

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK  
MULTILATERAL INVESTMENT FUND

**MEXICO**

**EXPANSION OF CLEANER PRODUCTION CENTERS**

**(TC-02-02-01-2)**

**DONORS PROJECT MEMORANDUM**

This document was prepared by the project team consisting of: Daniel Shepherd (MIF), Project Team Leader; Sergio Ardila (RE2/EN2); Alberto Bucardo (COF/CME); Javier Cayo (LEG/OPR); and Eliana Smith (RE2/EN2), who helped produce this document.

## CONTENTS

### EXECUTIVE SUMMARY

I.	COUNTRY AND PROJECT ELIGIBILITY .....	1
II.	BACKGROUND.....	1
	A. Industry and environmental performance in Chihuahua .....	1
	B. Industry and environmental performance in Tabasco .....	2
	C. Cleaner production and industry .....	3
	D. Cleaner production in Mexico .....	3
	E. Relationship to other activities .....	4
	F. MIF strategy .....	4
III.	PROGRAM OBJECTIVES AND COMPONENTS .....	5
	A. Program objectives.....	5
	B. Program components .....	5
	1. Component I: Raise awareness of cleaner production techniques among businesses and stakeholder groups.....	5
	2. Component II: Develop the pool of certified consulting service providers.....	6
	3. Component III: Conduct cleaner production demonstration projects.....	7
	4. Component IV: Institutional strengthening and reporting .....	8
IV.	EXECUTING AGENCY AND IMPLEMENTATION MECHANISM.....	9
	A. Executing agencies.....	9
	B. Implementation mechanism.....	10
V.	COST AND FINANCING .....	11
VI.	BENEFITS AND RISKS .....	13
	A. Benefits .....	13
	B. Risks .....	14
VII.	MONITORING AND EVALUATION.....	14
	A. Monitoring and oversight .....	14
	B. Evaluation.....	15
VIII.	ENVIRONMENTAL AND SOCIAL IMPACT.....	15

IX.	EXCEPTIONS TO BANK POLICY .....	15
X.	SPECIAL CONTRACTUAL CLAUSES.....	16

## ANNEXES

Annex I      Logical framework

## ABBREVIATIONS

CESI	Committee on Environment and Social Impact
CP	Cleaner production
EGADE	Executive MBA Program ( <i>Escuela de Graduados de Alta Dirección Empresarial</i> ,) at ITESM Chihuahua
EQC	Environmental Quality Center ( <i>Centro de Calidad Ambiental</i> )
IPN	National Polytechnic Institute ( <i>Instituto Politécnico Nacional</i> )
ISO	International Standards Organization
ITESM	Monterrey Institute of Technology and Advanced Study ( <i>Instituto Tecnológico y de Estudios Superiores de Monterrey</i> )
MCPC	Mexican Cleaner Production Center
MIF	Multilateral Investment Fund
NGO	Nongovernmental organization
RCPC	Regional Cleaner Production Center
SME	Small and medium-sized enterprise
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development

## EXPANSION OF CLEANER PRODUCTION CENTERS

(TC-02-02-01-2)

### EXECUTIVE SUMMARY

<b>Executing agency:</b>	National Polytechnic Institute (IPN)
<b>Co-executing agency:</b>	Monterrey Institute of Technology and Advanced Study (ITESM)
<b>Beneficiaries:</b>	Beneficiaries of the program will include: (i) 60 small and medium-sized enterprises (SMEs) to benefit from embracing cleaner production (CP) methods at their facilities; (ii) 120 consultants to receive CP training; (iii) 60 local consultants to earn CP certification; (iv) 1,200 representatives from companies, government, and industrial trade groups to be introduced to the program and the benefits of CP; and (v) two regional centers to be opened.
<b>Objective:</b>	The program's general objective is to help make small and medium-sized enterprises in the regions of Chihuahua and Tabasco more efficient, productive, and environmentally sound. To accomplish this aim, the program proposes to increase awareness and promote the use of cleaner production techniques at businesses by setting up and supporting two regional cleaner production centers.
<b>Description:</b>	<p>The program comprises four components:</p> <p><b>Component I: Raise awareness of cleaner production techniques among businesses and stakeholder groups.</b> For the regional cleaner production centers to be successful and sustainable, much of the initial effort must focus on raising awareness of the benefits of cleaner production. Accordingly, this component seeks to familiarize SMEs with cleaner production techniques.</p> <p><b>Component II: Develop the pool of certified consulting service providers.</b> This component will train practitioners in methods for implementing cleaner production programs at SMEs. A high-quality pool of CP consulting service providers will be developed through ongoing training courses held annually for prospective consultants covering all the basics of CP strategy implementation at manufacturers and service companies.</p>

**Component III: Conduct cleaner production demonstration projects.** Projects will be conducted at manufacturing plants under this component, to demonstrate the technical and economic viability of cleaner production techniques and how they make the plants more competitive. Sixteen demonstration projects will be conducted in year one, and 22 in each of the following two years. The projects will target a variety of subsectors, in order to deepen the know-how generated by the demonstration projects and facilitate their replication at a greater number of businesses.

**Component IV: Institutional strengthening and reporting.** This component's objective is to strengthen the institutional structure supporting cleaner production in Mexico and spread the word on program outcomes through the following activities: (i) setting up and supporting the regional cleaner production centers; (ii) inaugurating the regional centers with a special event; (iii) establishing an advisory board for each regional center; and (iv) developing a website for disseminating program outcomes.

<b>Financing:</b>	Method: nonreimbursable (Small Enterprise Development Facility, III-A)	
<b>Amount and source:</b>	MIF	US\$ 1,000,000
	Local contribution:	US\$ 1,400,000
	Total:	US\$ 2,400,000
<b>Execution timetable:</b>	Execution period: 36 months	
	Disbursement period: 42 months	
<b>Environmental and social review:</b>	The Committee on Environment and Social Impact (CESI) reviewed and approved the program abstract at its 29 March 2003 meeting, and recommended the addition of occupational safety and health topics to the definition of cleaner production (see paragraph 2.9)	
<b>Special contractual clauses:</b>	As a condition precedent to the first disbursement of the contribution, the IPN-MCPC must present the agreement entered into with ITESM, in which the latter assumes responsibility for co-execution of the program in Chihuahua.	
<b>Exceptions to Bank policy:</b>	None.	

## I. COUNTRY AND PROJECT ELIGIBILITY

- 1.1 Mexico was declared eligible for all financing facilities of the Multilateral Investment Fund (MIF) in 1994. The proposed project is eligible for MIF financing under the Small Enterprise Development Facility (III-A), since it seeks to improve the production methods of small and medium-sized enterprises while making them more competitive. This program is also part of the MIF cluster of projects on “*Achieving ecoefficiency through cleaner production and environmental management.*”<sup>1</sup> The program would be the sixth under this cluster. The MIF’s objective for this program, as for others, is to help businesses improve their performance through major financial gains and more sustainable production methods with less environmental impact.

## II. BACKGROUND

### A. Industry and environmental performance in Chihuahua

- 2.1 In 2001 the Environmental Quality Center (Centro de Calidad Ambiental, EQC) at the Chihuahua campus of the Monterrey Institute of Technology and Advanced Studies (Instituto Tecnológico y de Estudios Superiores de Monterrey, ITESM) performed the first industrial waste assessment for Chihuahua. This study furnished key data on the generation, management, and disposal of industrial waste, along with information on the levels of knowledge, verification, and compliance associated with the Ecobalance and Environmental Protection Act (Ley General del Equilibrio Ecológico y Protección al Ambiente) and the laws and regulations thereunder. A roster of over 1,300 industrial facilities, broken down by sector and size, was prepared for the study, yielding a sample segregated by sector and subsector.
- 2.2 The study revealed that small and medium-sized enterprises (SMEs)<sup>2</sup> tend to dominate the regional industrial landscape in Chihuahua, and that their environmental performance is poor. It convincingly identified two basic, very distinct groups of businesses. The first—large and medium-sized enterprises—generates nearly 95% of all hazardous waste, but a greater proportion employ best practices in waste management. Companies in this group generate nearly 88% of all nonhazardous waste, with more of that waste being recovered than for other companies. They report greater familiarity and compliance with environmental laws and regulations, and tend to be more closely controlled by environmental oversight authorities. Their major issue is the large amount of waste they generate, but they appear to have no difficulty managing it with human resources specifically assigned

---

<sup>1</sup> MIF/GN-58-1.

<sup>2</sup> For the purposes of this document and the proposed initiative, an SME is defined as a company with under US\$5 million in annual sales.



to look after environmental compliance and safety. Reduced waste generation through cleaner production techniques and better waste separation would lower the cost of raw materials procurement and waste disposal, representing a key area of opportunity.

- 2.3 Small businesses and micro enterprises generate little more than 4% of all hazardous waste, yet a greater proportion mismanage that waste. This group is responsible for just over 12% of nonhazardous waste, yet most of it goes unrecovered and is in some cases mismanaged. They are familiar with environmental legislation and compliance is poor. Moreover, they tend not to be inspected or controlled by government agencies of which they are often unaware. The implication is that some of these companies are unaware of their poor environmental performance. Though the group spans all industries, the machine tools, nonmetallic minerals, and wood sectors are of special concern. These SMEs have a greater need for heightened environmental awareness and practical information on how to become gradually more competitive and environmentally sound through efficient use of materials. The SMEs in this numerous group need to know more about cleaner production, so that they have a reason to change their behavior and outlook to be more competitive. The assessment identified the following sectors as the main environmental offenders that could benefit the most from cleaner production techniques: (i) machine tools, (ii) lumber industry, (iii) nonmetallic minerals, (iv) food industry, (v) machine shops, and (vi) hotels.

## **B. Industry and environmental performance in Tabasco**

- 2.4 Of companies based in Tabasco at year-end 1999, 99.2% were small businesses and micro enterprises, 0.7% were medium-sized enterprises, and only 0.1% were large companies. Natural resources are abundant in the State of Tabasco with 30% of the country's water resources located near its most important hydroelectric power producing area. Twenty-one percent of Mexico's oil reserves are concentrated in Tabasco, driving much of the state's economic growth. Petroleum industry development has created a series of major environmental problems that endanger natural resources and the local population's quality of life: drilling and processing have made soils unusable for agriculture, and gas and particle emissions have degraded air and water quality.
- 2.5 Magnifying these problems are environmental changes wrought by industrial urban development brought on by economic activity, drastically increasing utility service needs and demand, and generating substantially more solid waste, municipal sewage, industrial wastewater, atmospheric emissions, and hazardous and nonhazardous waste and materials. The state's principal industry in terms of units of production is food processing, including flours and meals, dairy, canning, sugar, and winemaking.

- 2.6 Affecting pollutant volume from untreated industrial wastewater is the fact that three of the state's six sewage treatment plants are operating at under 50% capacity, and the stabilization ponds built by several municipalities are of questionable effectiveness. In recent years the lack of environmental awareness or literacy has accelerated natural resource degradation and solid waste pile-up along roadways, streets, small lakes, and rivers.

### **C. Cleaner production and industry**

- 2.7 Cleaner production techniques make industries more efficient and competitive by producing more with the same amount of raw materials, energy, and inputs. Less pollution means they are more environmentally sound. As concern over environmental degradation grows, moreover, markets are increasingly quality conscious when it comes to the processes employed by raw materials suppliers and manufacturers and their products. This exerts pressure for cleaner production methods. But even so, only large companies can afford to implement these methods at present. Generally speaking, Latin America's SMEs lack the financial, technical, and technological resources to enter the most environmentally conscious markets.
- 2.8 Cleaner production looks at a company's processes and products to determine how and why waste is produced. The goal is to reduce or eliminate waste by consuming fewer raw materials and inputs, keeping waste from being generated or recycling it in-house or externally, and employing alternative technologies. Cleaner production also looks at occupational safety and health factors. The result is lower production costs and less risk to employees and the environment. Lastly, these programs create new opportunities in the labor market through business startups in environmental services and waste management and recycling.
- 2.9 For this reason, cleaner production programs and environmentally sound methods are becoming increasingly popular among SMEs the world over, as an easy and cost-effective way of making themselves more competitive. The traditional business wisdom that caring for the environment adds to production costs is yielding gradually to blossoming awareness that costs can be cut through cleaner production and effective environmental and technological management.

### **D. Cleaner production in Mexico**

- 2.10 In Mexico, the Mexican Cleaner Production Center (MCPC) has been successful in demonstrating how industry can benefit from cleaner production. Founded in 1996 with support from the United Nations Industrial Development Organization (UNIDO), the MCPC has helped dozens of businesses cut costs by using less energy, water, and raw materials. UNIDO's financial support for CPML ended in 1999.

- 2.11 Mexico's size has limited the MCPC's reach outside the capital, principally because working with companies outside Mexico City metropolitan area was not cost-effective. The proposed project seeks to extend the MCPC's reach by setting up and supporting regional cleaner production centers (RCPC) in the states of Chihuahua and Tabasco. The centers will provide more and better cleaner production services mainly to SMEs in these two regions, so they can become more competitive. The project is justified because it broadly meets the needs of Mexican industry. Given Mexico's numerous, mainly small and medium-sized industrial enterprises and diverse industrial base, the MCPC cannot meet cleaner production needs effectively throughout the country. The effectiveness of regional centers and hubs has been tested in a number of countries, including India and Brazil, where they had a substantial positive impact on the environment and productivity. The proposed regional centers would have a direct, beneficial economic impact and substantially reduce pollution, developing a culture of sustainable development in Chihuahua and Tabasco.

**E. Relationship to other activities**

- 2.12 In 1999 the MIF approved a project in Monterrey (ATN/MH-6742-ME) that provided SMEs with environmental assistance in another area: the implementation of ISO 14001 environmental management systems. The project was successful, and the executing agency (Instituto de Protección Ambiental) continues to provide services to other businesses in the State of Nuevo León.
- 2.13 The Bank's strategy with Mexico points to the need for productive sector strengthening through actions to improve natural resource management and repair environmental degradation. Other strategy goals include sustainable economic growth and heightened competitiveness. The proposed project would dovetail with the Bank's strategy by introducing cleaner production methods and environmental management systems at SMEs, lowering their environmental impact while raising profitability through reduced input use.

**F. MIF strategy**

- 2.14 By the end of this program sufficient local capacity should be available in the two regions to offer environmental management and cleaner production services to other businesses, heightening awareness of the advantages of cleaner production methods for SMEs. Successful execution of this program would also have a demonstration effect in other companies productivity when it is apparent that production cost can be significantly lowered purely through cleaner production methods. The innovative features of the Mexico program are a system of certification for qualified cleaner production consultants and the rollout of successful experiences to other parts of the country. Lessons learned at the MCPC will make it possible to develop local capacity quickly in the area of cleaner production.

### **III. PROGRAM OBJECTIVES AND COMPONENTS**

#### **A. Program objectives**

- 3.1 The program's general objective is to help make small and medium-sized enterprises in the regions of Chihuahua and Tabasco more efficient, productive, and environmentally sound. To accomplish this aim, the program proposes to increase awareness and use of cleaner production (CP) techniques at businesses by setting up and supporting two regional cleaner production centers.
- 3.2 Activities to achieve this goal are grouped into the following components: (i) raise awareness of cleaner production methods among businesses and stakeholder groups; (ii) develop certified consulting service providers; (iii) develop cleaner production demonstration projects; and (iv) institutional strengthening and reporting. Unless otherwise stated, all activities and strategies will apply to both regional centers (Chihuahua and Tabasco).

#### **B. Program components**

##### **1. Component I: Raise awareness of cleaner production techniques among businesses and stakeholder groups (MIF US\$100,760; Local US\$45,750)**

- 3.3 For the regional cleaner production centers to be successful and sustainable, much of the initial effort must focus on heightening awareness of the benefits of this new trend for all sectors involved. Accordingly, this component seeks to familiarize SMEs with cleaner production techniques
- 3.4 The project will put short talks or workshops on the meeting schedules of stakeholder groups, to raise awareness of cleaner production methods where appropriate. At least two meetings a year are to be organized at each association, to advocate cleaner production strategies and report on regional center success stories. These meetings will be designed to generate interest and encourage businesses to implement cleaner production strategies at their facilities. The awareness campaign will also reach out to government agencies and educational institutions as a way of shepherding along the process of change. Information materials and presentations targeting different audiences will be developed with a single message: "Cleaner production makes you more competitive."
- 3.5 Subsector-specific workshops to discuss particular sets of issues are planned as a means of generating interest and inducing more businesspeople to implement cleaner production methods at their facilities. The program will provide assistance on making cleaner production and environmental management part of the curriculum at such universities as ITESM. Future engineers will come away with an understanding of the advantages of cleaner production and other preventive tools. More specifically, they will receive training in how to support the implementation

of cleaner production methods. In the course at ITESM, students will participate in an apprenticeship designed to acquaint them with cleaner production tools and train them in their use, working under the direction of the professor and regional center on environmental assessments that present opportunities for cleaner production (see paragraph 3.11).

- 3.6 Annual forums on cleaner production are planned over the course of the program, where project outcomes would be presented. These events would be cohosted by representatives of each of the different stakeholder groups (industry, various levels of government, and educational institutions). The forums would provide information and training and publicize pollution-prevention success stories as a prelude to altering the mindset of SMEs, so they can produce more with less.

## **2. Component II: Develop the pool of certified consulting service providers (MIF US\$75,810; Local US\$129,540)**

- 3.7 This component will train practitioners in methods for implementing cleaner production programs at SMEs. A high-quality pool of CP consulting service providers will be developed through ongoing training courses held every year for prospective consultants covering all the basics of CP strategy implementation at manufacturers and service companies. The training will initially cover: (i) best practices; (ii) gains in process- and energy-efficiency; (iii) substitution of materials; (iv) conservation and efficient use of water; (v) site remediation, reuse, or recycling; (vi) new technologies; (vii) ecodesign; and (viii) project evaluation (cost analysis). The training would be divided into two main phases of five days each. Phase one would give participants the tools to start a demonstration project at a company under the direction and guidance of an outside consultant. At least eight participants from each region are expected to put what they have learned into practice on demonstration projects each year. Phase two would go into greater depth, covering more complicated subjects in greater detail with time for participants to raise questions based on their experience applying what they had learned in phase one to a real project.
- 3.8 As a first activity, a consultant will be hired to adapt a cleaner-production training program for environmental consultants. The final curriculum will draw on the MCPC's recommendations and experience developing training courses for consultants and introductory courses on cleaner production methods. Training under the program will be ongoing, rather than a one-time event, with training seminars followed by sessions on real-world applications at specific businesses. Training of this kind will be offered to environmental consultants, practitioners, and stakeholder groups each year. In year one, the focus will be on consultants in Chihuahua City and Villahermosa. Starting in year two, stakeholders from other parts of Chihuahua y Tabasco, and possibly other neighboring states, will be invited to participate in an effort to spread the word on cleaner production to more cities, especially industrial centers.

- 3.9 As more people from varied sectors apply (service companies, universities, government agencies, practitioners), the training program can become more selective in choosing individuals with a solid local reputation in the two regions. Programs of this kind will be rolled out to other municipalities and regions from year two onward, feeding the supply of CP services. Another major innovative feature of this component is the establishment of a national certification process for consultants, so that businesses have a solid roster of dependable consultants on which to draw. The MCPC will develop an evaluation framework for certifying consultants, based primarily on their technical and practical experience. Certification along these lines would become available in the regional center's second year of operation.
- 3.10 The expected outcome of this component is completion of the full training cycle by a minimum of 60 people in the following sectors: (i) 20% government employees at environmental and industrial development agencies; (ii) 30% university professors; and (iii) 50% private-sector consultants. All course participants will have to pay for the training. Additionally, a minimum of 30 consultants are expected to be trained and certified at each regional center over the three years of the project. With MCPC support, each regional cleaner production center will produce at least one manual per year (a total of six) for sectors on which no manual has been published in Mexico.

**3. Component III: Conduct cleaner production demonstration projects  
(MIF US\$301,135; Local US\$592,945)**

- 3.11 Businesses interested in CP assessments will be identified through the outreach efforts described in Component I and ongoing consultations with the two RCPC advisory boards (see paragraph 4.5). Businesses selected for a demonstration project must work out arrangements with the RCPC to publicize the gains achieved through cleaner production techniques, so that they can be held up as examples for other, similar companies.
- 3.12 Each RCPC will conduct 16 demonstration projects in year one, and 22 in each of the two subsequent years. The projects will target the subsectors described in paragraphs 2.4 and 2.5, in order to deepen the know-how generated by the demonstration projects and facilitate their replication at a greater number of businesses. To be selected for a demonstration project, a company must, among other criteria: (i) be a small and medium-sized enterprise; (ii) have a locally significant environmental impact; (iii) agree to share its experiences with other companies; and (iv) obtain full management involvement and commitment to the project (see Annex VIII in the technical files for more information).
- 3.13 To monitor project execution closely, two specialists will be hired for each RCPC (see paragraph 4.4). These specialists will visit prospective companies to settle on a contract stating both parties' obligations for the demonstration project (see

Annex VI for a draft contract). Fee-for-service arrangements will be worked out with participating companies based on their socioeconomic circumstances. The company will pay a percentage of the cost of the services, based on its size, with the program covering the remainder (see Annex II in the technical files).

- 3.14 Points to be covered in the memorandum of understanding between the RCPC and the company are as follows: (i) a demonstration project is to be conducted in conjunction with the company; (ii) the RCPC agrees that all confidential process data are the property of the company, and agrees to keep such data confidential; (iii) the company agrees to work actively with the RCPC specialists; (iv) the company will implement at least 50% of the recommended CP options, insofar as feasible; and (v) the company promises to get involved in local promotion of clean production with the RCPC, attending seminars and workshops based on the project. Consultants trained under the project will play an active part in conducting demonstration projects.
- 3.15 Once the final report on each demonstration project has been reviewed, a campaign to disseminate the results will target venues that reach similar companies (specialized trade journals, conferences, etc.). The businesses will support the outreach effort through presentations on their project at the annual forums on cleaner production and competitiveness described under Component I.

#### **4. Component IV: Institutional strengthening and reporting (MIF US\$226,250; Local US\$478,050)**

- 3.16 This component's objective is to strengthen the institutional structure supporting cleaner production in Mexico and spread the word on program outcomes through the following activities: (i) setting up and supporting the regional cleaner production centers; (ii) inaugurating the regional centers with a special event; (iii) establishing an advisory board for each regional center; and (iv) developing a website for publicizing program outcomes.
- 3.17 The first activity under this component will be to hire and train staff for each RCPC, including a director, two specialists, and an administrator (see paragraph 4.4). Technical staff will need training in both technical and administrative areas, so that they can provide beneficiaries with valuable information and highly competitive services. Most of this training will come early in the program, but further training will be given periodically as necessary or beneficial. Ongoing training in these areas will continually hone the skills of RCPC staff and, consequently, enhance the services offered.
- 3.18 To get word of the newly established RCPC out immediately to a greater number of potential project beneficiaries, a kickoff event will be organized as an initial outreach effort. The kickoff will be advertised in a variety of mass media, and 300 invitations will be sent to sector representatives, mainly in industry. A small

number of special guests will be invited from the national government and other areas connected in some way with the opening of the RCPC. The RCPC kickoffs will provide a venue for telling stakeholder groups about the plans, goals, actions, and services to be offered under the program.

- 3.19 Feedback and ongoing dialogue will be needed, if the RCPC is to gain an in-depth understanding of changing conditions in each of the target beneficiary sectors. Consequently, each RCPC should set up an advisory board of stakeholder group representatives with standing in the region, who are familiar with the issues. These bodies will serve as a consultative body, suggesting ways of enhancing the effectiveness of actions on which their views are sought. The advisory boards will be made up of representatives from government, development banking, academia, industrial associations, NGOs, and international organizations. The RCPC will have the task of holding the advisory board's interest through an effective strategy for turning its members into advocates for cleaner production in their own areas of activity.
- 3.20 The fourth activity will be to facilitate online access to valuable information on cleaner production through the design and upkeep of a RCPC website and platform to be publicized in the region. The website will provide industries with national and local information to assist them in better implementing CP at their companies, with: (i) participating institutions; (ii) key resources on CP; (iii) CP manuals for various subsectors; (iv) local success stories (as they occur); (v) information on RCPC events; (vi) Mexican lending institutions; (vii) information on workshops and conferences; and (viii) printing of CP manuals.

#### **IV. EXECUTING AGENCY AND IMPLEMENTATION MECHANISM**

##### **A. Executing agencies**

- 4.1 The beneficiary and executing agency for the project will be the National Polytechnic Institute (IPN). The IPN will manage the project through its Mexican Cleaner Production Center (MCPC) and the Chihuahua campus of the Monterrey Institute of Technology and Advanced Study (ITESM) (see Annex XI in the technical files for the IPN/ITESM memorandum of understanding). Specifically, the ITESM will bear primary responsibility for the execution of project activities in Chihuahua, and the IPN for those in Tabasco.
- 4.2 The IPN's MCPC (IPN-MCPC) is a nonprofit institution that develops and promotes services to build local CP implementation capacity as a way of making Mexican businesses more efficient, competitive, and environmentally friendly. The MCPC offers training, technology transfer, and evaluations of facilities and information. The added value of these services is assistance from international specialists and experts. The MCPC plays a pivotal role in promoting and



developing local CP service capacity. As focal point and promoter of the CP concept, it works with environmental consulting firms to develop and promote CP implementation tools without competing with them. It encourages the use of resources and mechanisms already available to these firms, supporting them through interaction. Working in close coordination with other service providers, it acts as catalyst, coordinator, and promoter of cleaner production, nurturing strategic partnerships that enhance the pool of service providers. The IPN has a branch in Villahermosa that will function as the institutional headquarters for the proposed RCPC.

- 4.3 The ITESM is a university system that educates individuals committed to the social, economic, and political development of their community, so that they can compete internationally in their field of study. The ITESM system is a network of 32 campuses throughout Mexico, providing educational services in other Latin American countries through its Virtual University. The ITSEM's Chihuahua campus opened in 1976. Sharing ITSEM's mission, the Chihuahua campus is home to over 2,600 students attending senior high school (preparatoria), undergraduate, and graduate classroom and virtual learning programs. The Executive MBA Program (EGADE) at ITESM Chihuahua houses a number of think tanks and continuing education programs that provide the business community, associations, government agencies, and others with personalized consulting and advisory services, research, and training. The proposed Regional Cleaner Production Center (RCPC) will fill such a role.

## **B. Implementation mechanism**

- 4.4 A project execution coordinator and manager will be hired to work at the IPN-MCPC. The coordinator's responsibilities will include: (i) managing project activities in accordance with the plan of action; (ii) directing budget management and execution in accordance with established procedures; (iii) processing disbursement requests for the Bank's contribution; (iv) preparing statements on the use of resources; and (iv) preparing and delivering administrative and technical reports to the Bank. The IPN-MCPC's executive director will supervise the coordinator.
- 4.5 Each RCPC will have a coordinator and an assistant to manage operations at the center. Each RCPC also will have an advisory board of around eight members from the public and private sectors and academia (see paragraph 3.18 for more information). The aim is to garner support among the advisory board members for the strategies adopted by the RCPC, paving the way for their implementation with the beneficiaries. Small, quarterly meetings will give the advisory board a fuller picture of CP strategies and keep them informed of all developments. The advisory board will be consulted on important matters and subsequently notified of milestones reached and upcoming activities.

- 4.6 The execution period for the program will be 36 months, and the disbursement period, 42 months. The Bank will set up a revolving fund of up to 10% of the total approved amount. The IPN-MCPC will use the MIF resources to procure goods and services, and hire consultants, necessary for program execution, in accordance with relevant Bank and MIF procedures and policies.
- 4.7 **Accounting and audits.** The IPN-MCPC will keep proper internal accounts and perform a financial audit of program funds. It must establish and maintain effective accounting, financial, and internal control systems that store and report itemized information separately from other programs managed by the executing agencies. The system of accounting will be such that the necessary documents can be produced, transactions audited, and financial statements prepared in a timely manner. Program records will: (i) identify sums received from each of the various existing sources of income; (ii) report program expenditures using a Bank-approved chart of accounts that segregates MIF contributions and funds from other sources; and (iii) include specific information as necessary to identify goods or services purchased and how they were used. The IPN-MCPC also will: (i) open separate bank accounts specifically for managing the MIF contribution and local counterpart funds; (ii) process disbursement requests and the respective expense vouchers, in accordance with Bank disbursement procedures; and (iii) submit annual financial statements audited by an independent firm of accountants acceptable to the Bank, as well as semiannual financial reports on the revolving fund.
- 4.8 **Preparedness.** The design, budget, and planned activities have been set with the involvement of the IPN-MCPC and ITESM Chihuahua, and both have confirmed the necessary local counterpart contribution (see Annex XII in the technical files).

## V. COST AND FINANCING

- 5.1 The estimated total cost of the program is US\$2,400,000 broken down as follows: (i) US\$1,000,000 in MIF nonreimbursable financing from the Bank (Small Enterprise Development Facility, III-A); and (ii) US\$1,400,000 in counterpart funding to be raised by the IPN-MCPC, with one-half of this amount in cash. The following table presents a breakdown by expenditure item and source of funding. The full budget is available for consultation in the program technical file.

**Budget  
(US\$)**

<b>Components</b>	<b>MIF</b>	<b>Local</b>	<b>Total</b>	<b>%</b>
Heightened awareness of cleaner production techniques among businesses and stakeholder groups	100,760	45,750	146,510	6.1
Development of certified consulting service providers	75,810	129,540	205,350	8.6
Cleaner production demonstration projects	301,135	592,945	894,080	37.3
Institutional strengthening and reporting	208,650	452,050	660,700	27.5
Management	176,960	119,000	295,960	12.3
Cluster monitoring	20,000	--	20,000	0.8
Evaluation	50,000	--	50,000	2.1
Financial audit	18,000	--	18,000	0.7
Contingencies	48,685	60,715	109,400	4.6
<b>TOTAL</b>	<b>1,000,000</b>	<b>1,400,000</b>	<b>2,400,000</b>	<b>100.0</b>

- 5.2 **Sustainability.** Program sustainability is closely linked to the RCPCs' ability to promote and develop the new services available through this initiative. Accordingly, each RCPC is expected to expand demand for CP-related services and their future supply, creating a sustainable market. All project income from training and technical assistance will go to the regional centers and be used for further training of local trainers, as needed, and training to small businesses in addition to the group of 60 SMEs under the program. By the end of the project, therefore, the RCPCs will possess institutional capacity and an income stream sufficient to carry on their training and consulting activities (see Annex II to the technical files). The group of local consultants who receive training are also expected to be able to provide training and consulting services to other local companies interested in CP.
- 5.3 Another way of achieving sustainability is for the RCPCs to provide services to major corporations and implement projects without RCPC subsidies, raising funds from the outset separately from the project targeting SMEs. The RCPCs will provide a number of inexpensive services not charged to the direct beneficiary, such as the information provided on the website, short awareness workshops, etc. Such services will be supported and sustained through sponsorships to be sought among local manufacturers and businesspeople with a special interest in them.

## VI. BENEFITS AND RISKS

### A. Benefits

- 6.1 SMEs in the states of Chihuahua and Tabasco will have a RCPC closeby, supporting their efforts to become more competitive and environmentally sound in a variety of subsectors through a preventive approach employing a methodology proven in Mexico City by the MCPC. The two RCPCs will give them better and cheaper access to highly competitive CP services. Companies throughout the two regions will have access to a sufficient number of CP consultants, as well as to valuable information and training in a number of areas, making it possible for them to build capacity and produce more with less. An intensive awareness campaign and CP training will enable companies to begin a process of continual improvement at their facilities, shifting priority to lower-cost preventive strategies and away from the current expensive end-of-the-pipe strategies that SMEs cannot afford.
- 6.2 The two RCPCs will work to create the virtuous circle pictured in Figure 1. The RCPCs build capacity through a process of continual improvement, which helps them run more efficiently and achieve their objective of promoting CP in the two regions. Activities to promote the RCPC generate supply and demand for CP services in the target sectors. These activities lead to more companies seeking to operate in a more environmentally sound manner, while at the same time becoming more competitive.

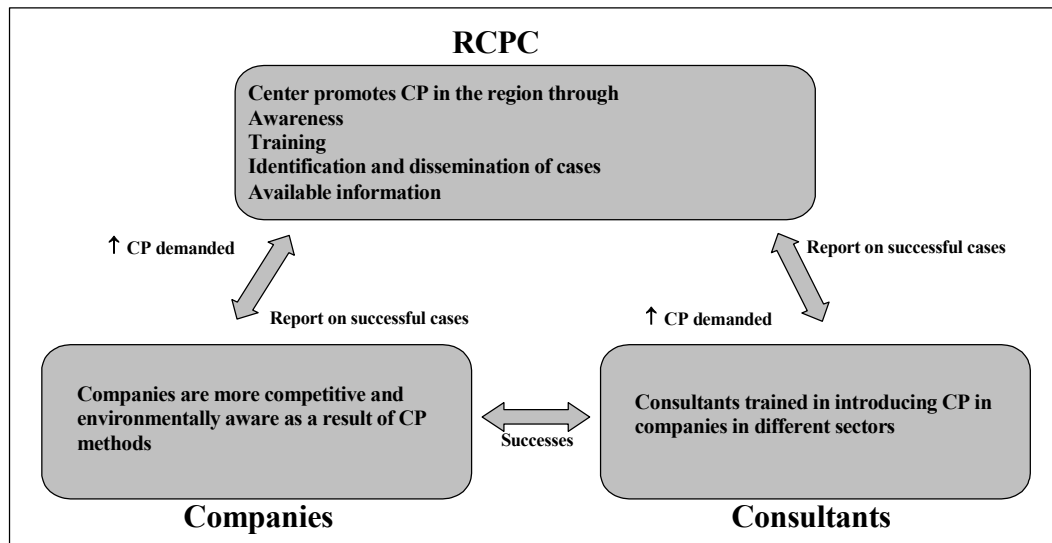


Figure 1. Role of the RCPCs in the program

- 6.3 **Beneficiaries** of the program will include: (i) 60 small and medium-sized enterprises (SMEs) to benefit from embracing cleaner production techniques at their facilities; (ii) 120 consultants to receive CP training; (iii) 60 local consultants to earn CP certification; (iv) 1,200 representatives from companies, government,

and industrial trade groups to be introduced to the program and the benefits of CP; and (v) two regional centers to be opened.

## **B. Risks**

- 6.4 The program may run risks due to the following: (i) future demand for the services to be provided may not be as strong as anticipated; and (ii) financial constraints could keep Mexican companies from participating in the program. The first of these risks will be mitigated by the resources devoted to raising awareness among Mexican SMEs of the advantages of embracing cleaner production techniques. The project includes specific activities to raise such awareness and publicize the gains from implementing CP at companies. These gains could be used to interest other companies in CP. The second risk will be mitigated by lowering the cost of participating in the program, making it more affordable and likely more attractive for SMEs. More importantly, strengthening the local pool of trained professionals will make it less expensive for companies to embrace cleaner production techniques by the end of the program, so that more SMEs can defray the cost.

## **VII. MONITORING AND EVALUATION**

### **A. Monitoring and oversight**

- 7.1 Monitoring. The IPN-MCPC will prepare and deliver project progress reports to the Bank's Country Office in Mexico within 30 days after the close of each six-month period, and a final report within 30 days after the final disbursement. These reports will follow a format agreed upon in advance with the Country Office and discuss project activities, finances, and outcomes measured in terms of the benchmarks set in the logical framework for the project. The Country Office will use these reports to supervise project implementation and prepare a project completion report within three months after the final disbursement.
- 7.2 The IPN-MCPC will be responsible for gathering and analyzing the information necessary to track on an ongoing basis the principal indicators established in the logical framework attached to this document as Annex I, as modified by mutual agreement between the Bank and the IPN-MCPC. The IPN-MCPC and the Bank will use these indicators for program oversight and evaluation. They must be taken into account when preparing the semiannual progress reports and the midterm and final evaluations.
- 7.3 Under the heading of monitoring, the program will provide funding for its staff to attend events relating to the MIF cluster of projects on "*Achieving ecoefficiency through cleaner production and environmental management*," as well as workshops and conferences.

## **B. Evaluation**

- 7.4 The Bank will hire outside consultants with program funds to conduct (i) a midterm evaluation approximately 18 months after the program is declared eligible for disbursements, or once 50% of resources have been disbursed; and (ii) a final evaluation at the end of the execution period. The Bank will prepare the terms of reference for these evaluations in conjunction with the MCPC. The midterm evaluation will assess program progress and general performance with special emphasis on: (i) the effectiveness of the certification program and specific recommendations for its improvement; and (ii) user satisfaction with program services (recipients of training, companies participating in Component III, etc.). This assessment will serve as a basis for recommending any changes necessary in the use of the remaining funds. For the final evaluation the outside consultants will assess: (i) whether certification of consultants trained under the program has had any impact on what they charge for their services, or has brought them more business; (ii) the percentage of recommendations implemented in response to evaluations done at companies participating in Component III; and (iii) the geographic scope of program activities (including areas bordering the states of Tabasco and Chihuahua). The consultants will employ the logical framework attached as Annex I, as amended by mutual agreement between the Bank and the MCPC, as well as the evaluations of each CP implementation project at companies under Component III. The IPN-MCPC and ITESM will make available any and all information and documentation needed for the evaluations. The Bank's Country Office will conduct annual performance reviews with support from the Project Team and IPN-MCPC, to determine the extent to which the program objectives have been achieved. These reviews will determine annual counterpart funding requirements, as well as whether a program should continue, be suspended, or be canceled.

## **VIII. ENVIRONMENTAL AND SOCIAL IMPACT**

- 8.1 The project is expected to have a positive environmental impact, given its focus on promoting cleaner production strategies. The thrust of the planned activities, moreover, is to work with companies on introducing such pollution prevention strategies as better use of resources and more environmentally friendly materials. Since occupational safety and health considerations are part of the cleaner production approach, the program is expected to affect working conditions for the better.

## **IX. EXCEPTIONS TO BANK POLICY**

- 9.1 No exceptions to Bank and MIF policies are contemplated.

## **X. SPECIAL CONTRACTUAL CLAUSES**

- 10.1 As a condition precedent to the first disbursement of the contribution, the IPN-MCPC must present the agreement entered into with ITESM, in which ITESM assumes responsibility for co-execution of the program in Chihuahua.

**LOGICAL FRAMEWORK**  
**EXPANSION OF CLEANER PRODUCTION CENTERS**  
**(TC-02-02-01-2)**

Narrative summary	Indicators	Means of verification	Assumptions
<p><b>Goal</b></p> <p>Help make small and medium-sized enterprises in the regions of Chihuahua and Tabasco more efficient, productive, and environmentally sound.</p>	<p>Participating SMEs reduce their emissions and achieve savings of at least 10% on waste, energy, raw materials, and/or water.</p>	<p>Report on what participating companies have achieved with a before-and-after comparison of their implementation of CP techniques, using pre-established indicators.</p>	<p>The macroeconomic conditions and business environment in the country are those required for private sector development.</p>
<p><b>Purpose</b></p> <p>Increase awareness and use of cleaner production (CP) techniques at businesses by setting up and supporting two regional cleaner production centers.</p>	<p>By the end of the program, 50 companies employ cleaner production techniques in the two regions, and two regional cleaner production centers are operating independently.</p>	<p>Annual report on project activities, including the number of customers served under the project.</p>	<p>Cleaner production techniques and environmental management remain important considerations in domestic and international markets.</p> <p>Environmental policy increasingly emphasizes pollution prevention.</p>
<p><b>Components</b></p> <p>1. Raise awareness of cleaner production techniques among businesses and stakeholder groups.</p>	<p>1,200 representatives from companies, government, and industrial trade groups are introduced to the program and the benefits of CP; 180 engineering students become more aware of CP tools, and are trained to use them in their future careers.</p>	<p>Attendance sheets of forums, workshops, and meetings.</p> <p>Lists of students enrolled in the course each semester.</p>	<p>The media targeted for CP awareness-building are effective at reaching SMEs and other stakeholder groups.</p> <p>Teaching and learning strategy and schedule are geared to the customer, to encourage workshop attendance and sustained participation.</p>



Narrative summary	Indicators	Means of verification	Assumptions
2. Develop the pool of certified consulting service providers.	At least 120 consultants receive training. Of these, 60 of the best take part in demonstration projects, gaining practical experience and, subsequently, earning RCPC certification.	Training session attendance sheets.  Certifications of outstanding consultants.	Sufficient interest is generated to attract the desired number of consultants.  Teaching and learning strategy and schedule are geared to the customer, to encourage workshop attendance and completion of the training requirements.
3. Conduct cleaner production demonstration projects.	A minimum of 16 demonstration projects are conducted at SMEs in year one, 22 in year two, and 22 in year three.  The demonstration projects conducted each year are documented and publicized among stakeholder groups.	Agreements entered into with companies, and documented projects.  Publications and events to spread the word on demonstration project outcomes.	SMEs are motivated to improve and take part in the program.  Environmental management at participating companies is poor, but can be improved.
4. Institutional strengthening and reporting.	Each RCPC operating in the regions of Chihuahua and Tabasco has an advisory board of eight members from stakeholder groups, to promote CP and provide decision-making support.	Two RCPCs opened, equipped, and operating with advisory boards.	A growing number of SMEs have Internet access.
<b>Activities</b> 1.1 Short meeting to raise CP awareness in the target sectors. 1.2 Subsector-specific workshops to discuss particular issues with experts. 1.3 Annual forums to promote CP, co-hosted with stakeholder groups.	- Reach 460 representatives of various sectors through activities, talks, short workshops, and presentations. - Hold six short subsector-specific workshops led by experts each year with total attendance of 120. - An annual forum on CP and competitiveness in each of the two regions, each with at least 150 participants, for total attendance of 900.	- Event attendance sheets.          - Event attendance sheets.	

Narrative summary	Indicators	Means of verification	Assumptions
1.4 Raise awareness among students, and train them to conduct demonstration projects.	- Courses on “ CP tools and ISO 14001” given to industrial engineering students each semester.	- List of university-level students registered each semester	
2.1 Design a training and certification program for local CP consultants. 2.2 Set up a training program for environmental consultants. 2.3 Certification of consultants by the MCPC. 2.4 Develop CP manuals for publication in a variety of venues.	- Develop a complete training package for CP consultants. - A minimum of 120 individuals enroll in the training program (40/year) - Sixty consultants whose performance on demonstration projects was outstanding are certified in accordance with requirements established by the MCPC. - Two CP manuals are published each year on a subsector not yet addressed at the national level.	- Training packages printed for course participants. - Attendance sheets for all sessions. - Records of accreditation examinations evaluated by the MCPC. - Printed CP manuals.	
3.1 Perform assessments at companies in conjunction with an outside consultant. 3.2 Replicate assessments with RCPC staff. 3.3 Publicize results of demonstration projects in target sectors.	- CP demonstration projects are conducted at 12 SMEs in the manufacturing and service sectors. - CP demonstration projects are conducted at 48 SMEs in the manufacturing and service sectors. - Each regional center produces an annual report (for a total of six) on demonstration projects conducted.	- Three-party contracts and consultant reports on demonstration projects. - Printed forms used in demonstration projects.	
4.1 Hone RCPC staff skills through training and continuing education. 4.2 Establish an advisory board of representatives from stakeholder groups for each RCPC. 4.3 Kickoff event for the RCPC in Chihuahua.	- All-round training program for RCPC staff, including four modules in year one and three courses per year in years two and three, to raise the quality of service offered by the RCPCs. - Eight representatives of stakeholder groups serve on each RCPC’s advisory board. - A minimum of 100 representatives from a variety of sectors attend kickoff events for each RCPC.	- Printed forms and event registration records. - Agenda and minutes of semiannual meetings of the advisory board. - Attendance sheet from RCPC kickoff events.	

Narrative summary	Indicators	Means of verification	Assumptions
<p>4.4 Design, set up, and maintain a RCPC website.</p> <p>4.5 Train a network of experts to answer questions online through the “Ask the Expert” section at the RCPC in Chihuahua.</p>	<ul style="list-style-type: none"> <li>- Websites are kept current with news on the two RCPCs, providing and valuable information on CP to an average of 100 visitors per month for each center.</li> <li>- At least 100 online queries to the “Ask the Expert” section during the three-year program in Chihuahua.</li> </ul>	<ul style="list-style-type: none"> <li>- Report on number of distinct visitors to the RCPC website each year.</li> <li>- Records of online written queries and number of questions submitted to the network of experts each year.</li> </ul>	