

*The demand for  
environmental services  
within the UNIDO  
Subcontracting and  
Partnership Exchange  
(SPX) network*



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*A background paper on cooperation between the  
UNIDO Subcontracting and Supply Chain Management Programme  
and the UNIDO/UNEP National Cleaner Production Centre Programme*

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*This document has not been officially edited.*

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## Introduction

This paper is intended to serve as the basis to consider cooperation between the UNIDO SPX Programme and the UNIDO/UNEP NCPC Programme. The programmes facilitate and support the establishment of Subcontracting and Partnerships Exchanges (SPX) and National Cleaner Production Centres (NCPC) respectively,<sup>1</sup> that today successfully serve SMEs in developing countries and in countries with transition economies. Further strengthening of the Centres may be achievable through cooperation between them. This paper explores this issue, the synergies and complementarities between the two programmes being investigated at both the programmatic and centre levels.

The research is based on a survey conducted in May and June 2000 on the demand for environmental services at the Subcontracting and Partnership Exchanges. At the generic level, the hypothesis investigated in the survey was whether environmental services are relevant supplements to the range of services that the SPXs currently provide to their registered subcontractors. The environmental awareness and practices of subcontractors and main contractors were investigated. The observations provided by the responding SPXs on their main industries were also analysed to identify potential areas of cooperation between the two Programmes.

The survey was a joint effort between the NCPC Programme and the SPX Programme. The input to the survey was obtained through questionnaires sent out to selected SPXs and associate members of the SPX Club or Network, to draw on their sectoral expertise.

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<sup>1</sup>See Annexes 1 and 2 for more detailed information on the two programmes.



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# 1. Methodology

Before presenting the findings of the survey, a few methodological issues will briefly be addressed. These are: survey at the aggregate industry level, the content of the questionnaire and the selection of respondents.

## 1.1 Survey at the aggregate industry level

The large number of companies registered with the established SPXs would clearly constitute a good population from which to draw a sample for a survey on the demand of these companies for environmental services. Nevertheless in this first phase of investigations into potential cooperation, it was considered sufficient to ask the SPXs for information at the aggregated industry level. This was done because in addition to the practical problems of conducting a survey at the particular subcontractor level, the possibility of capitalizing on the significant expertise the SPXs have earned from their work with a large number of companies was considered sufficient at this stage. Furthermore, a certain level of interest and commitment from the SPXs themselves to the topic, which a survey conducted at the SPX level would give an indication of, is considered to be a necessity for cooperation to take place between the two programmes. Since the SPXs and many of the NCPCs are independent institutions participating in their respective networks mainly to support their own sustainability and competitiveness, cooperation must be based on sound business incentives for the individual SPXs and NCPCs.

In the questionnaire the SPXs were therefore asked to provide generalized answers for the four main industrial sectors they work with, based on their personal impressions and experience. This may limit the interpretation of the results as opposed to a survey conducted at the more precise company level. Nevertheless, sufficiently significant correlation is assumed to exist between the answers and the reality, to address the basic hypothesis underlying this study.

## 1.2 Content of the questionnaire

The questionnaire was drafted and then discussed with staff from both the SPX programme and the NCPC programme. Based on their inputs, the questionnaire was completed and afterwards translated into French and Spanish (see annex 3). A letter of explanation was attached to the questionnaire to provide the recipients with background information on the survey (see annex 4).

The questionnaire consists of the following six sections: SPX background information, industry background information, the environment as a purchasing parameter of main contractors, the environment as a competitive advantage of subcontractors, environmental cooperation between main contractors and subcontractors, and environmental services to be promoted to SPX member enterprises. The purpose and content of each section will be explained in detail in the sections below that also contain the presentation and analysis of the results.

Most questions are based on the same basic methodology: to maximize the comparability and quality of responses, and also to ease the respondents' work in filling out the questionnaire. The lists of corporate environmental initiatives and motivational

factors that constitute most questions provide a rather closed response system. This way of constructing questions aims at maximizing the comparability of responses and specifying the questions further for the respondents. They are based on research into corporate environmental policies and actions of leading international companies and their suppliers. Though the lists are not comprehensive, they most likely cover most potential initiatives and motivational factors in the subcontracting industries.

With respect to the interpretation of the statistics presented in this paper, it should be noted that for instance in questions concerning specific environmental policies and practices, the respondent was asked to give a positive indication, when he/she was aware of at least one company having the environmental policy or practice. Consequently these results only show that the practical environmental initiative is present in the specific industry. The magnitude of environmental concern or the number of companies applying this measure cannot be derived from these results. If the SPXs had been asked for more detailed indications, it would have required them to do further research on the issues, and they would have been less likely to answer.

### **1.3 Selection of respondents and response rate**

Questionnaires were sent out to 38 of the 50 established SPXs. In addition, 37 associate members were sent questionnaires, to allow a comparison between developing countries and developed countries. The sampling process was based on the anticipated interest of the SPXs and associated members in environmental issues. A total of 75 questionnaires were sent out in English, French or Spanish between 5 May and 15 May 2000. At the beginning of June, reminders were sent out to all recipients who had not replied. By 18 June 2000 17 SPXs and 4 associate members had replied. Fifteen of the completed questionnaires come from developing countries and 6 from developed countries. Another 5 recipients commented on the questionnaire without filling it out. The response rate of almost 50 per cent for the SPX is very satisfactory. The low response rate (11 per cent) for associate members may reflect the fact that they are not directly concerned by a potential cooperation between the SPX and NCPC Programmes. The questionnaires received refer to a total of 24,000 companies out of which 17,000 are situated in developing countries. Please refer to annex 4 for more information on the questionnaires received and other responses.

## 2. Presentation and analysis of the survey results

### 2.1 Main SPX industries

In general, industries differ with regard to their stakeholders, products, processes, supply chain structures and competitive situation. Consequently, many issues including environmental awareness and practices are subject to significant sectoral differences. The incorporation of environmental issues into industries and their markets must therefore be investigated at the industry level. Consequently, respondents were asked to list the four main industrial sectors to which their organization offers services. The answers were standardized by means of the NACE<sup>2</sup> industrial code. In addition, the respondents were requested to provide the number of companies registered with the SPX in each of the four industries and the approximate number of inquiries received by them per year. In the succeeding sections of the survey the questions were to be answered for each of the four chosen industries. Thus, the respondents provided information about the industries that they are most exposed to and consequently can be expected to have the most experience with. Table 1 provides the results of the responses to the question: “which are the four main industrial sectors that your SPX offers services to today?” (due to some incomplete questionnaires the number of inquiries per year has not been included).

**Table 1. Four main industrial sectors offered services by SPX**

NACE	Main Industries	Total		SPXs in developing countries	
		No. of responses per industry	Average No. of companies registered per industry	No. of responses per industry	Average No. of companies registered per industry
28	Fabricated metal products	18	443	14	478
25	Rubber and plastic products	14	61	12	58
30/31	Electric and electronic	11	144	9	166
17	Textiles	7	455	7	455
34/35	Transportation equipment	8	243	4	393
27	Basic metals	5	25	3	28
29	Machinery and equipment	4	1081	2	59
15	Food and beverages	3	385	2	11
74	Other business activities	5	491	2	401
20	Wood and furniture	2	94	1	17
24	Chemicals and chemical products	2	20	1	0
45	Construction	2	1377	0	0
GOV	Government procurement	1	200	1	200
	Total	82		58	

In order to obtain a satisfactory level of significance from the statistics used for the analysis, it was necessary to limit the data material. Furthermore, a distinction between replies from developing countries or countries with transition economies and those from developed countries needed to be made in order to recognize the current differences in industrial development. Table 1 lists the number of replies from all the

<sup>2</sup>NACE, Nomenclature des Activités Economiques de la Communauté Européenne.

respondents and the number of replies from responding SPXs situated in developing countries. It is evident that the number of replies from developed countries, mainly associate members, is too small for interpretation. Moreover, the number of replies for several industries is also not significant. The following analysis therefore, is based only on replies from SPXs in developing countries, and only on those industries that at least three SPXs indicated to be one of their four most important industries. In the survey statistics sheet in annex 5 the complete results are provided for reference purposes.

Interestingly, there is a significant overlap between the SPXs' main industries and the industries that NCPCs have been providing environmental services to. This supports a fundamental premise of cooperation between the two programmes in countries with an established SPX and NCPC: the NCPCs already have, or are building, the national capacity necessary to meet the needs for environmental services of the majority of types of subcontractors registered with the SPX.

## 2.2 Main contractors' environmental awareness and practices

It is widely recognized that by the late 1980's and 1990's many producing companies encouraged their suppliers to comply with quality standards, while others promoted cooperative initiatives to boost the implementation of quality measures among them (these suppliers frequently were SMEs in developing countries). In a parallel development, as external pressures on main contractors increase and internal appreciation of the benefits of environmental programmes start penetrating leading companies in many industries, main contractors' growing environmental awareness and practices can become a vehicle for environmental improvements throughout their supply chains. By means of main contractors' purchasing power allied to their strategic importance to subcontractors, in terms of the latter's potential growth and development opportunities, main contractors are able to push for environmental improvements in their supply chains. Due to the on-going globalization and diffusion of production processes, environmental policies and practices of main contractors will increasingly influence companies in developing countries as well. Thus, main contractors' environmental awareness and practices are fundamental variables to consider when evaluating the relevance of environmental services to subcontractors.

Table 2 displays the responses to the question: "in addition to traditional market parameters such as quality, price and terms of delivery, do main contractors place importance on the environmental performance of subcontractors?"

The table shows that respondents have the impression that at least 70 per cent of the main contractors in each industry place some or much importance on this issue. The basic metal and rubber and plastic sector are the industries in which the environment is considered most important. Thus main contractors certainly consider the environmental performance of their subcontractors as an important market parameter.

**Table 2. The importance of the environment for main contractors**

<i>Industry</i>	<i>Fabricated metal 28</i>	<i>Rubber and plastic 25</i>	<i>Electric and electronic 30/31</i>	<i>Textiles 17</i>	<i>Transportation equipment 34/35</i>	<i>Basic metals 27</i>
No. of replies	14	12	9	7	4	3
	(percentage)					
No importance	14	17	22			
Some importance	57	25	44	71	50	33
Much importance	21	58	22	29	50	67
Don't know	7		11			

*Note:* Based on the replies from SPXs in developing countries—see paragraph 2.1.

Such corporate attitudes however only become relevant and interesting to sub-contractors, and consequently to SPXs, when the main contractors' environmental awareness results in real environmental action. The environmental requirements and preferences of main contractors with respect to their subcontractors were thus investigated in the following question: "How is the importance of the environment reflected in the environmental requirements or preferences to subcontractors set by main contractors?" The results are displayed in table 3.

**Table 3. Environmental requirements and preferences of main contractors**

<i>Industry</i>	<i>Fabricated metal 28</i>	<i>Rubber and plastic 25</i>	<i>Electric and electronic 30/31</i>	<i>Textiles 17</i>	<i>Transportation equipment 34/35</i>	<i>Basic metals 27</i>
No. of replies	14	12	9	7	4	3
	(percentage)					
Compliance with national environmental regulations						
Required	71	67	78	86	100	100
Preferred	14	25	11	14		
No requirement or preference	14	8	11			
Compliance with environmental standards of the main contractor						
Required	50	50	33	43	75	67
Preferred	36	42	44	43	25	33
No requirement or preference	14	8	22	14		
Environmental performance included in supplier assessment scheme						
Required	29	25	33	43	50	33
Preferred	29	33	11	29		33
No requirement or preference	43	42	56	29	50	33
Requirement of ISO 14001 certification						
Required	29	25	33	57	25	33
Preferred	21	33	11	14	25	67
No requirement or preference	50	42	56	29	50	
Requirement of implementation Environmental Management System						
Required	14	8	22	43	50	
Preferred	36	42	11	14	25	100
No requirement or preference	50	50	67	43	25	
Documentation of toxic substances in goods						
Required	43	58	44	57	50	
Preferred	36	42	11	29	50	100
No requirement or preference	21		44	14		

Note: Based on the replies from SPXs in developing countries—see paragraph 2.1.

All these possible environmental activities have the potential to influence main contractors' purchasing decisions and their decisions to establish business relationships with suppliers.

Several interesting points come out of table 3. The most obvious is that all the environmental activities listed have been observed by at least one SPX as a requirement or as a preference of main contractors. As one could expect compliance with national environmental laws but also with the main contractors environmental standards are the activities most observed by responding SPXs (80-100 per cent as required or preferred). Between 45 per cent and 70 per cent of the SPXs indicate that environmental performance is incorporated by main contractors in supplier assessment schemes in the selected industries. The gap between the compliance could also indicate that liability concerns push main contractors not to get involved with environmental performance assessments, but merely be satisfied with declarations by subcontractors that they are in compliance. Alternatively, it may indicate that environmental issues are mainly considered in the start up phase of a business relationship, so after its establishment, the main contractor only partly continues the supplier environmental assessment process.

The application of ISO 14000 requirements is very sector specific and most prevalent in the textile industry. Only a few SPXs considered Environmental Management Systems as a requirement or preference. Again, however, the textile industry (but also the transportation equipment industry in this case), has the highest percentages. The reason might be that these industries are linked up to a larger extent with international supply chains demanding such rather sophisticated environmental measures (this illustrates the snowball effect global sourcing can have on suppliers).

The documentation of toxic substances in goods seems to be applied in many of the surveyed countries in the selected industries and it is often a requirement. This is not altogether surprising given the strict laws in place in all developed countries regarding the reporting through MSDSs<sup>3</sup> of the toxic components in the materials that companies use.

In conclusion, the responses show that main contractors in all of the selected industries are aware of environmental issues. Furthermore, this awareness is incorporated into practices and procedures used by at least some main contractors to manage their supply chain (as mentioned in section 1, the magnitude cannot be established by means of this survey). In the case of international companies, their behaviour may reflect increasing domestic pressures from governments, clients and shareholders to involve themselves with their entire supply chain (including suppliers in developing countries), to ensure responsible corporate behavior and the proper management of environmental risks at all stages of production.

## **2.3 Subcontractors' environmental awareness and practices**

Since 1984 the SPXs programme has supported subcontractors, mainly SMEs, in their effort to improve their prospects for development and growth. This is why their current activities (including information, promotional and advisory services) are SME specific. In light of the finding in the previous section of main contractors' increasing interest in the environmental performance of their suppliers, SMEs in developing countries will have to become more sensitive to this topic as a competitive factor that is important to their business performance. The SMEs may therefore also need supportive and substantive services on environmental issues from the SPXs.

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<sup>3</sup>MSDS, Material Safety Data Sheet.

In section four of the questionnaire, the status of subcontractors' awareness of the environmental impacts of their business and their environmental practices were explored. Furthermore the SPXs were asked to provide their impression of what factors are driving subcontractors to take environmental action. An understanding of the present status is essential to assess how the SPXs could best serve their membership in the environmental field.

**Table 4. Subcontractors awareness of the environmental impact of their operations**

<i>Industry</i>	<i>Fabricated metal 28</i>	<i>Rubber and plastic 25</i>	<i>Electric and electronic 30/31</i>	<i>Textiles 17</i>	<i>Transportation equipment 34/35</i>	<i>Basic metals 27</i>
No. of replies	14	12	9	7	4	3
	<i>(percentage)</i>					
No awareness	36	25	33	29	25	
Some awareness	50	42	44	43	75	33
Much awareness	7	25		29		67
Don't know	7	8	22			

Note: Based on the replies from SPXs in developing countries—see paragraph 2.1.

The first question explored subcontractors' awareness of the environmental impact of their operations. Table 4 reveals that awareness is very sector specific. The different industries may thus be expected, for instance, to comply with more or less strict national environmental laws; to be more or less exposed to environmental priorities in their respective markets and/or to have more or less environmental improvement potential in their products and processes. Awareness is most profound in the textile industry, the rubber and plastics industry and the basic metals industry.

When comparing these findings to those of main contractors' environmental awareness, it is evident that there is less awareness about environmental issues among subcontractors. This gap supports the idea that there is a need for environmental services for subcontractors in order to improve their competitiveness and ability to meet their customers' demand.

Table 5 entails a list of actions that subcontractors can introduce to their business in order to improve their environmental performance. As mentioned earlier, a respondent's positive indication merely means that a specific measure has been undertaken in the specific industry, and does not provide indication of the magnitude of the measure's importance. Nevertheless, table 5 clarifies two important aspects to the survey: what common environmental measures are currently known in a certain industry, and what measures may in general be relevant for a certain industry.

Overall, the most frequently reported measures are "end of pipe" pollution controls and changes to cleaner technologies. Whereas the first measure is rather unambiguous and according to experience often is a reaction to national environmental requirements, the change to cleaner technologies could encompass a wide variety of simple and advanced process and procedure changes (the figures vary substantially from one sector to the next). The substitution of raw materials is also important in the rubber and plastic products and in the textile industries, whereas in the transportation equipment industry ISO 14000 registrations stand out together with changes to cleaner technologies. As mentioned above, this could well correspond to the high degree of internationalization that this last in industry particular is facing.

The figures in table 5 indicate that the surveyed subcontracting industries differ significantly in their application of environmental measures. Thus a sector specific approach is likely to be necessary in order to identify the appropriate environmental services for the subcontractors.

**Table 5. Actions taken by subcontractors to address environmental issues**

<i>Industry</i>	<i>Fabricated metal 28</i>	<i>Rubber and plastic 25</i>	<i>Electric and electronic 30/31</i>	<i>Textiles 17</i>	<i>Transportation equipment 34/35</i>	<i>Basic metals 27</i>
No. of replies	14	12	9	7	4	3
	(percentage)					
“End of pipe” pollution control measures	64	33	56	29	25	67
Environmental reporting	21	25	11	29	25	67
ISO 14000 certification	7	25	22	29	50	67
Labelling of products	7	25	22	14	25	
Change to less polluting and toxic raw materials	21	50	22	43		33
Change to cleaner technologies	36	42	11	57	75	67
Trained staff in environmental issues	14	25		29	25	67
Implementation of an Environmental Management System	7			14		33

*Note:* Based on the replies from SPXs in developing countries—see paragraph 2.1.

Several of the responding SPXs indicated in their comments that subcontractors are just starting to involve themselves with environmental issues. Contrasting this to the fact that most measures have nevertheless been observed in the surveyed industries, suggest that there is a growing awareness of and interest in environmental issues although implementation into action has still not penetrated deeply the surveyed industries. The observation of such measures at leading subcontractors may provide the SPXs with reference projects, and thus later support the promotion of environmental services to industry. In response to subcontractors’ interest in getting started with ISO 14000 certification, one of the Mexican SPX, asked for the contact details of the Mexican NCPC immediately after filling out the questionnaire.

It is important to note that the provision of staff training and the enabling of subcontractors to produce environmental reports already have been observed in most industries. These areas constitute an immediate potential for cooperation through environmental services provided by NCPCs to subcontractors. In general terms the application of most measures indicates that at least some companies recognize and explore cleaner production potentials in all industries. This further shows that the environmental actions are relevant to all surveyed industries, but naturally not necessarily to all companies.

The last question of the section on subcontractors’ environmental awareness and practices focuses on the motives driving subcontractors’ environmental actions. The possible motives factors included in the questionnaire encompass external pressures as well as internal incentives. In this manner the SMEs’ entire business environment has been considered, which is necessary to investigate a company’s decision making.

**Table 6. Motivational factors driving subcontractors environmental actions**

<i>Industry</i>	<i>Fabricated metal 28</i>	<i>Rubber and plastic 25</i>	<i>Electric and electronic 30/31</i>	<i>Textiles 17</i>	<i>Transportation equipment 34/35</i>	<i>Basic metals 27</i>
No. of replies	14	12	9	7	4	3
	(percentage)					
Compliance with national environmental laws	86	75	89	86	75	100
Pressure from the public and/or NGOs	36	50	44	29	25	67
Requirements or preferences of main contractors	14	42	11	29	25	67
Environmental actions of competitors			11	29	25	
Expected cost savings	29	25	22	57	25	33
Improvement of products and processes by means of cleaner technologies	36	42	11	71	25	67

*Note:* Based on the replies from SPXs in developing countries—see paragraph 2.1.

By far and away the single most important motivational factor reported for all the industries is compliance with national environmental laws. Thus reactive action to national governments' environmental standards and regulations is considered very influential to subcontractors' decisions on environmental issues. Compliance with national environmental law has traditionally also been a major driving force for the NCPCs' clients. The NCPCs consequently have the necessary technical expertise and knowledge about the requirements of national laws to assist SMEs in this matter. Pressure from other stakeholders such as the public and NGOs are also perceived to motivate subcontractors.

Main contractors are considered to have impact on subcontractors' environmental practices by a limited number of the responding SPXs (especially in the rubber and plastic products and the basic metals industries).

In other industries, subcontractors are not only responding to external pressures, but are also motivated by internal economic benefits including cost saving (in raw materials, energy, labour, equipment maintenance, etc). This seems to be especially to the case in the textile industry. The experiences currently made by these subcontractors may help to promote the mind shift among other SMEs that environmental actions in many cases are not a compliance burden, but make good business sense.

The question related to environmental investments is not included here, since very few responses were submitted. This may indicate that the question was not suitable for the aggregated industry level.

In conclusion, the fourth section of the survey on the demand for environmental services within subcontracting companies first of all revealed that subcontractors in many of the surveyed countries are active in the environmental field. Furthermore many SPXs indicated that the interest and awareness among subcontractors is currently in an initial phase and apparently growing. Considering this and the identified gap between main contractors' and subcontractors' environmental awareness and practices, there seems to be a need for environmental services in the subcontractors registered at the responding SPXs. It is important to note, however, that the need is country and sector specific.

## 2.4 Joint environmental initiatives

Subcontracting has increasingly become based on long term partnership relations between buying and selling companies. For instance, main contractors' TQM related activities often lead to joint projects between buyers and sellers, because the nature of such improvements brings or at least encourages a total systems approach to production and information flows. The elements of existing partnerships with subcontractors registered with SPXs may include the provision by the main contractor of some of the following elements: special raw materials, specialized equipment, moulds, technical assistance, training, know-how, license agreements, equity participation and complementary networking. Many of these elements contain environmental components and are thus potential subjects of joint environmental initiatives. In general, such industrial relations build on complementary skills of buyer and seller, or buyers' comparative advantage in a specific area (such as the cost advantages of many companies in developing countries).

Many business partnerships have already been established based on traditional business focus areas such as quality improvements and time/cost savings. To incorporate environmental aspects into such established partnerships could prove to be a powerful vehicle for also introducing environmental services. An example is to supplement an ISO 9000 certification with an ISO 14000 certification that enables companies to capitalize on the synergy effects of having a framework for inter- and intraorganizational improvements in place. New business partnerships based merely on environmental issues are also possible, but they can be expected to be less likely. Table 7 captures the existence of environmental cooperation in the selected surveyed industries according to the responding SPXs.

**Table 7. SPXs awareness of completed, on-going or planned environmental cooperation between main contractors and subcontractors**

<i>Industry</i>	<i>Fabricated metal 28</i>	<i>Rubber and plastic 25</i>	<i>Electric and electronic 30/31</i>	<i>Textiles 17</i>	<i>Transportation equipment 34/35</i>	<i>Basic metals 27</i>
No. of replies	14	12	9	7	4	3
	<i>(percentage)</i>					
Yes	43	42	44	57	50	33

*Note:* Based on the replies from SPXs in developing countries—see paragraph 2.1.

The awareness of environmental cooperation between subcontractors and main contractors was much higher than expected. However, several SPXs indicated that they merely knew of a limited number of such partnerships. The small number of partnerships corresponds with the relatively low influence of main contractors requirements and preferences on subcontractors environmental actions reported in table 6, because environmental cooperation in most cases is initiated by the main contractor. Again, this supports the impression that only a few leading companies currently implement such environmental measures.

The findings on environmental cooperation are elaborated in table 8. The possible areas of environmental cooperation listed in the table were chosen based on research into leading international companies' environmental policies and practices. In general, main contractors initiate cooperation when they extend their environmental management system and environmental procedures into their supply chains. Environmental cooperation at the generic level aims at strengthening the supply chain and

improving its overall environmental performance to the benefit of each supply chain member including of course the supply chain leader (in this case the main-contractor).

On average most of the cooperation forms are observed in 25 per cent to 35 per cent of the cases by responding SPXs, which is significantly higher than expected. In particular, a high degree of cooperation seems to take place in the textile, transportation equipment and basic metals industries. For the industries with a higher number of replies there is also a clearer indication that many forms of cooperation take place. The rubber and plastic industry is above the average for a few specific cooperation forms. The best-known cooperation form is the implementation of main contractors' own internal environmental programme (35 per cent on average). Then come joint projects on certification and environmental impact assessment of the subcontractors' products.

**Table 8. Areas of environmental cooperation**

<i>Industry</i>	<i>Fabricated metal 28</i>	<i>Rubber and plastic 25</i>	<i>Electric and electronic 30/31</i>	<i>Textiles 17</i>	<i>Transportation equipment 34/35</i>	<i>Basic metals 27</i>
No. of replies	14	12	9	7	4	3
	<i>(percentage)</i>					
Joint training of staff	21	33	11	43	25	33
Joint project on certification (e.g. ISO 14000)	29	25	22	29	50	67
Product design and development	14	25		29	25	67
Implementation of main contractors own internal environmental programme	29	25	22	57	50	67
Technology transfer from main contractor	14	17				33
Main contractor financed environmental project at the subcontractor	7					33
Environmental impact assessment of subcontractors products	29	42	22	29	50	33

*Note:* Based on the replies from SPXs in developing countries—see paragraph 2.1.

The specific examples provided by responding SPXs on environmental cooperation between main contractors and subcontractors cover the following: pilot testing of equipment, reuse/recycling of packaging/containers, technology transfer to a subcontractor and the ISO 14000 certification of a subcontractor.

In conclusion, the results in table 8 suggest that most of the industries have potentials for environmental cooperation. SPXs have provided advice and assistance concerning quality-related issues to their subcontractors. Now a similar need for environmental services seems to be evolving and calls for an expansion of the current SPX service range. The cooperation between the SPX programme and NCPC programme as a response to this development seems to be highly relevant.

## 2.5 Environmental services to be provided to SPX members enterprises

As stated in the introduction, the hypothesis that is being investigated concerns the potential for environmental services to supplement the SPXs' current range of activities. The structure of the questionnaire was aimed at guiding the respondents through the environmental awareness and practices of the main contractors and subcontractors in each SPX's four main industries. Based on the sequence required to answer these questions, the respondent was at the end asked to evaluate the relevance of environmental services to his own SPX. This overall indicator encompasses the respondent's industry specific knowledge and to some extent his immediate response to the idea of cooperating with an NCPC in order to supplement his current service package. Therefore the indicator is essential to get a feel for the real prospects of cooperation between the two programmes. Table 9 shows the responses on this indicator and the SPXs' view as to whether or not they are aware of a Cleaner Production Centre in their country.

**Table 9. Is environmental services a relevant SPX-service?**

<i>Industry</i>	<i>Fabricated metal 28</i>	<i>Rubber and plastic 25</i>	<i>Electric and electronic 30/31</i>	<i>Textiles 17</i>	<i>Transportation equipment 34/35</i>	<i>Basic metals 27</i>
No. of replies	14	12	9	7	4	3
	<i>(percentage)</i>					
YES	71	75	78	71	50	67
Know a CPC	57	50	67	71	25	67

*Note:* Based on the replies from SPXs in developing countries—see paragraph 2.1.

From table 9 it is clear that the majority of the responding SPXs consider environmental services to be a relevant SPX-service for all selected industries. Twelve out of the 15 responding SPXs in developing countries indicated that environmental services would be relevant for some or all of their four main industrial sectors (see annex 5 for details). Certainly it can be argued that the SPXs that decided to reply to the questionnaire would be likely to support the initiative of cooperation, as a response probably reflects an observed relevance of the environmental issues in the country. Nevertheless when considering the high response rate of the SPXs, the proposition of cooperation between the two programmes seems justified. Table 9 moreover reveals a significant variation between the industries, which contributes to the call for further sector specific investigation.

A high proportion of the SPXs are already aware of a Cleaner Production Centre or equivalents in their country. Considering the indicated need for environmental services, it is interesting that none of the SPXs has attempted to get closer to the CPC. It may be worthwhile to look into the reasons for this behaviour in any the further investigations of potential cooperation, since the underlying reasons or barriers need to be addressed. One possible explanation could be that since the SPXs are often industry organizations, they are more used to working with private consultancy companies.

## 2.6 Conclusion

The survey was conducted to investigate the demand for environmental services within the SPX network. Based on its outcome, cooperation between the UNIDO SPX

programme and the UNIDO/UNEP NCPC programme will be further discussed. In order to support such discussions this report will be disseminated to all responding SPXs and associate members as well as the involved persons at UNIDO HQ.

In order to achieve certain significance in the results, the received data was limited for the analysis. Thus conclusions given below draw on the answers from SPXs in developing countries only.

The findings are encouraging for a future possible cooperation between the two programmes. The main contractors are perceived to place high importance on the environmental performance of their suppliers, and corresponding environmental policies and practices related to suppliers are observed in all of the industries surveyed. The magnitude of such environmental initiatives, including the setting of requirements, preferences and the conduct of joint environmental projects, cannot be established based on this survey. However several comments from responding SPXs support the general impression that an increasing number of main contractors are prioritizing the environment also with regard to subcontractors.

Subcontractors are in general less aware of environmental aspects of their operations than main contractors. The implementation of environmental measures is furthermore very sector specific and has not yet penetrated deeply the surveyed industries. However, in response to pressures from national governments, NGOs and main contractors, subcontractors are increasingly getting involved with environmental issues. The gap between main contractors' and subcontractors' environmental concern indicates that at least some subcontractors need environmental advice and assistance in order to improve their competitiveness and to improve their prospects for development and growth.

In this respect joint programmes involving both the main contractor and the subcontractor should also be encouraged in order to apply to the supply chain the environmental systems and standards that are set by the main contractor, and in order to comply with national and international environmental regulations.

In conclusion, the answer to the posited hypothesis is that there is a clear indication that environmental services are relevant as an expansion of the current SPX service package to subcontractors in developing countries. This is supported in particular by the SPXs' direct evaluation of the relevance of such an expansion: 12 out of the 15 responding SPXs considered environmental services important to some or all of their industries. It was however clear throughout the analysis that sectoral and country specific differences need to be addressed in the further considerations of cooperation between the two programmes. It is therefore highly recommended to conduct any further analysis at the company level instead of at the aggregated SPX level.

The most appropriate mechanism for a deeper analysis is direct discussions between interested SPXs and NCPCs in their respective country. Cooperation will take place only if the respective SPX and NCPC benefit from it, which the institutions can better evaluate themselves. UNIDO should therefore merely bring the potential partners together and facilitate discussions on cooperation based on this survey. This approach is also more effective with respect to exploring the actual standing of the relevant industrial sectors on environmental issues and to further identify the subcontractors' specific needs for environmental services. Lastly cooperation is more likely to take place if the rather independent SPXs and NCPCs (the mature centres in particular) evaluate the prospects of cooperation themselves instead of simply receiving recommendations to this effect from UNIDO HQ.

In order to facilitate of such discussions some potential areas of cooperation between the SPXs and NCPCs will be presented in the next section of the report.



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### 3. Cooperation between the SPX programme and the NCPC programme

In this section some potential areas of cooperation between the UNIDO SPX and NCPC programmes will be presented. The basic philosophy behind such cooperation is to strengthen both by exploiting synergies and complementary capacities. Therefore the cooperation has been considered not exclusively on NCPCs' provision of environmental services to the SPXs' subcontractors, which has been the focus of the survey.

Initial cooperation should mainly be considered for SPXs and NCPCs situated in the same country. Later, based on the experiences gained from established partnerships, it may become interesting to also consider regional cooperation. Currently, the following countries have both an SPX and an NCPC, thus constituting the immediate target group for cooperation: **Brazil, Chile**, Costa Rica, Czech Republic, **Guatemala**, India, **Mexico, Morocco, Russian Federation, Slovakia** and Tunisia. The countries in bold indicate that the respective SPXs consider environmental services to be relevant for the companies registered at their respective SPX, and should therefore be considered as the group of highest immediate potential for cooperation. Preliminary research showed that some SPXs and NCPCs either have the same host institution or have the host institution of the SPX in the steering committee of the NCPC (Costa Rica, the Czech Republic, Guatemala and India). This may ease cooperation and thus make it more interesting for the institutions. After consultations within UNIDO, it is suggested to test this cooperation in Mexico and Slovakia.

The following five areas of cooperation have been identified and are supported by the responses to the survey:

1. **The provision by the NCPC of in-plant assessments, staff training, and CP financing methodology to the registered SPX subcontractors**

Based on the survey, a need for such services has been identified. The SPXs lack capacity and expertise to satisfy such a need on the part of their registered subcontractors. A cooperation with the NCPCs supplementing the current SPX service package with environmental services seems therefore very interesting. The survey provides examples of concrete services relevant to at least some subcontractors, in particular concerning technical assistance and training. Furthermore, informational services, including knowledge on national environmental law and how to comply with it, toxic materials and potential substitutes and relevant environment related labels are interesting for initial discussions.

2. **Placing NCPC clients in the SPX databases would provide the NCPC clients with access to the existing SPX services**

Including NCPC clients in an SPX would support their further development through access to new markets, and thus improve their resources for CP activities. The SPXs would expand the number of companies in their database.

These first two areas of cooperation would lead to the SPXs and NCPCs gaining access to new customers for their services. Furthermore the individual SPX or NCPC would expand its service package by referring to the partner's services as well in their promotion efforts to SMEs. By

complementing each other the SPXs and NCPCs would thus become more competitive. The promotion of each other could for instance take place at NCPC's awareness raising seminars, at SPX's subcontracting exhibitions and in daily contacts with the existing customers from both centers.

**3. Training of the SPX staff members**

This would enable the SPX in cooperation with the NCPC to make relevant companies aware of the new environmental services.

**4. Incorporation of environmental issues into the SPX industry questionnaire and database**

This would enable a systematic collection and analysis of environmental data at the company level to facilitate for instance identification of companies that would need environmental services or that need to comply with environmental regulations and standards.

**5. Organizational expansion of SPXs and NCPCs**

Cooperation between the two programmes at the programmatic level may also become a vehicle for the establishment of new SPXs and NCPCs in countries where one or the other already exists. By capitalizing on the established organizational structures of an SPX or NCPC, resources could be used more effectively, as the incorporation of new services may prove less costly and less difficult than the establishment of new institutions.

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# Annex 1. The UNIDO Subcontracting and Supply Chain Management Programme

## Background information on the UNIDO SPX Programme

Since 1984, the SPX Programme has supported and facilitated the establishment of a total of 50 Subcontracting and Partnership Exchanges in 30 countries and countries in transition. Subcontracting and Partnership Exchanges (SPX) are technical information, promotion and match making centres for industrial subcontracting and partnership between main-contractors, suppliers and subcontractors, aiming at the optimal utilization (the most complete, rational and productive) of the manufacturing capacities of the affiliated industries.

The **industrial sectors** where subcontracting applies are, by ranking order of importance and priority of SPXs:

1. The metal-working industries;
2. The mechanical, electrical and electronic engineering industries (it is well known that the whole manufacturing process in the automobile, the electronics and aeronautics industries relies on subcontracting); as well as the
3. Plastic and rubber industries;
4. The textile and leather industries; and to a lesser extent
5. The wood-working, ceramics, glass and chemical industries. Furthermore, subcontracting (f) in industrial services is becoming increasingly important.

## SPX Services

SPXs have three main services to offer SMEs to help them enter industrial partnerships and networks:

### 1. Information services

Technical information to main-contractors concerning small and medium industries which are capable of working as subcontractors, suppliers or partners for domestic and foreign main-contractors;

Brokerage of information relating to the supply of and/or demand for subcontracted products and supplies;

Information on supply of and demand for know-how, patents, technical cooperation, opportunities and procedures for the setting-up of partnership agreements.

### 2. Promotional services

Organization of business meetings with purchase managers from domestic and foreign industrial groups;

Organization of collective participation in industrial fairs of the sector;

Preparation and dissemination of promotional material on the SPXs and their member industries.

3. **Advisory services** on legal aspects of subcontracting operations, product development and adaptation, quality control, standardization and certification, marketing.

### **SPX methodology, tools and software**

The SPXs share standard instruments and methods for the development of industrial subcontracting. An important tool is the **UNIDOSS** database-software that has the following basic functions:

The registration of manufacturing capacities and capabilities of industrial companies based on detailed questionnaires and surveys;

The classification of these companies according to a set of given industrial nomenclatures, such as products, sectors, manufacturing processes and equipment; and

A search of subcontracting and supplying enterprises according to a very large set of criteria (including an exhaustive analysis of the registered machinery and its technical characteristics) to match them with inquiries from buyers and contractors.

It allows economic analyses to be carried out on specific subsectors and areas, on enterprise deficiencies and required remedies, on technological and quality assessments and on investment and marketing strategies. Other instruments developed by UNIDO include legal guidelines and model contracts for establishing subcontracting agreements and guidelines on policy issues and industrial legislation.

### **Subcontracting and partnerships**

Subcontracting has become increasingly based on long lasting partnership relations between subcontracting and contracting companies. For instance, TQM activities have often lead to joint projects between buyers and sellers. The elements of existing partnership include the provision by the main-contractor of: special raw materials, specialized equipment, moulds, technical assistance, training, know-how, license agreements, equity participation and complementary networking. In general, such industrial relations build on complementary skills of buyer and seller, or buyers' absolute advantage in a specific area (such as cost advantage).

All information is taken from the SPX home page (<http://www.unido.org/doc/f330742.htmls>) and the UNIDO publication "Practical Case Studies on Industrial Subcontracting and Partnerships".

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## Annex 2. The UNIDO/UNEP NCPC programme

### The National Cleaner Production Centres Programme

#### *Background*

The National Cleaner Production Centres (NCPC) Programme is a joint initiative of the United Nations Industrial Development Organization (UNIDO) in Vienna and the United Nations Environment Programme (UNEP) in Paris. UNIDO is the executing agency, with UNEP assisting in the provision of strategic environmental guidance and professional support. In total, 15 centres are now part of the international UNIDO/UNEP NCPC network.

After detailed preparatory work in 1994, the first eight NCPCs were established in 1995 in Brazil, China, Czech Republic, India, Mexico, Slovakia, United Republic of Tanzania and Zimbabwe. These eight centres were selected from requests received from 39 institutions in 25 countries. Since then, NCPCs have been established in Tunisia, Hungary, Costa Rica, El Salvador, Guatemala, Nicaragua, Viet Nam and Croatia.

Moreover, funding for four additional centres has been secured. These centres will be established during the course of 2000 in Ethiopia, Morocco, Mozambique and Kenya. Many requests have been received from other countries for support in the establishment of National Cleaner Production Centres, and a number of centres established under other programmes have requested to become part of the network.

In the table below, established NCPCs and NCPCs under establishment are listed with their main sources of funding:

**Table 1. Donor support of the National Cleaner Production Programme**

<i>NCPC</i>	<i>Donor Support (through UNIDO or directly)</i>
Brazil	Brazil
China	<i>The Netherlands</i> , United States, World Bank, Denmark, Australia, EU
Costa Rica	Switzerland
Czech Republic	<i>Austria</i> , Denmark, EU
Croatia	Czech Republic
El Salvador	<i>Switzerland</i>
Ethiopia	Italy
Guatemala	<i>Switzerland</i> , Inter American Development Bank
Hungary	<i>Austria</i>
India	<i>The Netherlands</i> , World Bank, <i>India</i>
Kenya	UNDP
Mexico	<i>The Netherlands</i> , United States
Morocco	Switzerland
Mozambique	<i>Italy</i>
Nicaragua	<i>Austria</i>
Slovakia	<i>Austria</i>
United Republic of Tanzania	<i>The Netherlands</i> , Norway
Tunisia	Norway
Uzbekistan (CP Project)	Japan
Viet Nam	<i>Switzerland</i> , Asian Development Bank, <i>Sweden</i> (CP project in HCMC)
Zimbabwe	<i>The Netherlands</i> , Denmark
Global Activities	Norway

## **Programme approach**

The objective of the NCPC programme is to build national capacity in the field of Cleaner Production (CP) in order to ensure its sustainable application and improve, in this manner, the environmental performance of industry in developing countries. The programme is based on the premise that the concept of cleaner production can only be sustained in a country, if capacity is in place to adopt it. The concept can only be applied, if it is adjusted to the local conditions and promoted by professionals in the beneficiary country itself.

To build national capacity and adapt CP methodologies to local conditions, the programme establishes National Cleaner Productions Centres. In contrast to the pure technology transfer approach, NCPCs target the transfer of know-how. Consequently, NCPCs do not deliver ready-made solutions for specific problems, but rather they train their clients on how to find the best solutions for their problems. By providing industry with appropriate know-how, the problem solution process does not remain a one-time-exercise, but becomes an integrated and progressive part of the overall management of a company. In this way, the NCPC methodology also generates continuous demand for cleaner production and other environment related services.

## **Core services of the National Cleaner Production Centres Programme**

Specifically, the national capacity build in the field of CP is aimed at providing five services: in-plant assessments, training, information dissemination, policy advice and CP financing. All of these services are interrelated and strongly support each other:

*In-plant assessments:* through in-plant assessments of SMEs' processes, managerial practices and environmental and economic performance, a NCPC shows that the CP concept can be applied to any industrial sector and that pollutant reduction can be financially attractive. In-plant assessments create examples of successful CP applications that have a direct positive impact on the environment and that can be copied by other enterprises.

*Training:* through training in CP methodologies, a NCPC develops a core of national CP consultants, ensures that plant personnel participating in assessments retain the ability to implement additional CP measures and informs other relevant parties, such as subsector organizations, governments, research institutes, financial institutions, universities and consultants, of the advantages of CP.

*Information dissemination:* through information dissemination, a NCPC provides technical information (e.g., available technologies for solving environmental problems in sector-specific processes), shares experience with interested partners through CP case studies and promotes its services. An effective information dissemination programme is essential for ensuring that CP consultants can provide SMEs with information about the most appropriate CP techniques and technologies.

*Policy advice:* through policy dialogue, a NCPC aims at modifying national legislation and policies to assign priority to preventive environmental management and to support effective environmental regulation. The latter involves not only administrative measures, such as licensing, but also economic measures such as realistic disposal charges and market priced energy and water.

*Cleaner production financing:* the NCPCs assist and educate SMEs in preparing loan applications for CP investments and detailed analysis of the economical viability of the planned investments. Furthermore, financial institutions are assisted with the establishment of funding schemes for CP investments.

## **Target beneficiaries**

SMEs are the primary focus of the NCPCs services. The SMEs benefit from monetary savings as a result of reductions in waste generation and resource consumption, improvements in managerial practices, as well as increased access to cleaner technologies to upgrade their operations. Large-scale plants can also benefit from the training in CP methodologies, which they can later apply.

Industrial associations, research institutes, consultants and universities connected to industries can also benefit from participation in the NCPCs activities due to the marketable research possibilities and projects in the field of cleaner production. With respect to universities, in particular, it could also help them to include cleaner production in the curricula and to gain expertise through participation in projects and, thus, develop a firm basis for teaching cleaner production.

Environmental and industrial policy-makers will benefit due to their improved awareness of the fact that there are cost-effective ways for industry to reduce environmental pollution. Finally, the environment will also benefit due to the decreased emissions and wastes from SMEs and larger industries, which have adopted cleaner production techniques and technologies.

## **Further information**

For further information on the National Cleaner Production Programme the following publications can be obtained by request to UNIDO or UNEP. In addition, the UNIDO homepage ([www.unido.org](http://www.unido.org)) provides in-depth information on the programme and its projects.

### *Technical manuals and reports*

Breweries, dairy, electronics, fertilizers, hotels, iron foundries, leather tanning, metal finishing, non-ferrous metals ore mining, nickel, pulp and paper, sugar refineries, textiles (UNIDO and UNEP).

### *Other manuals and reports*

Strategies and policy for CP, environmental auditing, hazardous wastes, emission reduction, chemical accidents, transport, environmental compliance, life-cycle assessment, eco-designs (UNIDO and UNEP).

### *Training and Information*

Cleaner Production—A Training Resource Package (trainers handbook), UNEP, 1996.

Trainers Workbooks in brewing, leather and textile wet processing, UNEP, 1996.

Information Sources on Cleaner Production (CP topics), on-line sources of CP information, UNIDO. <http://www.unido.org/services/environment/envlearn/ftp/LUeight04.html>.

International Cleaner Production Information Clearinghouse, Diskette, Version II, UNEP, 1996.

Trade Implications of International Standards for Quality and Environmental Management Systems, Survey results, UNIDO/ISO, 1996.

DESIRE—From Waste to Profits—the Indian experience: case studies, methodology for waste minimization, video, UNIDO, 1995.

Environmental Action Pack for Hotels, IHA/IHEI/UNEP, 1995.

ESID: Ecologically Sustainable Industrial Development, 10 learning units, 7 short films on video, diskettes with data base, case studies and project document sample, 3 booklets, learning recall tape, UNIDO, 1994.

Sustainable Industrial Development—UNIDO Services—UNIDO, 1998.

Sustainable Industrial Development—UNIDO Position—UNIDO, 1998.  
(Available only on-line at: <http://www.unido.org>).

### *Case studies*

NCPC Programme Case Studies, UNIDO/UNEP, 1997.

Cleaner Industrial Production, Demonstration projects, UNIDO, 1995.

Cleaner Production Worldwide, Volume I, 1993 and Volume II, 1996, UNEP.

Cleaner Production in the APEC Region, UNEP, 1994.

### *Periodicals*

Industry and Environment Review (quarterly) with CP Newsletter (bi-annually) as a supplement, UNEP, IE.

Sustainable Industrial Development Network Newsletter (annually), UNIDO.

### *Videos\**

Sustainable Industrial Development, 10 min/English/French/Spanish, UNIDO, 1997.

Cleaner Production: - A Global Trend, 14 min/English/German/French/Spanish, UNIDO, 1996.

National Cleaner Production Centres, 9 min/English/Spanish, UNIDO, 1996.

Ganancias sin Residuos, 14 min/Spanish, UNIDO, 1996.

From Waste to Profits - the Indian experience, 20 min/English, UNIDO, 1996.

Getting it right, Success through transferring and sharing environmentally sound technology, 7 min/English, UNIDO, 1998.

Sweet Success in the Sugar Industry, 8 min/English/Spanish, UNIDO 1998.

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\*All videos available in VHS. Please specify your colour system (PAL/SECAM or NTSC)

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## **Annex 3. Questionnaire on the demand for environmental services within the SPX**



**UNITED NATIONS INDUSTRIAL DEVELOPMENT  
ORGANIZATION**

QUESTIONNAIRE  
ON  
THE DEMAND FOR ENVIRONMENTAL SERVICES  
WITHIN THE SPX NETWORK

Practical information:

Dissemination: 4 June 2000

Please return the questionnaire to Mr. Andre de Crombrughe

Fax: +43-1-26026-6805

In case you have any questions regarding the questionnaire, please do not  
hesitate to contact Mr. Lars Engel Nielsen:

Email: [lnielsen@unido.org](mailto:lnielsen@unido.org)

Fax: +43-1-26026-

Phone: +43-1-26026-4325

29 May, 2000

## 1. SPX background information

1.1 Name of SPX: \_\_\_\_\_

1.2 Country: \_\_\_\_\_

1.3 Respondent: \_\_\_\_\_

Name of the person, who fills out the questionnaire

1.4 Contact details of respondent: \_\_\_\_\_

Preferable email-address or telephone no.

## 2. Industry background information

2.1 Which are the four main industrial sectors that your SPX offers services today:

Industrial sector with NACE code	No. of inquiries per year	No. of companies in SPX database
1.		
2.		
3.		
4.		

2.2 What are the characteristics of the typical relationship between main contractor and subcontractor in the main industrial sectors?

**All fields should have a letter**

Characteristics	Sector 1	Sector 2	Sector 3	Sector 4
● Permanent (P) or Case-by-case (C)	P or C?			
● Contractual (C) or Non-contractual (N)	C or N?			
● Main contractor has many potential suppliers (M) or few potential suppliers (F)	M or F?			
● Subcontractor is offering tailor-made products (T), standardized supplies (S) or both (B)	T, S or B?			
● Subcontractor produce mainly according to main contractors specifications (S) or take part in the product design and development (D)	S or D?			

### 3. The environment as purchasing parameter of main contractors

#### 3.1 Importance of the environment for main contractors

In addition to traditional market parameters such as quality, price and terms of delivery, do main contractors place importance on the environmental performance of subcontractors?

Sector	No importance	Some importance	Much importance	Don't know
1.				
2.				
3.				
4.				

#### 3.2 How is the importance of the environment reflected in the environmental requirements or preferences to subcontractors set by main contractors?

**X = requirement**

**O = preference**

Requirements	Sector 1	Sector 2	Sector 3	Sector 4
● Compliance with national environmental regulations	X or O			
● Compliance with environmental standards of the main contractor				
● Environmental performance included in supplier assessment scheme				
● Requirement of ISO 14001 certification				
● Requirement of implementation Environmental Management System (EMS)				
● Documentation of toxic substances in goods				

3.3 Please give one or two examples of requirements made by main contractors to subcontractors, which you find representative for the respective industrial sector.

**Example 1**

Industrial sector: \_\_\_\_\_

Main contractor \_\_\_\_\_  
Name and their product

Subcontractor \_\_\_\_\_  
Name and the supplied product

Requirements:

**Example 2**

Industrial sector: \_\_\_\_\_

Main contractor \_\_\_\_\_  
Name and their product

Subcontractor \_\_\_\_\_  
Name and the supplied product

Requirements:

**4. The environment as competitive advantage of subcontractors**

4.1 Are subcontractors aware of the environmental impact of their operations?

Sector	No awareness	Some awareness	Much awareness	Don't know
1.				
2.				
3.				
4.				

4.2 In which way have subcontractors addressed environmental issues?

X = yes

Actions	Sector 1	Sector 2	Sector 3	Sector 4
● "End of pipe" pollution control measures				
● Environmental reporting				
● ISO 14000 Certification				
● Labeling of products				
● Change to less polluting and toxic raw materials				
● Change to cleaner technologies				
● Trained staff in environmental issues				
● Implementation of an Environmental Management System (EMS)				

4.3 To which extent have subcontractors invested in improving their environmental performance?

Initial environmental investments as percentage of total investments within the last 5 years				
Sector	0-3%	4-6%	7-10%	Above 10%
1.				
2.				
3.				
4.				

Environmental costs as percentage of total production costs				
Sector	0-1%	2-3%	4-5%	Above 5%
1.				
2.				
3.				
4.				

4.4 What motivated subcontractors to take environmental actions and make environmental investments?

**X = yes**

Motivation	Sector 1	Sector 2	Sector 3	Sector 4
● Compliance with national environmental laws				
● Pressure from the public and/or NGOs				
● Requirements and/or preferences of main contractors				
● Environmental actions of competitors				
● Expected cost savings				
● Improvement of products and processes by means of cleaner technologies				

4.5 Please give one or two examples of environmental actions made by subcontractors, which you find representative for the respective industrial sector.

**Example 1**

Industrial sector: \_\_\_\_\_

Subcontractor \_\_\_\_\_

Name and the supplied product

Environmental actions:

**Example 2**

Industrial sector: \_\_\_\_\_

Subcontractor \_\_\_\_\_

Name and the supplied product

Environmental actions:

**5. Environmental Cooperation between main contractors and sub-contractors**

5.1 Are you aware of completed, on-going or planned environmental co-operation between main-contractors and subcontractors?

Sector	Yes	No
1.		
2.		
3.		
4.		

5.2 Which kind of environmental cooperation are you aware of?

**X = yes**

Cooperation forms	Sector 1	Sector 2	Sector 3	Sector 4
● Joint training of staff				
● Joint project on certification (e.g. ISO 14000)				
● Product design and development				
● Implementation of main contractors own internal environmental programme				
● Technology transfer from main contractor				
● Main contractor financed environmental project at the subcontractor				
● Environmental impact assessment of subcontractors products				

5.3 Please give one or two examples of environmental completed, on-going or planned environmental cooperation between main-contractors and subcontractors, which you find representative for the respective industrial sectors

**Example 1**

Industrial sector: \_\_\_\_\_

Main contractor \_\_\_\_\_  
Name and their product

Subcontractor \_\_\_\_\_  
Name and the supplied product

Environmental cooperation:

**Example 2**

Industrial sector: \_\_\_\_\_

Main contractor \_\_\_\_\_  
Name and their product

Subcontractor \_\_\_\_\_  
Name and the supplied product

Environmental cooperation:

**6. The Environment as a potential SPX support service to its members**

6.1 Is environmental advice and assistance a relevant new support service for the companies participating in your SPX?

Sector	Yes	No
1.		
2.		
3.		
4.		

6.2 Are you aware of a Cleaner Production Centre in your country and, if so, have you been in contact with this centre?

	Yes	No
● We are aware of a Cleaner Production Centre in my country		
● We have been in contact with a Cleaner Production Centre in my country		
● Which programme does the Centre belong to? (UNIDO/UNEP NCPC, USAID-EP3 or?)		

6.3 Are you interested in receiving further information on the UNIDO/UNEP National Cleaner Production Programme?

YES

NO

**End of questionnaire. Thank you very much for your time and kind help with filling out the questionnaire!**



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## Annex 4. Letter of explanation to questionnaire

Dear Mr./Ms.,

Over the past decade, many companies in developed countries have transformed their view of the environment from a compliance burden into a business opportunity. Increasingly, environmental awareness is being integrated into core business processes, systems and strategies. Environmental initiatives of multinational companies such as Xerox, Volvo, General Motors, UPS and British Telecom reflect more than fluffy company visions—they prove to be attractive investment options providing substantial environmental and economic improvements. In the course of incorporating environmental measure such as environmental management systems, cleaner technology and life-cycle management, main contractors realize, how dependent their environmental performance is on the their subcontractors. Consequently, they start focussing on their suppliers and go into partnerships with them on improving the environmental performance of the entire supply chain.

**Thus, environmental issues can be expected to become increasingly important to the subcontractors registered with your SPX; not just as question of regulatory compliance, but also as an important source of competitive advantage.**

In order to address this, UNIDO is investigating the possibility of supplementing the SPX support services with environmental advice and assistance. Such environmental services could imply an expansion of the existing advisory services of the SPX. Furthermore, environmental issues could be promoted by cooperation between the UNIDO Subcontracting and Partnership Exchanges and the UNIDO/UNEP National Cleaner Production Centres, which operate in 20 developing countries. Such cooperation could facilitate in-plant assessments, staff and expert training, information dissemination and financial advisory related to environmental investments. The joining of the SPXs vast network and the NCPCs environmental expertise could help both programmes to develop further.

**Please find the attached questionnaire, which we kindly ask you to fill out carefully. Through the questionnaire, information is gathered on the status quo of environmental issues within the main industrial sectors dealt with by your SPXs. The questionnaire will be distributed to all 50 SPX.**

Your contribution is essential, since only research based on the sector specific expertise of the SPXs can lead to a meaningful identification of environmental services relevant for the subcontractors in the SPX. Hopefully, this research will enable future environmental projects facilitating cleaner technology transfer, training of staff and national experts, efficiency improvements based on cleaner technologies and increased competitiveness of subcontractors in markets with increasing environmental awareness.

We kindly ask you to return the questionnaire by **4 June 2000** and thank you very much in advance for your cooperation.



## Annex 5. Survey statistics

No.	Organi- zation	Country	Contact person	Language	Country	Is Environ- mental services relevant	Awareness of CPC	NCPC
1	SPX	Argentina	Mr. Checa	Spanish	DLC	YES	NO	
2	SPX	Brazil	Mr. Bastos	Spanish	DLC	YES	NO	X
3	SPX	Chile	Mr. Oyarzun	Spanish	DLC	NO ??	YES CNPL	X
4	SPX	Colombia 1	Mr. Zuluaga	Spanish	DLC	YES	YES	
5	SPX	Colombia 2	Mr. Montes	Spanish	DLC	YES	YES	
6	SPX	France 1	Mr. Yves le Touze	French	DEV	YES	NO	
7	SPX	France 2	Mr. Guillaís	French	DEV	YES	YES	
8	SPX	Guatemala	Mr. Martínez	Spanish	DLC	YES	YES UNIDO	X
9	SPX	Madagascar	Mr. Randrianarivony	French	DLC	YES	YES	
10	SPX	Mauritius	Mr. Rajaretnon	English	DLC	YES	NO	
11	SPX	Mexico1	Mr. Elore	Spanish	DLC	YES	YES	X
12	SPX	Mexico2	Mr. Cervantes	Spanish	DLC	NO	NO	X
13	SPX	Morocco	Mr. Benmoussa	French	DLC	YES	NO	X
14	SPX	Peru	Mr. Tejada	Spanish	DLC	YES	YES	
15	SPX	Russian Fed.	Mr. Baboshin	English	DLC	No indication	YES	X
16	SPX	Slovakia	Mr. Kavocik	English	DLC	YES	YES	X
17	SPX	Turkey	Mr. Caglar	English	DLC	NO	NO	
18	AM	Belgium GOM-Limburg	Mr. Rutten	English	DEV	YES	YES	
19	AM	Germany, Handels- kammer Aachen	Mr. Weber	English	DEV	YES	YES	
20	AM	Italy	Mr. Ciolella	English	DEV	YES	NO	
21	AM	Spain	Mr. Lucía	English	DEV	YES	NO	

Other SPX countries with NCPCs: Costa Rica, Czech Republic, India, Tunisia. SPX are considered in Viet Nam and Zimbabwe.

Other responses:			Reason
22	SPX	Bolivia	Did not find questionnaire relevant
23	SPX	Tunisia	No interest and did not have information available
24	SPX	Peru 2	Did not understand / did not want to fill it out
25	SPX	Russia 2	Data not available, but will include environmental questions in own survey of subcontractors
26	AM	Taipei	No activities with subcontractors and maincontractors and thus not relevant

Response statistic						
	SPX	AM	%-SPX	%-AM	Developing C	Developed C
Questionnaires sent out	38	37	—	—	—	—
Questionnaires received	17	4	45%	11%	15	6
Other responses	4	1	11%	3%	5	0

