exercises added and including participation by supplying companies that had already used the program methodology.

- Time frame: the total duration of the program (consisting of ten units) was reduced from 20 to 15 weeks. Specifically, the first five meetings are scheduled once a week (previously they were scheduled for every other week), and the following five meetings are scheduled every other week.
- Methodology: The methodology should be documented to assure its systematization, and in this way establish mechanisms for assuring and controlling quality in training and technical assistance activities with participating companies. Also, the program's systematization will facilitate its expansion to make it possible to work with a greater number of companies in an effective, efficient way.

Results

The results obtained reflect the experienced generated with 65 supplying companies for six major companies operating in Mexico. Of all the companies initiating the program, twelve left the program for diverse reasons.

Combined program results will be presented for the two program stages, and grouped under three headings: (i) economic and environmental benefits from the projects generated by participating companies, (ii) effectiveness of the transfer of capacities and the appropriation of concepts and tools, and (iii) assimilation of the cooperation-based mechanism on the part of suppliers and major companies.

Economic and environmental benefits

Between September 2005 and March 2006, 24 supplying companies and their four clients developed projects that, according to reports by their own suppliers, anticipated an accumulated savings of P$14,445,683 per year, plus an annual savings of 15,307 m^3 of water, 415 tonnes of paper and cardboard, and 23 tonnes of plastics. In addition it was anticipated that the projects would prevent the generation of 12 tonnes of hazardous wastes and the emission of 36 m^3 of solvents each year, and would bring energy savings of 1.46 million kWh/year.

In July 2006 the second stage of the program began, with the goal of expanding the program's scope and serving as an effective mechanism for promoting eco-efficiency as a strategy for optimizing companies. Participating in this stage were four large companies and 52 of their supplying companies. Of the latter, 46 supplying companies developed projects that anticipated an accumulated savings of P$25,573,014 per year, as well as a savings of 55,675 m^3 of water, 184 tonnes of paper and cardboard, and 5 tonnes of plastics per year. In addition it was anticipated that the projects would prevent the emission of 6 m^3 of solvents every year, and would generate energy savings signifying that approximately 1,341.3 tonnes of carbon dioxide (CO_2) would not be produced.

All together, considering the two stages of the program carried out thus far between August 2005 and December 2006, 65 supplying companies and six of their clients have developed projects through their

participation in this program. According to their own reports, they anticipate an accumulated savings of P$40,018,697 per year, as well as a savings of 70,982 m^3 of water, 599 tonnes of paper and cardboard, and 78 tonnes of plastic per year. They also anticipate preventing the generation of 14 tonnes of hazardous wastes and the emission of 32.4 m^3 of solvents each year, and achieving energy savings signifying that approximately 2,299.1 tonnes of carbon dioxide (CO_2) will not be produced. The factor used for this calculation is from the Association of Professionals and Technicians in Energy Application (*Asociación de Técnicos y Profesionistas en Aplicación Energética*—ATPAE) and corresponds to an average for the national electricity system, kWh x 0.6539 = kg CO_2 (www.atpae.org.mx).

The estimated benefits are the result of the projects developed by participating companies. The projects, in turn, result from a wide range of preventative alternatives that address different levels of change in companies, from the implementation of good operational practices to technological innovation. Good operational practices tend to be simple and easy to apply, typically produce immediate savings and can be implemented with minimal or no investment.

The implementation of technological improvements in companies involves changes that require major investment, but also offer competitive advantages associated with improvements in quality, productivity and efficiency. The total investment required by the 121 projects[1] developed through the program is P$20,014,784. As in the case of benefits, this amount corresponds to the estimates made in the projects developed to date.

The various prevention-oriented alternatives developed by participating companies include:

- Use of devices designed for more efficient water consumption; re-using wash water; and the installation of technology for more efficient water consumption.
- Best practices in the efficient use of thermal and electrical energy; replacing lighting systems; and technological modernization.
- Efficient use of raw materials; best practices in operations and production planning; and technological innovation.
- Making use of wastes; re-using wooden platforms; recycling packaging material; best practices in the use of contaminated rags and remanufacturing pieces.

Results demonstrate the effectiveness and efficiency of actions taken by participating companies. The average savings projected, amounting to more than a half million pesos per company per year, contribute toward improving their competitiveness and that of the productive chain to which they belong. With regard to the environmental performance of participating companies, they anticipate important benefits that will assist them in complying with applicable standards. In addition to savings in energy and raw materials (wood, paper and cardboard, among others), the reductions in emissions and wastes make a significant contribution to improving environmental quality.

---

[1] *Since some companies developed more than one project, the 65 companies together designed 114 projects in all. The large companies developed seven additional projects.*

Eight companies left the program during the stage in which they were developing their projects, primarily due to changes in personnel at their plants that affected those assigned to the program. Nevertheless, it is worth highlighting that the number of individuals assigned by companies to participate in the program was gradually increased as meetings were held. This reflects the growing interest on the part of companies that remained in the capacity-building process, as they became involved in the corresponding activities.

Strengthening capacities

A total of 181 professionals from 65 supplying companies participated in the training program. Typically, two or more professionals from different areas of the company participated. To achieve the transfer of capacities through the appropriation of concepts and tools in pollution prevention, the program used the methodology of "learning by doing." In this methodology, participants from companies develop their own projects and generate "know-how" through this experience. After completing the training sessions and group meetings, most participants considered themselves to be capable of developing new pollution prevention projects in their companies. Nearly all participants stated that the knowledge they obtained in the program was useful in their professional work, and they expressed confidence that they and the company where they were working would continue to develop pollution prevention projects. Concretely, the results obtained from the second stage illustrate the same tendencies as the results obtained by companies in the first stage.

Assimilation of cooperation-based mechanism

In terms of the assimilation of the cooperation-based mechanism, interesting prospects became apparent in the second stage of the program. First of all, the call for participation by large companies was coordinated, just as in the first stage, together with GEMI-Mexico and Querétaro's Department of Sustainable Development. When the results from the first stage were disseminated, various multinational companies became interested in participating in the program. Three of the companies that participated in the first stage (Colgate-Palmolive, Bristol-Myers Squibb and Electrónica Clarion) expressed their interest in "repeating" the program with a new group of suppliers. As a result of this significant interest, a "coupon" was implemented to facilitate the definition of participating companies.

It is clear that for the two large companies that participated for the second time in the program, their leadership role increased considerably during the second stage, with participation by a broad interdisciplinary team of professionals from these companies.

In terms of appropriation by SMEs, 100% expressed their interest in continuing to participate in the program. When asked to indicate the primarily reasons for wishing to continue, they stated that in addition to the direct

benefits obtained through project development, the interaction with other supplying companies and other sectors represents a significant added value for them. This same tendency was also evident in the evaluation surveys given in the first stage.

Final notes

1. The proposed goal of working with 40 supplying companies was surpassed by a significant margin. The large companies that participated during the first stage of the program (Colgate-Palmolive and Bristol-Myers Squibb) have demonstrated a greater capacity for sparking interest in others to participate in the program and a greater commitment to achieve program objectives. The large companies joining the program for the first time (JUMEX and SIKA Mexicana) have demonstrated a similar great commitment. It is important to emphasize that unlike the previous year, all participating companies presented a letter of commitment to CEC before entering the program.

2. As expected, the interest of participating suppliers was sparked once again, and this has been manifested in the active, growing participation of suppliers and large companies in program activities.

3. With essentially the same resources dedicated by CEC in the previous stage, it has been possible to serve a significantly greater number of companies, thereby substantially increasing the program's efficiency.

4. The participation by large companies through their work in coordination, the call for participation and assistance provided, together with their commitments associated with the participation of their suppliers is fundamental to achieving concrete results.

5. It is recommended that follow-up be provided to the implementation of the projects developed by the different companies participating in the first and second stages, in order to evaluate the program's real impacts.

6. Defining more precisely the size of the supplying companies that should be invited to participate in the program continues to be an important need. It has been noted that companies with fewer than 25 workers have greater difficulties in generating eco-efficiency projects that are economically significant for them. In addition it is complicated for them to free up the time of their personnel to attend program meetings.

7. It is important to continue to work on preventing the existence of competitors within the working groups for the different supplier chains.

8. Based on the responses from suppliers, it is important to explore the possibility of reducing the process time for the program, and this would, at the same time, make the program more efficient.

9. It is important to emphasize the development of eco-efficiency projects that will benefit the client-supplier, and also the active participation by purchasing departments in large companies, since management reports not having improved relations with clients during the course of the program.

10. There is no doubt that the costs of technical assistance for achieving the objectives proposed in the program are lower than those that would be required for other mechanisms. In addition, many of those other mechanisms do not encompass the development of capacities in companies.

11. The possibility of facilitating the process of obtaining Profepa's Clean Industry certification for participating companies should be considered.