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US/INT/92/004 - " Project for Cleaner Production Centres in Developing Countries, Phase I"

Preparatory Mission for the Establishment of a Cleaner Production Centre in Mexico

Mexico City, 13-17 June 1994

REPORT

Prepared by

M. Rigola Lapeña, Consultant, UNIDO

and

C. Scaratti, ITPD/OD

Backstop Off. M. Vallodia, ISE II/ENV

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CS/R.3/June 1994

Meeting with IMIT, UNIDO and UNEP on the Establishment of a Cleaner Production Centre in Mexico

Summary of Discussions

A meeting was convened on 16 and 17 June 1994 with IMIT (Messrs. M. Pérez Cárdenas and J.J. Romero Chávez), UNIDO (Messrs. M. Rigola Lapeña, G. Pruzan and C. Scaratti) and UNEP (Messrs. J. Kryger and L. Heileman) to review a number of financial, operational and administrative aspects relating to the establishment of a National Cleaner Production Centre (NCPC) in Mexico. The outcome of the OOPP workshop which had been organized prior to the meeting (13-15 June) was briefly analyzed. The following points were discussed:

1. **UNIDO/UNEP Inputs**

(a) UNIDO/UNEP indicated that international assistance to establish and operate the NCPC will be provided for an initial period of 3 years. It was pointed out that the tentative annual budget for the Mexican Centre will be as follows:

- Chief of the Centre.....	US$	40,000
- International Consultants.....	US$	60,000
- Subcontracts (for analytical services).....	US$	10,000
- Discretionary budget (for national experts, local training, local travel, information).....	US$	60,000

In addition to the above, the budget will provide for an allocation of approximately US$ 30,000 in the first year for purchase of equipment (vehicle, personal computer with printer and modem, CD-ROM reader, copy machine, fax machine).

UNIDO/UNEP will also meet the costs relating to (i) the initial training and study tours for the Chief and Deputy Chief of the NCPC, (ii) the organization of meetings of the various NCPCs, (iii) the missions of UNIDO/UNEP staff.

(b) It was noted that, due to the high salary scale for national experts in Mexico, the amount earmarked for the NCPC Chief might not be sufficient to recruit a candidate with suitable qualifications for the post. In this respect, IMIT expressed its readiness to provide additional resources; the amount of, and modalities for, this contribution will have to be further discussed.

IMIT further indicated that it was also ready to provide the NCPC with the equipment mentioned under point (a) above. UNIDO/UNEP therefore proposed that the amount earmarked for that purpose in the international budget (US$ 30,000) be redeployed to the discretionary budget.

(c) Concerning the discretionary budget, it was agreed that special consideration should be given to identifying - within the framework of UNIDO financial regulations - the appropriate administrative arrangements which would facilitate the expeditious use of funds at the local level.

2. IMIT Inputs

(a) In order to stress the importance given to the NCPC, IMIT indicated that the Centre will be directly attached to the office of its director-general and will become the focal point within the institution for all matters relating to cleaner production.

IMIT confirmed that it will bear the costs of the following staff: the deputy chief of the NCPC, an administrative assistant and a secretary.

(b) IMIT will provide adequate office facilities - including meeting/conference rooms (approximately 250/300 square meters of total space) and office equipment - and will meet the operating costs (phone, electricity, fax). IMIT pointed out that work on cable connections for the NCPC (for access to databanks, e-mail etc.) had already started. The UNIDO/UNEP mission was shown the area which has been set aside to host the NCPC in the near future; it was further indicated that the Centre will be transferred to a new wing currently under expansion/renovation in two year's time.

3. Sustainability

It was agreed that a special effort should be made to ensure the sustainability of the NCPC, considering that UNIDO/UNEP's assistance to the Centre will be provided for an initial period of 3 years (with possibility of extension for 2 additional years) and will be relatively limited in financial terms.

IMIT stressed the fact that, as a private organization providing services to small and medium-scale enterprises, it was fully committed to sustainability. It also pointed out that its close relationship with two of Mexico's biggest development banks - BANCOMEXT and NAFIN - could represent a major asset. In this respect, UNIDO/UNEP indicated that a written expression of interest in the NCPC on the part of the two banks would be useful.

4. Relationship with Other Institutions

Collaboration with all the parties concerned will be one of the key factors for the success of the NCPC. It was agreed that the Centre could play a catalytic role by mobilizing the expertise available in the country

and co-ordinating the efforts individually undertaken by other entities. In this respect, IMIT pointed out that it had already initiated contacts with other institutions - notably with the University of Mexico (UNAM), the Instituto Tecnológico de Monterrey, the Universidad Metropolitana and the Colegio de Posgraduados - with a view to establishing a network which could provide support in the field of cleaner production.

5. Chief of the NCPC

IMIT briefed UNIDO/UNEP on how the screening of the applications for the post of NCPC Chief had been conducted. In the pauses of the meeting, five candidates were interviewed by UNIDO/UNEP; out of these, three were found to possess the basic qualifications for the job. The results of the interviews were subsequently discussed with IMIT, which agreed with the assessment made by UNIDO/UNEP.

With regard to the Deputy Chief, IMIT indicated that it intends to appoint the most qualified person for the position and added that, if a suitable candidate cannot be found among its own staff, it will look for external applicants. IMIT and UNIDO/UNEP agreed that the Deputy Chief should be identified only after the Chief of the NCPC has been selected, to make sure that the two personalities complement each other.

6. OOPP Workshop

The OOPP workshop which had taken place from 13 to 15 June was briefly discussed. The organization arrangements made by IMIT were commended but it was noted that - due to the very high number of participants - it had not been possible to cover all the points on the agenda. Discussions and group work had been mainly focussed on the analysis of the cleaner production situation in Mexico and little time was left for detailed planning. Nevertheless, it was found that the outcome of the workshop had been successful; the exercise had provided a unique opportunity to clarify the concept of cleaner production, to discuss the role of an NCPC in Mexico and to establish useful contacts between representatives of many organizations in the country.

7. Cleaner Production Demonstrations

It was agreed that cleaner production demonstrations will be crucial to the operation of the NCPC. An attempt was therefore made to identify the most appropriate mechanism for conducting such demonstrations, taking also into account the suggestions made during the workshop. The comparative strengths and weaknesses of adopting sectoral, cross-sectoral or geographical approaches were briefly examined.

Although it was not possible to make a final decision, it was found that - considering the environmental situation in Mexico and the size of the industry - a combination of different approaches would be more likely to produce a concrete impact. To this effect it was proposed to start off with a cross-sectoral demonstration (designed to raise the awareness of a broad range of enterprises) and then, based on the first results, to proceed to 3 sector specific demonstrations.

IMIT indicated that it would consider the possibility of using its own resources to conduct more sectoral demonstrations; it was however pointed out that, in such a case, IMIT will have to charge the enterprises for the services provided. It was agreed that this point will need to be further discussed.

8. Follow-up

UNIDO/UNEP indicated that a formal decision on the establishment of the NCPC in Mexico will be made at the beginning of September. Meanwhile, UNIDO will check with the relevant units in Vienna on the various points raised during the discussions in Mexico and will prepare (i) a model agreement with IMIT and (ii) a draft project document for the operation of the NCPC.

With a view to facilitating the decision process, IMIT expressed its readiness to come to Vienna at its own cost to discuss with UNIDO those legal and administrative issues which still require clarification. UNIDO will inform IMIT whether such visit may be required and, if appropriate, arrange a programme for the meetings.

M. Rigola Lapeña

NOTE NO. 1

Some Consideration on the Effectiveness of the Cleaner Production Programme

During the OOPP workshop in Mexico and the meetings in Brazil, the question of whether the Cleaner Production Programme can have a real impact was frequently raised. Mr. C.A. Miquel, the UNDP Resident Representative in Brazil, expressed his interest in the approach but asked how likely NCPCs are to produce concrete results. The following comments try to give an answer to this question.

The achievement of concrete results can be considerably facilitated by reproducing the conditions that proved successful in similar countries, and have led the industries to adopt cleaner production programmes.

Based on my own experience as a consultant in Spain (which is part of the EU) and taking into account the industrial situation in Mexico (which belongs to NAFTA) and Brazil (which belongs to MERCOSUR), it can be easy to identify the necessary conditions, not present in the Latin American countries, that are needed to successfully introduce the concept of Cleaner Production.

Cleaner Production embraces two different factors: (i) adoption of environmentally sound technologies and management systems; (ii) improvement of the economic performance of the industry (many times requiring an investment with a very short pay-back period).

This definition makes the success of Cleaner Production very much dependent on the framework of the industrial and environmental policy in which the industries have to operate, including implementation and enforcement of regulations and financial support. In a country with no environmental regulations (or where regulations are not applied) the opportunities for Cleaner Production are very low.

On the other hand, when the environmental regulations are fully applied, Cleaner Production becomes a real alternative for "end-of-pipe" treatment; in this case, Cleaner Production means savings on the otherwise necessary investments for, and operating cost of, treatment plants. The opportunities for Cleaner Production increase exponentially as a function of those treatment costs, that can be reduced and sometimes eliminated.

As the necessary investment cannot be made by all industries at the same time, one way to maintain fair competition between industries is to apply a tax on (non dangerous) pollution. This tax may be used to rise funds to help industries ready to make investment. The tax may start at a low level, and

increase annually until the country achieves its environmental objectives. This is one way of applying the EU regulation (who pollutes has to pay; one way or another); but actually each country must assess its best solution.

Although called a tax, this must be presented as an internalization of the cost of pollution inside the cost of the products. Other financial formulas (from soft credits to subventions) can be instrumental in stimulating Cleaner Production.

Under such circumstances, Cleaner Production can produce concrete results. There is a strong dependence of the success of Cleaner Production Programmes on the environmental policy and strategy applied in a country. Industry provides only the framework where to apply the Cleaner Production concept but motivation comes from Environmental authorities.

It is important to stress this dependency on environmental policy. It is only then that Cleaner Production is seen by industries as an incentive, as a profit-making instrument which can also offer a number of advanges in terms of management improvement, process simplification, risk minimization, etc.

It is therefore very important that environmental authorities sit on the Advisory Committees of NCPCs; such a direct link will, on one hand, facilitate a closer co-ordination of the Centres with their countries' environmental policies and, on the other, provide the authorities with concrete indications of how to incorporate the incentive element into environmental regulations.

Finally, it should be noted that the Cleaner Production Programme is the best counter-argument to those groups of ecologists who complain that too much end-of-pipe treatment, dumping, incineration, etc. is not an environmental-friendly solutions.

M. Rigola Lapeña

CONFIDENTIAL

NOTE NO. 2

Some Considerations on IMIT's Support Capacity

In parallel with the implementation of the workshop on the Nation Cleaner Production Centre, one of the purposes of the mission was to make an assessment of IMIT's capabilities to host the NCPC in Mexico.

The mission found that IMIT is in the process of undergoing a major reorganization which is intended to turn it from a subventioned research centre into a self-sustained, client-oriented institution providing services to enterprises (as described in Attachment 1).

This type of transition is always painful for any company or entity which has operated in a protected environment. IMIT is no exception, as can be seen from its financial statements (cf. Attachment 1). The figures relating to the first quarter of 1994 show that the financial situation remains critical.

To overcome this predicament, at least two factors are needed: good management and adequate financial support; both seem to be present at IMIT.

The mission was positively impressed by IMIT's management, and particularly by the Director-General (Mr. Manuel Pérez Cárdenas) and the Environmental Co-ordinator (Mr. J. Jesús Romero Chávez).

A good managerial team, however, is not enough. It may take some time before IMIT can achieve self-sufficiency and make a profit. Throughout the transition period, financial resources must be made available. In this respect, IMIT can count on the support of its two main shareholders - BANCOMEXT and NAFIN - which rank among the largest banks in the country.

This commitment was reiterated by the general managers of BANCOMEXT and NAFIN (Mr. Enrique Villatella and Mr. Arturo Ortiz Hidalgo respectively) in the course of two short meetings with the UNIDO/UNEP mission. The mission pointed out to the director-general of IMIT that a written confirmation of this commitment from the banks would be useful.

Finally, it should be noted that the Cleaner Production Centre will be probably used by IMIT as one of the main elements of its promotional strategy; meanwhile, IMIT will also develop other activities in its Environmental Branch. It will be important to monitor that these activities do not overlap with those directly conducted by the NCPC.

NOTE NO. 3

Evaluation of Candidates for the Post of Chief of the NCPC in Mexico

5 candidates, among those previously screened by IMIT, were interviewed by the UNIDO/UNEP mission. Of these, 3 were found to be suitable for the job. A fourth candidate possessed very high managerial qualifications but was not familiar with the type of industries which will be the potential clients of the NCPC; moreover, his salary requirements were well beyond what the project could offer. The last candidate was interviewed as a younger alternative; his experience was limited and his salary expectations quite high.

Concerning the 3 candidates which were retained, the interviewers and IMIT agreed on the following ranking:

1. Ms. Susana Judith Hurtado Baker
   (salary expectations: NP 15,000 gross per month x 13 months) [1];

2. Mr. Fernando Cervantes Espinosa
   (salary expectations: NP 20,000 gross per month x 13 months);

3. Mr. Juan Carlos Vargas Balderas
   (salary expectations: NP 20,000 gross per month x 13 months).

Ms. Hurtado Baker has the most balanced experience, both from a managerial and technical point of view. Her rating in process engineering is lower than that of the other candidates. This relative weakness, however, could be easily offset by a deputy chief with a strong process engineering background.

Mr. Cervantes Espinosa has a very good experience as process engineer but is not familiar with financial aspects; his conceptualization and presentation skills constitute a rather weak point.

Mr. Vargas Balderas is brilliant and clever; however, he has a tendency to show off which makes it somewhat difficult to assess his real value. His "high-flier" approach may not be appropriate to deal with small-scale entrepreneurs.

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[1] NP stands for New Pesos; the current exchange rate is approximately 3.2 NP to the US Dollar.

C. Scaratti

NOTE NO. 4.

Some Considerations on the OOPP Workshop

I. The Mexico Workshop

(1) With regard to the logistics and organization of the workshop, the arrangements made by IMIT were satisfactory. The Institute did its best to follow the instructions which were initially forwarded by UNIDO. However, due to the scarce contacts between Vienna and the host institutions during the preparation of the workshop, a number of key decisions were made by IMIT without the appropriate guidance from UNIDO (e.g. selection of participants, definition of the workshop programme, etc.). This caused some unforseen difficulties in the implementation of the workshop and made the task of both the moderator and the resource persons more difficult than usual.

(2) The number of persons who attended the workshop was quite high; more than 50 had been invited on the first day, although some of them merely as observers. In fact, the number of those who actively participated in the discussions was lower (some 30 people) but still unusually large for an OOPP exercise.

Almost all the main parties dealing with, or related to, environmental issues in Mexico were present at the workshop (institutions, government departments, universities, NGOs etc) with a notable exception - the major target beneficiaries, i.e. SMEs. In fact, no more than two entrepreneurial associations were represented.

(3) Almost all participants (including those from the host institution) were not clear about the purpose of the workshop; only some were familiar with the cleaner production concept while practically nobody had heard about the NCPC programme and strategy.

Against this background, the original workshop programme which had been prepared by IMIT had to be modified and considerable time was devoted to clarifying what cleaner production means and under what conditions it could be successfully implemented in Mexico. This prompted a debate on the overall environmental situation of the country, with particular reference to existing policies and legislation and to their relationship with cleaner production.

Most of the workshop was therefore focussed on the assessment of the present situation. Following the discussions of a more general nature, groups were formed to analyze (a) the various parties concerned with cleaner production and (b) their specific problems:

- With regard to (a) five major groups were identified (i.e. enterprises & entrepreneurial associations, government departments & institutions, universities & research institutions, professional associations & NGOs, finance institutions); their respective strengths, weaknesses and potential contributions to the NCPC were examined (cf. Annex III).

- With regard to (b) a core problem was identified (cleaner production is insufficiently applied); different levels of causes were discussed and their links assessed; (cf. Annex IV).

Because of time constraints, it was not possible to go into the detailed planning of the NCPC. However, during the final session of the workshop, participants reviewed the project strategy and the model project document developed by UNIDO and found it consistent with the country's situation.

(4) Although not all the original targets of the OOPP workshop were achieved (at least as far as the finalization of the project document for the NCPC is concerned), the exercise proved successful.

(a) It provided a unique opportunity for senior representatives of the main parties concerned with environmental issues in Mexico (most of which were not even familiar with what their respective entities did) to meet, confront their different opinions and perceptions, and reach a common understanding of what cleaner production means in practice. The fact that almost all the participants stayed until the very end of the workshop and actively participated in the discussions attests to their interest in the exercise.

(b) IMIT was also satisfied because the workshop helped (i) to promote its image as a focal point in the country for cleaner production issues and (2) to forge closer working links with several institutions which could assist in the operation of the NCPC.

(c) As for UNIDO, the exercise provided first-hand information on, and clarification of, several aspects relating the cleaner production in Mexico, which will allow to finetune the project document. The workshop was a good opportunity to test the application of OOPP to the establishment of NCPCs and provided useful indications of the methodological adjustments which may be required.

II. Recommendations for Future Cleaner Production Workshops

Based on the experience gained in Mexico, it is proposed that in the organization of future OOPP workshops for the establishment of NCPCs, the following aspects be given due consideration:

(1) UNIDO should closely follow the preparation of the OOPP workshop, monitor the arrangements made by the host institutions (from Hqs or through the local UCD) and provide guidance whenever appropriate. This is a critical pre-condition for the successful implementation of the exercise.

(2) The main purpose of the workshop needs to be clearly defined in advance. In this respect there are several possibilities; an OOPP exercise may be carried out with a view to:

(a) getting participants acquainted with the cleaner production concept;
(b) analyzing the implications of cleaner production within the broader environmental context of a country;
(c) analyzing the specific situation of cleaner production in that country;
(d) defining the most appropriate course of action to be adopted at the national level;
(e) defining the specific strategy of the future NCPC;
(f) formulating the project document for the NCPC.

These aspects are of course inter-related and some of them can (and should) be dealt with together. It is important however to realize that, with only 3 days available, it is practically impossible to address all of them in a consistent way. A selection has to be made taking into account the conditions prevailing in the host country.

On the basis of the Mexican experience, it is suggested that future OOPP workshops be mainly focussed on (b) and (c) above and devote some time to assessing whether the NCPC model strategy is in line with the requirements of the host country or needs some adjustments.

(3) UNIDO should be directly involved in the selection of participants and make sure that all the main parties (including of course SMEs) are represented. The number of participants should not exceed 15 (18 at the most), otherwise communications problems may arise. If necessary, more people could attend, but only as observers.

(4) Prior to the workshop, participants should be provided with some basic material on: (a) the cleaner production concept; (b) some examples of successful applications; (c) the UNIDO/UNEP experience; (d) the CNPC Programme. They should also be informed about the purpose of the workshop and the OOPP methodology.

(5) It would be useful to ask participants to do some simple homework, (e.g. prepare a brief presentation of the institution or group they will represent). This could expedite the exercise and cut some unnecessarily

long discussions which usually take place at the beginning of the workshop.

(6) The host institution could also prepare some documentation summarizing the country's situation in respect of cleaner production (including policy and legislative aspects). In the case of Mexico, IMIT had prepared very detailed papers which however were handed out to the participants (and the resource persons as well) only at the workshop, with the result that nobody had the time to read them.

(7) Depending on the circumstances, preliminary meetings could be arranged with the host institution (and other participants) to review the workshop organization, make final adjustments and discuss some important aspects which need to be clarified before the workshop starts.

(8) The workshop programme will of course depend on the purpose of the exercise If the workshop focus is the one suggested in point II. (ii) above, the following tentative programme could be adopted:

1st day,	morning:	Brief introduction to cleaner production (with reference to practical examples); presentation of the NCPC strategy; presentation by the host institution of the country's situation and by participants of their institutions/experience; discussion.
	afternoon:	Introduction to OOPP and explanation of the different steps to be taken; analysis of the parties involved (strengths, weaknesses, expectations, potential contributions to the NCPC).
2nd day,	morning:	Analysis of problems (identification of problems; group discussion).
	afternoon:	Analysis of problems (identification of core problem; definition of cause-effect relationships; group discussion);
3rd day,	morning:	Analysis of problems (drawing of cause-effect diagram/problem tree; selection of problems which can be addressed by NCPC; group discussion)
	afternoon:	Check on the consistency of NCPC strategy with the country's situation (with particular reference to the demonstration approach); group discussion; wrap-up and evaluation of workshop

(9) At the end of the workshop, at least one day should be reserved for more detailed discussions with the host institutions on the NCPC project and a number of financial and administrative matters (e.g. project budget,

procedures for the use of discretionary budget, type of contract for the NCPC Chief, counterpart inputs and support - including the possibility of cost-sharing, relationship of the NCPC with other departments/units of the host institution, links with other institutions and enterprises, advisory board, preparation of project document for the NCPC, type of agreement to be concluded with host institution, etc.).

ORGANIZACION DE LAS NACIONES UNIDAS PARA EL DESARROLLO INDUSTRIAL (ONUDI)
PROGRAMA DE LAS NACIONES UNIDAS PARA EL MEDIO AMBIENTE (PNUMA)
INSTITUTO MEXICANO DE INVESTIGACIONES TECNOLOGICAS, A. C.

TALLER-SEMINARIO/PROGRAMA DEFINITIVO

LUNES 13 DE JUNIO

09:00 a 9:30

- Inscripción

09:30 a 10:00

- **INAUGURACION DEL TALLER-SEMINARIO (PROGRAMA ESPECIAL)**

10:10 a 11:10

- Introducción al Taller-Seminario: Técnicas de PPOO y concepto de Producción más Limpia

11:10 a 11:30

- Receso

11:30 a 12:15

- Continuación
- Explicación de la técnica PPOO
- Clarificación del concepto "Producción más Limpia"

12:15 a 13:00

- Brindis (IMIT)

13:00 a 14:00

- COMIDA-En IMIT se servirá un almuerzo para los asistentes al Taller-Seminario

14:00 a 15:30

- Análisis de Problemas
    - Problemas ambientales principales causados por la industria; problemas expecíficos por sector y subsector.
    - Principales causas de los problemas a lo largo del "Ciclo de los Productos".
    - Problemas que pueden atacarse en base al concepto de "Producción más Limpia".

15:30 a 15:50

- Receso

15:50 a 17:30

- Análisis de problemas
- Análisis de las partes que intervienen
    - Asociación y Cámaras Industriales y de Servicios
    - Gobiernos
    - Dependencias/Instituciones de Protección Ambiental

- Consultoras
- Institutos de Investigación y Desarrollo
- Organizaciones no Gubernamentales

- Análisis Participativo (Terminación)

MARTES 14 DE JUNIO

9:00 a 10:30

- Estrategia del Proyecto Propuesto (CMPL)

  - Grupo de Expertos Nacionales entrenados para la "Producción más Limpia".
  - Demostraciones reales a nivel planta
  - Inicio-apoyo a Proyectos de Investigación y Desarrollo
  - Asesoría en legislación y políticas
  - El Centro Nacional de Producción más Limpia como punto de interés

- Prioridades para México

10:30 a 10:45

- Receso

10:45 a 12:30

- Matriz de Planeación de Proyectos para tres años

  - Propósitos
  - Metas
  - Productos

12:30 a 13:30

  - COMIDA-En IMIT se servirá un almuerzo para los asistentes al Taller-Seminario

13:30 a 15:00

- Productos

15:00 a 15:15

- Receso

15:15 a 17:30

- Indicadores

MIERCOLES 15 DE JUNIO

9:00 A 10:30

- Actividades

10:30 a 10:45

- Receso

10:45 a 12:30

- Actividades

12:30 a 13:30

- COMIDA-En IMIT se servirá un almuerzo para los asistentes al Taller-Seminario

13:30 a 15:00

- Factores Externos

15:15 a 17:30

- Costos
- CLAUSURA del Taller-Seminario

ORGANIZACION DE LAS NACIONES UNIDAS PARA EL DESARROLLO INDUSTRIAL (ONUDI)
PROGRAMA DE LAS NACIONES UNIDAS PARA EL MEDIO AMBIENTE (PNUMA)
INSTITUTO MEXICANO DE INVESTIGACIONES TECNOLOGICAS, A. C.

II PARTE/PROGRAMA TENTATIVO

JUEVES 16 DE JUNIO

9:00 A 10:30

- Configuración del plan anual de operaciones (indice/estructura)

10:45 a 12:30

- Anteproyecto del plan de operaciones para el primer año

12:30 a 13:30

- COMIDA En IMIT se servirá un almuerzo para los asistentes a la reunión o se planteará alguna otra alternativa

13:30 a 15:00

- Borrador del documento del proyecto (CMPL)
- Posibles visitas a Nacional Financiera y Banco Nacional de Comercio Exterior
- Otras actividades

15:00 a 17:00

- Borrador del Convenio del Proyecto

VIERNES 17 DE JUNIO

09:00 A 17:00

- Terminación del Convenio del Proyecto
- Discusión Final del Convenio del Proyecto
- Otras actividades
- FIN DE ACTIVIDADES

IMIT, a. c.

México, D.F. junio, 1994

DIRECTORIO DE LOS ASISTENTES AL TALLER SEMINARIO DIRIGIDO POR ONUDI / PNUMA EN LAS INSTALACIONES DEL IMIT LOS DIAS 13, 14 Y 15 DE JUNIO DE 1994.

DIRECTORIO TALLER SEMINARIO PRODUCCION MAS LIMPIA.

No.	DEPENDENCIA	PARTICIPANTE	PROFESION	DOMICILIO	TELEFONO	FAX
1	ITESM	Alemán Zepeda Marina Gpe.	Ciencias Comunicación	Carr. Lago de Guadalupe km. 4 Atizapán de Zaragoza Edo. de México.	326-56-14	326-56-07
2	ITESM-CEM	Antúnez Alvarado R. David.	Ingeniero Quimico	Carr. Lago de Guadalupe km. 35 Atizapán de Zaragoza Edo. de México.	326-56-114	326-56-07
3	BENITEZ Y AJURIA/CANACINTRA	Benitez De la Garza Carlos	Ingeniero Quimico	Centeotl No. 223 Azcapotzalco	561-12-18	352-30-65
4	INSTITUTO DE INVEST. JURIDICAS	Carmona Lara Maria Carmen	Abogada	Circuito Exterior Mario de la Cueva Cd. de Investigación en Humanidades Cd. Universitaria, Coyoacán. 04510, México, D.F.	622-74-77	665-21-93
5	Particular	Cervantes Espinosa Fernando	Ingeniero Quimico	- - -	557-19-30	
6	INST. NACIONAL DE ECOLOGIA	Cortinas Durán Cristina	Doctor en Ciencias	Rio Elba No. 20 - piso 14. Col. Cuauhtémoc 06500 México, D.F.	553-97-94	553-97-53
7	UNAM	Del Moral Palacio Laura E.	Ingeniero Quimico	Rancho Rogo No. 4 Col. Prado Coapa.	679-22-26	
8	INSTITUTO NAL. DE PESCA	Diaz López Ma. Luz	Ingeniero Bioquimico	Dr. Valenzuela No. 85 - 2o. nivel Col. Doctores	761-37-28	578-15-07
9	CONCAMIN	España Fernández Francisco.	Médico	Manuel Ma. Contreras No. 133 2o. piso Col. Cuauhtémoc	566-68-51 / 592-00-92	
10	COLEGIO DE POSGRADUADOS	Figueroa Sandoval Benjamin	Ingeniero Agrónomo	Km. 36.5 Carr. Mexico-Texcoco Montecillo Texcoco, México.	(595) 4-50-22	(595) 4-57-23
11	MOV. ECOLOGISTA MEXICANO	Galván Soto Felipe	Lic. Ciencias Politicas	Columbia No. 167 Col. Delicias Cuernavaca, Morelos.	15-37-09	
12	CANACINTRA	González Fisch Carlos	Ingeniero Industrial	Av. San Antonio No. 256 Ampliación Nápoles	563-34-00 ext.111,161	
13	SECOFI	Gonzalez Medina J. Martin	Licenciado	03849, México, D.F.		
14	INST. MEXICANO DEL PETROLEO	González Ortiz Emmanuel	Ingeniero Ambiental	Eje Central L. Cárdenas No. 152 Col. San Bartolo Atepehuacan.	567-92-46	587-00-09
15	CONACYT	Guerrero Vázquez David	Lic. en Economia	Av. Constituyentes No. 1046		

DIRECTORIO TALLER SEMINARIO PRODUCCION MAS LIMPIA.

16	INST. MEX. DE INVEST. ELECTRICAS	Heard Christopher	Ingeniero	Interior Internado Palmira 62000. H.P. 475 Cuernavaca, Morelos.	(9173) 18-38-11 ext. 7764	(9173) 18-25-26
17	PNUMA (Oficina Regional)	Heileman Leo	Ingeniero Ambiental	Blvd. de los Virreyes 155 Lomas Virreyes	202-48-41	202-09-50
18	BANCO DE TECNOLOGIAS	Hori Acosta Alfonso	Ingeniero Químico	José Ma. Rico No. 55 03100. México, D.F.	660-09-48	
19	UNEP Industry & Environment PNUMA	Kryger John	Senior Consultant	Tour Mirabean 39-43 Quai Andre Citroen 75739, Paris Cedex 15. France.	(33-1)44-37-14-21	(33-1) 44-37-14-74
20	BANOBRAS	Luna García José Angel	Lic. en Economía	Tecoyotitla No. 100 - 2o. piso Col. Florida	723-60-00 ext.2580	723-62-48
21	ITESM / CAMPUS MONTERREY	Lozano García Fco. José	Ingeniero Químico	Monterrey		
22	GRUPO ASESOR EN PLANEACION	Meade García de León Edgar	Ingeniero	Hortensia No. 118 06400. México, D.F.	541-33-64 / 66	
23	QUIMICA WIMER/CANACINTRA	Merin Winnitzky Alejandro	Ingeniero Químico	Calle Tecamazuchitl s/n Valle de Chalco, Edo. de México.	842-47-06	842-15-49
24	NAFINSA	Montiel Pérez Susana	Economista	Av. San Antonio No. 263 México, D.F. Insurgentes Sur No. 1971 Col. Guadalupe Inn	325-61-16 / 17	325-61-39
25	SRIA. RELACIONES EXTERIORES	Naveja Macías Ismael	Funcionario Público	Torre III - 2o. piso Homero No. 213 esq. Taine Col. Chapultepec Morales	327-32-37	327-32-13
26	UNAM	Pérez García Enrique	Ingeniero	AP 20-29 México, D.F.	622-41-86	550-88-34
27	SEDESOL	Pérez Patraca Ana María.	Biólogo	Río Elba No. 20 - 4o. piso Col. Cuauhtémoc	286-93-91	553-95-90
28	SECOFI	Pérez Motta Eduardo	Lic. en Economía	Insurgentes Sur No. 1940 - 3r. piso Col. Florida	229-61-00	229-65-94
29	INSTITUTO NAL. DE ECOLOGIA	Prieto Ruiz Miguel	Ingeniero y Físico	Río Elba No. 20 - piso 14 Col. Cuauhtémoc 06500 México, D.F.	553-68-38	553-97-53
30	ONUDI / MEXICO	Pruzán N. Gregorio	Químico	Presidente Mazaryk No. 29 Col. Polanco	250-15-55	250-41-52

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31	SEDESOL	Quezada Camacho Luis.	Ingeniero Civil	El Pipila No. 1 Tecamachalco, Edo. de México.	294-57-20	589-43-98
32	NAFINSA	Ramirez Bustos Juan Antonio	Ingeniero Mec. Elect.	Insurgentes Sur No. 1971 Torre IV - Piso 10 Mexico, D.F.	325-71-54 / 55	325-71-99
33	INSTITUTO MEX. DEL PETROLEO	Ramirez Zúñiga Armando	Ingeniero Quimico Ind.	Eje Central L. Cárdenas No. 152 México, D.F.	368-25-68	368-25-68
34	UAM	Revah Moiseev Sergio	Ingeniero Quimico	Av. Purisima s/n Del Iztapalapa 09340. México, D.F.	724-46-48	724-49-00
35	IPN / PIMADI	Reynoso Pérez Rolando	Ingeniero Civil	Juan de Dios Bátiz esq. Luis E. Erro Unidad Profesional Zacatenco 01170. México, D.F.		
36	ONUDI UNIVERSIDAD DE GIRONA	Rigola La Peña Miguel	Ingeniero Quimico	Pl. Hospital 6 17071 Girona	(72)41-81-61	(72)41-81-50
37	MOV. ECOLOGISTA MEXICANO	Rosado Arce Elman C.		Columbia No. 167 Col. Delicias Cuernavaca, Morelos.	(9173)15-37-09	(9173)15-37-09
38	DGPIND-SECOFI	Ruiz Suárez Ma. Eugenia	Lic. en Economia	Insurgentes Sur No. 1940 - 3r. piso Col. Florida	229-61-00	229-65-94
39	ONUDI / VIENA	Scaratti Claudio	Funcionario			
40	INIFAP / SARH	Sánchez Brito Carlos	Doctorado	Teniente Isidro Alemán No. 294 Morelia, Michoacán.	15-91-21 / 15-94-89	14-70-52
X 41	SRIA. DE ECOLOGIA (GEM)	Solis Segura Luz Maria.	Ingeniero Quimico	Paseo Vicente Guerrero No. 203 Col. Morelos Toluca, Edo. de México.	(72)15-93-67 / 64	15-93-67
42	INE / SEDESOL	Soto Delgadillo Francisco	Ingeniero Industrial	Rio Elba No. 20 Col. Cuauhtémoc	553-97-09 / 553-94-06	
43	BANOBRAS	Suzán Colombres Francisco	Ingeniero Quimico	Tecoyotitla No. 100 - 2o. piso Col. Florida	723-60-19	723-62-48
44	INSTITUTO NAL. DE ECOLOGIA	Tejeda Ruiz Javier	Ingeniero Bioquimico	Rio Elba No. 20 - piso 14 México, D.F.	553-97-04	.....
45	COMISION NACIONAL DEL AGUA	Tortajada Quiroz Hilda C.	Biólogo	Av. San Bernabé No. 549 San Jerónimo Lídice 10200. México, D.F.	683-17-10	

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46	WOODWARD CLYDE MEXICO	Vargas Balderas Juan Carlos	Ingeniero Ambiental	Insurgentes Sur No. 1802 Col. Guadalupe Inn.	661-14-01	661-14-01

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México, D.F., junio 1994

Análisis de las partes

INSTITUCIONES GUBERNAMENTALES

Fortalezas	Especialización de los recursos humanos
	Diseño de normas
	Elaboración de proyectos
	Infraestructura de investigación

Debilidades	Falta de recursos (Humanos, materiales y financieros)
	Burocratismo
	Desorganización
	Recursos humanos no aprovechados
	Falta de información documentada
	Cambios frecuentes en mandos, medios y superiores
	Falta de capacitación a nivel básico
	Falta de continuidad en los proyectos
	Normatividad incompleta

Lo que podrían aportar al CPML	Generación de leyes, normas y reglamentos
	Evaluación de proyectos
	Capacitación, asesoría tecnica, información especializada
	Generación y promoción de conocimientos por sector industrial
	Diseño de centros de apoyo en tecnología ambiental para PYME (INE)

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México, D.F., junio 1994

Análisis de las partes

EMPRESAS/ASOCIACIONES EMPRESARIALES

Fortalezas	Contribución a la economia del país
	Integración en Cámaras y Asociaciones
	Capacidades especiales de la mano de obra (adaptabilidad y creatividad)
	Flexibilidad de adaptación al mercado

Debilidades	Alta concentración industrial en unas pocas zonas del país
	Procesos productivos insuficientes
	Baja participación en la definición de políticas industriales
	Preponderancia de micro, pequeña y mediana industria
	Falta de recursos financieros viables
	Pobre actitud de investigación y desorrollo
	Baja capacitación del recurso humano

Lo que podrían aportar al CPML	Insumos industriales
	Casos exitoscs para promover la PL
	Canales de difusión y divulgación masiva
	Definición precisa de necesidades y áreas de atención prioritaria
	Aportación de expertos que apoyen acciones
	Apoyos económicos (premios, donaciones, financiamiento)

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México, D.F., junio 1994

Análisis de las partes

ACADEMIA/INVESTIGACION

Fortalezas	Recursos humanos
	Infraestructura
	Conocimiento

Debilidades	Falta de vinculación del gobierno e industria con las universidades
	Falta involucrar el aspecto empresarial en la formación académica

Lo que podrían aportar al CPML	Asistencia en compra y transferencia de tecnología
	Formación de recursos humanos con enfoque integral, empresarial-competitivo
	Relación contínua universidades-industria comunicación para búsquedas de oportunidades
	Formación de especialistas
	Educación contínua, cursos de acualización en tecnologías de producción

Análisis de las partes
ASOCIACIONES PROFESIONALES/ONG

Fortalezas	Movimiento social
	Ejercición, presión a la autoridad y a ellos mismos
	Están reconocidos para su participación en denuncias
	Ayudan a concientizar a los integrantes de un sector
	Fácil creación
	Fuentes de información
	Interconexión con organismos, interacción
	Existe un directorio
	Aprovechan el peso especifico como asociaciones profesionales

Debilidades	Grupos diversos
	No tienen representatividad total
	Débil financiamiento
	Poca fuerza institucional
	Falta de organización
	Falta de alianzas jurídicas para llevar a sus últimas consecuencias las iniciativas propuestas
	Se les dá poca importancia
	Visión parcial de un problema

Lo que podrían aportar al CPML	Pueden ofrecer capacitación las organizaciones especializadas
	Planos y programas conjuntos con iniciativas tanto del Centro como las organizaciones
	Identificación de necesidades de las empresas y de la sociedad

Análisis de las partes

ORGANISMOS DE FINANCIAMIENTO

Fortalezas	Programa de apoyo a proyectos de mejoramiento ambiental
	Diversas formas de canalización de los recursos que atienden las necesidades de distintos tamaños de empresas (micro, pequeña y mediana, etc.)
	Uniones de crédito habilitados para dar apoyo en el aspecto ambiental

Debilidades	Falta flexibilidades en esquemas financieros
	Alto costo de dinero
	Limitación de recursos financieros
	No tienen criterios claros para jerarquizar la asignación de recursos a proyectos específicos
	Falta de difusión de los mecanismos para asignación de recursos financieros a proyectos tecnológicos y de capital de riesgo
	No hay fomento al ahorro interno
	Requisitos en exceso
	Rigidez

Lo que podrían aportar al CPML	Apoyo financiero para la elaboración de estudios y proyectos
	Apoyo financiero para demostración de tecnologías
	Apoyo de garantías complementarias a favor de los usuarios del Centro
	Capacitación y asistencia técnica

CRITERIOS PARA LA SELECCION DE RAMAS INDUSTRIALES Y EMPRESAS QUE SE CONSIDERARAN DENTRO DEL PROGRAMA DEMOSTRATIVO DEL CENTRO DE PRODUCCION MAS LIMPIA (PROPUESTA IMIT)

En base a los plantiamientos de ONUDI y PNUMA, se propone una nueva alternativa que incluye una combinación de estos, con la información que presenta el documento de IMIT "Apuntes del Taller - Seminario del Programa Mundial de Producción Más Limpia".

Esta nueva propuesta, considera los criterios que se indican acontinuación, para la selección de las ramas industriales y del número de empresas:

A. Selección de ramas y subsectores

1. Nivel de contaminación (aire, agua y residuos sólidos.
2. Contribución al PIB de la industria manufacturera
3. Concentración geográfica de los establecimientos de la rama industrial.
4. Expectativas de la rama industrial
5. Uso intensivo de agua y energía
6. Grado de complejidad de la tecnología para la producción limpia.

B. Selección de empresas

1. Empresas de tamaño pequeño y mediano
2. Prestigio y liderazgo de la empresa
3. Tamaño
4. Grado de integración industrial
5. Participación en el comercio exterior
6. Ubicación (dentro de una zona de concentración de empresas similares)

SUBSECTORES Y RAMAS QUE SE PROPONE ANALIZAR PARA SELECCIONAR LAS EMPRESAS PARA EL PROGRAMA DEMOSTRATIVO DEL CENTRO PARA LA PRODUCCION MAS LIMPIA/*
(PROPUESTA IMIT)

Subsector/Rama No.	Nombre	Aportación al PIB Manufacturero (%)
31	**Alimentos, bebidas y tabacos**	**26.6**
3118	Industria azucarera	
3113	Conservas alimenticias	
3130	Bebidas	
32	**Textiles y prendas de vestir**	**8.9**
3230	Industria del cuero	
3212	Hilados, tejidos y acabado de fibras blandas	
34	**Papel y productos del papel**	**5.2**
341021	Fabricación de papel	
341022	Fabricación de cartón y cartoncillo	
35	**Sustancias químicas, caucho y plástico**	**17.9**
3512	Fabricación de sustancias químicas básicas	
3522	Fabricación de otras sustancias y productos químicos	
36	**Productos minerales no metálicos**	**7.1**
3691	Cemento, cal y yeso	
37	**Industrias metálicas básicas**	**5.8**
3710	Industria básica del hierro y acero	
3720	Industria básica de metales no ferrosos	
38	**Productos metálicos, maquinaria y equipo**	**23.1**
3813	Fabricación y reparación de muebles metálicos**/	
3831	Fabricación de maquinaria, equipo y accesorios eléctricos	
3841	Industria automotriz	

* Esta preselección se hizo con base en los criterios antes mencionados y la información sobre las industrias más contaminantes que está contenida en el documento "APUNTES DEL TALLER-SEMINARIO DEL PROGRAMA MUNDIAL DE PRODUCCION MAS LIMPIA" que se impartió en IMIT del 13 al 15 de junio.

** Incluye galvanoplastia de piezas metálicas (381412)

MATRIZ PARA LA SELECCION DE RAMAS Y SUBSECTORES DEL PROGRAMA DEMOSTRATIVO DEL CENTRO DE PRODUCCION MAS LIMPIA *

No.	SUBSECTOR/RAMA	APORTACION AL PIB MANUFACTURERO	CONCENTRACION (Ubicación)		NIVEL DE CONTAMINACION Aire	Agua	Residuos sólidos	EXPECTATIVAS DE LA RAMA	CONSUMO INTENSIVO DE AGUA Y ENERGIA	COMPLEJIDAD DE LA TECNOLOGIA	PARTICIPACION TOTAL
31	**Alimentos , bebidas y tabaco**										
3118	Industria azucarera	3	1	1/	1	3	1	1	3	2	90
3113	Conservas alimenticias	3	3	2/	1	1	1	3	2	1	162
3130	Bebidas	3	5	3/	1	2	1	2	3	1	360
32	**Textiles y prendas de vestir**										
3230	Industria del cuero	1	2	4/	2	3	1	2	3	2	144
3212	Hilados, tejidos y acabado de fibras blandas	1	5	5/	3	3	2	1	2	2	160
34	**Papel y productos de papel**										
341021	Fabricación de papel	1	5	6/	3	4	2	3	3	3	1,215
341022	Fabricación de cartón y cartoncillo	1	5	6/	3	4	2	3	3	3	1,215
35	**Sustancias químicas , caucho y plástico**										
3512	Fabricación de sustancias químicas básicas	2	5	7/	4	3	2	3	2	3	1,620
3522	Fabricación de otras susts. y prods. químicos	2	5	8/	4	5	4	3	2	3	2,340
36	**Productos minerales no metálicos**										
3691	Cemento, cal y yeso	1	4	9/	1	1	1	2	2	2	96
37	**Industrias metálicas básicas**										
3710	Industria básica del hierro y acero	1	5	10/	5	4	4	1	3	3	585
3720	Industria básica de metales no ferrosos	1	5	10/	5	4	4	2	3	3	1,170
38	**Productos metálicos, maquinaria y eq.**										
3813	Fab. y rep. de muebles metálicos	3	5	11/	3	1	1	2	2	2	600
3831	Fab. de maq., eq. y accesorios eléctricos	3	5	12/	1	2	1	3	1	1	180
3841	Industria automotriz	3	5	13/	1	2	2	3	3	3	2,025

CENTRO.WK1

* Las notas explicativas y criterios de valorización de los conceptos se anexan en la hoja adjunta.

CRITERIOS DE VALORIZACION Y NOTAS EXPLICATIVAS DE LA MATRIZ PARA LA SELECCION DE SUBSECTORES Y RAMAS INDUSTRIALES PARA EL PROGRAMA DEMOSTRATIVO DEL CPML.

Criterios:

Aportación al PIB Manufacturero De acuerdo con la participación de la rama al PIB de la Industria Manufacturera, se le asignaron los siguientes valores:

Valor	Aportación al PIB (%)
3	20 - 30
2	10 - 19
1	01 - 09

Concentración (ubicación) De acuerdo con la importancia de la concentración de la industria, se le asignaron valores a las regiones, como sigue:

Valor	Región
5	Eje Neovolcánico
4	Planicie Costera Noroccidental
3	Sierra Madre Oriental
2	Altiplano Mexicano Sur
1	Demás regiones

Contaminación: Se sumaron los contaminantes que genera la industria, por tipo y grado, según las matrices del anexo 4 del documento "APUNTES" antes mencionado, dando un valor por gravedad del impacto del contaminante como sigue: (muy grave = 4: grave = 3: leve = 2: bajo = 1), según los resultados obtenidos de sumar para la región donde principalmente se localiza la industria de la rama, según los valores antes presentados, el peso de los contaminantes, para aire, agua y residuos, quedó como sigue:

Valor	Grado de contaminación
4	41 - 50
3	31 -40
2	21 - 30
1	0 - 10

Expectativas de la rama industrial: Evaluación cualitativa, de acuerdo con los pronósticos de crecimiento para las diferentes ramas industriales:

Valor	Expectativa de crecimiento
3	Amplia
2	Regular
1	Baja

Grado de complejidad de la tecnología para la PML: Evaluación cualitativa, de acuerdo con el grado de complejidad que previsiblemente, tendrán las tecnologías para la producción más limpia, para las diferentes ramas industriales:

Valor	Grado de complejidad
3	Muy complejo
2	Complejo
1	Regular

Notas:

1/ 21% de los establecimientos contaminantes de la rama, se encuentran en el estado de Veracruz.

2/ 27% de los establecimientos contaminantes de la rama, se encuentran en la región Planicie Costera Noroocidental.

3/ 30% de los establecimientos contaminantes de la rama, se encuentran en la región del Eje Neovolcánico.

4/ 41% de los establecimientos contaminantes de la rama, se encuentran en la región Altiplano Mexicano Sur.

5/ 46% de los establecimientos contaminantes de la rama, se encuentran en la región del Eje Neovolcánico.

6/ 54% de los establecimientos contaminantes de la rama, se encuentran en la región del Eje Neovolcánico.

7/ 48% de los establecimientos contaminantes de la rama, se encuentran en la región del Eje Neovolcánico.

8/ 54% de los establecimientos contaminantes de la rama, se encuentran en la región del Ejej Neovolcánico.

9/ 23% de los establecimientos contaminantes de la rama, se encuentran en la región Planicie Costera Noroccidental.

10/ 55% de los establecimientos contaminantes de la rama, se encuentran en la región del Eje Neovolcánico.

11/ 49% de los establecimientos contaminantes de la rama, se encuentran en la región del Eje Neovolcánico.

12/ 45% de los establecimientos contaminantes de la rama, se encuentran en la región del Eje Neovolcánico.

13/ Más del 50% de los establecimientos contaminantes de la rama, se encuentran en la región del Eje Neovolcánico.