Evolution of Cleaner Production Centres and National Cleaner Production Centres

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2.1 Cleaner Production Centres - Their Origin and Evolution

Part 1 concluded on the note of mainstreaming cleaner production and the role of Cleaner Production Centres (CPCs) as critical capacity building institutions at the local and / or national levels. It is therefore interesting and worthwhile to track the history of CPCs and in particular understand the origin and evolution of the NCPC Programme that was established by UNIDO and UNEP.

For the purposes of this Part, the term "Cleaner Production Centres" or CPCs will include Pollution Prevention (P2) Centres, Regional CPCs, Green Technology Centres, National Centres for Cleaner Production1, Centres of Investment Projects and Environmental Certification, Technical Assistance Centres for Pollution Prevention and Waste Minimization, Technical Assistance Programmes for P2, Cleaner Production Laboratories, Centres for Pollution Prevention and Clean Technology Offices2, etc. We shall use the term “National Cleaner Production Centres” or NCPCs exclusively in the context of the UNIDO/UNEP-backed Programme.

Figure 2.1 shows the NCPCs and CPCs around the world. To date, 25 NCPCs have been established by UNIDO with support from UNEP. In parallel, more than 100 CPCs have been established through bilateral, government and other forms of assistance. Thus, there is now an extensive network of cleaner production-related institutions capable of delivering cleaner production at the local and national levels.

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1 Although they sound alike, the term “National Centres for Cleaner Production” (NCCP) differs from the term “National Cleaner Production Centre” (NCPC). The latter is always employed in the context of the UNIDO/UNEP-backed NCPC Programme (see Section 2.2).

2 The underlying theme amongst all the terms is cleaner production. However, the terminologies are varied depending on the institutions / agencies financing the centres.
Figure 2.1: NCPCs and CPCs around the world\(^3\)

It is important to note that the idea of reviewing the evolution of CPCs/NCPCs is mainly to understand the strategies used and experiences gained, and not to report an inventory on CPCs/NCPCs as such. We will however make an attempt to provide a representative status on the CPCs across the world.

### 2.1.1 Pollution Prevention Initiatives in North America

The concept of pollution prevention\(^4\) already figured prominently in the National Environmental Policy Act (NEPA) of the United States of America (USA) in the late 1960s. Pollution prevention gained additional momentum with the passage of a national law, the Pollution Prevention Act, in 1990. This led to the development and implementation of a series of specific prevention programmes, most notably the establishment and operation of CPCs (termed Pollution Prevention Centres) in the region.

The initial role of the CPCs in the USA was to act primarily as information-clearing houses, concerned with the collection of pollution prevention-related information in the form of case studies, bibliographies, etc.; and its dissemination to interested parties through hard copy publications, electronic media, and finally the World Wide Web. Service-oriented activities were provided by the private sector - a

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\(^3\) From: [http://www.uneptie.org/pc/cp/ncpc/ncpcmap.htm](http://www.uneptie.org/pc/cp/ncpc/ncpcmap.htm)

\(^4\) We noted in Part 1 that the term “pollution prevention” (or P2) is synonymous with cleaner production - the former tends to be used widely in North America, while the latter is used in other parts of the world.
logical outcome, given that the legal and regulatory framework for pollution prevention was established at the outset. These CPCs confined their area of activity to one or more (but never all) of the following services viz. publications, training, applied research, technical assistance, permit and regulatory assistance, financial assistance and so on. Interestingly, in every State, CPCs were set up as project units, outreach offices or technical assistance cells across environmental regulatory offices, small business assistance and promotion offices, environmental NGOs, research units and universities. This provided a wider institutional base to mainstream pollution prevention in the USA.

The Pollution Prevention Act also mandated the allocation of revolving funds for local pollution prevention programmes. This greatly assisted in the promotion of pollution prevention investments amongst businesses in the region. Some of the CPCs operated as project development and appraisal offices to service pollution prevention funds. Thus, the setting up of CPCs in the United States was rather well-strategized - it was broad-based and created an enabling framework through pollution prevention legislation and financing schemes.

A CPC was established by Environment Canada in Ontario in 1992. Formerly called the "Great Lakes P2 Centre", it is now known as the "Canadian Centre for P2" or C2P2. Today, C2P2 functions as an information clearinghouse for promoting pollution prevention. It is a non-profit, non-governmental organization supported by businesses and the Canadian government. The Board of Directors of the C2P2 includes persons from businesses, the government, trade institutions and academia. In 1997, the centre decided not to limit itself to information-sharing alone and broadened its scope to include various other services.

### 2.1.2 Cleaner Production Initiatives in the European Region

Developments concerning CPCs were taking place in the European region in parallel. Adopting cleaner production throughout the European industry was a recommendation put forth at the Industry and Development Seminar in Warsaw, held prior to the 1990 Bergen Conference in preparation for the 1992 Earth Summit. As a result, in 1991, the Norwegian government supported a Polish CPC as part of the NIF-NOT Cleaner Production Programme. This programme was run between the Norwegian Chartered Engineers' (Norske Sivilenginore Forening, NIF) and the Polish Engineers' (Naczelna Organizacja

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5 USEPA: Pollution Prevention State P2 Programmes Website. Available at: [http://www.epa.gov/p2/resources/statep2.htm](http://www.epa.gov/p2/resources/statep2.htm)
Techniczna, NOT) Societies. The CPC formulated in this programme coordinated the work of eight other regional centres. Interestingly enough, these societies were non-governmental organizations, with the Polish counterpart providing the existing infrastructure and network of its various branch societies, and the Norwegian counterpart providing the technical experts and the funding. The main objective of the CPC was to raise awareness, conduct training, develop trainers and build a framework between cleaner production and EMS.

Around 1992, the concept of NCPC was promulgated, taking its directions from Agenda 21. In 1993, taking a cue from the forthcoming NCPC Programme, Australia launched a CPC (“Australia Centre for Cleaner Production”) based on strong State and Federal Government interest in and commitment to cleaner production. This CPC was a non-profit organization and any excess revenue was distributed to appropriate beneficiaries at the end of each financial year (e.g. for cleaner production scholarships, public good funding, etc.). The seed funding for the centre was provided by sponsoring and associate member institutions. The centre was to be self-funding within three years; consequently it chose to build up a constant revenue base from its services as a broker in technology transfer, a consultant for cleaner production, and a developer of education and business packages in cleaner production. Unfortunately, this CPC failed in 1996 and was finally wound up in 1997.

2.1.3 Establishment of CPCs across the Continents

Given the enthusiastic response to CPCs, some of the developed countries decided to introduce CPCs in other countries, (especially the developing countries), thereby establishing a gateway for marketing cleaner technologies. This led to the establishment of CPCs across the continents. These CPCs focused on the traditional information-dissemination, training and technology transfer activities, and gradually expanded their services to include technical assistance and catalyzing investments for cleaner technology projects.

While generally quite similar to NCPCs, these centres can and did differ in some significant aspects, notably the importance given to technology transfer rather than to the development of national capacities.

In the initial years, such CPCs were primarily funded by the bilateral developmental agencies under various international projects. Between 1994 and 1995, eleven CPCs were established in the Central and Eastern European region, specifically in Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland (three centres), Romania and Slovakia through seed funding by USAID, and the assistance of the
World Environment Centre (WEC). The USAID grants were available to most centres until September 1997.

In 1994, the Government of Norway through the World Cleaner Production Society (WCPS) established Russian and Russian-Norwegian CPCs, drawing funds partly from the Government of Norway and partly through domestic funding.

In the Asia-Pacific region, USAID funded a CPC in the Taiwan Province of China in 1995 through the US Asia Environment Partnership (USAEP). USAEP along with the Singapore Confederation of Industries (SCI) established a CPC in Singapore in 1996 under a programme called Clean Technology and Environmental Management (CTEM). Initially, this Center was designed to be a clearinghouse for information on cleaner production practices, but today the centre provides outreach activities such as briefings, seminars, and workshops for CEOs and industry associations.

There have also been instances of CPCs merging. For instance, the USAID-funded CPCs in the Czech Republic and Slovakia merged with the respective NCPCs of the countries after several years of establishment as CPCs.

2.1.4 Some Observations about the CPCs

From the last section, it is clear that CPCs in developing countries and countries in economic transition, evolved primarily as regional offshoots. These CPCs were influenced to a great extent by donor / funding institutions.

While the concept of CPCs trickled down well with important stakeholders, there were some inherent drawbacks. To a large extent, these CPCs tended to be more supply-driven than demand driven. Being rather devoid of "national character", they could not influence national policies, and were generally confined to providing services such as information sharing, technology transfer and match making.

CPCs in the developed countries, on the other hand (US, Canada and Australia), played an important role in catalyzing and mainstreaming cleaner production. These CPCs performed reasonably well because of the enabling framework already in place, such as a pollution prevention-oriented policy and pollution prevention regulations, as well as supportive financing and budgetary allocations.
2.2 The National Cleaner Production Centre Programme

We have tracked the evolution of CPCs in the previous section. There are many similarities between CPCs and NCPCs. In fact, many a time it becomes difficult to assess which takes a cue from which. We also noted certain drawbacks inherent to CPCs, notably their inability to influence national policies, as they were devoid of national character.

NCPCs are backed by two multilateral UN institutions, the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Programme (UNEP). The NCPC Programme mandates a commitment by the National Governments to their respective NCPCs and hence (unlike the CPCs) NCPCs get uniquely positioned in the national perspective. The NCPC Programme builds the capacity of NCPCs to enable them to provide a wide range of services such as awareness-raising, training, cleaner production assessments, demonstration projects, etc. Finally, the NCPC is part of a worldwide network that provides an opportunity to share both content and experiences in cleaner production – a great advantage in being a member of the same “family”.

Thus, the UNIDO/UNEP NCPC Programme design provides a unique set-up in terms of offering an opportunity for international co-operation, national capacity building and networking amongst the actors in cleaner production throughout the world. In the following section, we shall examine the NCPC Programme in further detail.

2.2.1 An Introduction to the National Cleaner Production Programme

The NCPC Programme is a joint initiative by UNIDO and the Division of Technology, Industry and Economics (DTIE) of UNEP, to help developing countries and countries with economies in transition promote the application of cleaner production in enterprises, and importantly, to incorporate cleaner production in the national environmental policy and regulatory framework.

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6 Covered in detail in Part 4 and Part 5 of this Manual.
UNIDO has the lead role in establishing NCPCs. It is the executing agency for the NCPCs, being responsible to the funding or donor organizations and the NCPC counterparts; viz. the national governments. It is responsible for providing initial training to centre personnel, providing technical oversight for all activities undertaken by the centres, formulating the annual work plans with the Directors of the centres, assisting them in the management of their centres and monitoring their progress.

For its part, UNEP plays a lead role in the dissemination of cleaner production information, the organization of in-country training activities, and the mobilization of key policy-makers, particularly the Ministries of Environment.

The UNIDO/UNEP NCPC Programme typically provides funding for the first three to five years of a centre’s life. These funds cover the NCPC director’s salary, short-term national and international consultancies, initial international training and study tours, and procurement of some equipment. The host country or institution typically provides the salaries of a deputy director, administrative staff, office space and logistical support (communications, supplies, etc).

NCPCs have relatively lean organizational structures, the idea being that each centre creates a network of institutions and individuals in the country that it can work with. Each centre is directed by an experienced country national. In nearly all cases, the NCPC is hosted within a local organization - for example, in Costa Rica by the Chamber of Industry, in India by the National Productivity Council, in Kenya by the Kenya Industrial Research Development Institute, and in Hungary by the Department of Environmental Economics and Technology, Budapest University.

Host organizations and other local stakeholders make contributions (both financial and in-kind) to the centre, such as secondment of personnel, office facilities and equipment. This arrangement has been effective in building ownership of activities in each country, and has also minimized operational costs. Furthermore, co-operation with a strong national host institution increases possibilities for the sustainability of the centre, once the project funding period has elapsed.

“For successful capacity building, it is crucial to form partnerships with local organizations that are willing to invest resources for promoting cleaner production. A key requirement for the host is that it has to have good contacts with the industry.”

2.2.2 The Gradual Evolution of the NCPC Programme

At the launching of the NCPC Programme in 1994, eight NCPCs were set up - Zimbabwe (1994), Brazil (1995), China (1995), India (1995), the Czech Republic (1994), Mexico (1995), the Slovak Republic (1995), and the United Republic of Tanzania (1995). These centres were selected from solicitations received from 39 institutions in 25 countries. The NCPCs in the Czech Republic and Slovakia were extensions of CPCs established earlier with USAID support. In 1996, the Tunisian CPC established a few years before with USAID funding was included in the Programme. In 1997, a centre was established in Hungary.

The Government of the Netherlands funded the centres in China, India, Mexico, the United Republic of Tanzania and Zimbabwe, whereas the Government of Austria funded the centres in the Czech Republic, Hungary and Slovakia. The centre in Tunisia, when it entered the UNIDO / UNEP Programme, received funding from Norway. The centre in Brazil was funded nationally and continues to remain so.

At this stage, the NCPCs' activity profile was designed to cover the following areas - awareness-raising, training, information dissemination, demonstration projects, and to some extent, policy advocacy.

Based on the encouraging progress of the Programme and requests from developing countries and countries with economies in transition, the years 1998 and 1999 saw a continuation of the Programme and addition of new NCPCs. In 1998, a regional grouping of centres was established in Central America: Costa Rica, El Salvador, Guatemala and Nicaragua. The first three of these centres were funded by Switzerland (the Swiss State Secretariat for Economic Affairs, SECO), while Austria funded the NCPC in Nicaragua. The year 1998 also saw the establishment of an NCPC in Vietnam, through initial funding from the Swiss Development Corporation (SDC), and later funding from SECO. Another centre, also funded by SECO, was set up in Morocco in 1999.

At this point, NCPC services were expanded to include assistance in obtaining cleaner production investments. Additional emphasis was also put on integrating cleaner production with Environmental Management Systems like ISO 14001. Performance indicators were also introduced for monitoring and assessment of all NCPCs.

The period 2000-2001 saw the creation of a group of new centres in Eastern and Southern Africa: Ethiopia, Mozambique (both funded by Italy), Kenya (funded by UNDP) and Uganda (funded by Austria). The same period saw the establishment of two more centres in Asia, one in
Sri Lanka (funded by Norway) and one in the Republic of Korea (self-funded). The latter NCPC has a design specifically suited to the country's specialty; i.e. technological expertise. There was an added emphasis on providing services concerning cleaner technology know-how. The Croatian centre was also established in this period, as the outcome of a cleaner production demonstration project which was funded by the Czech Government.

Finally, in 2002, centres were established in Lebanon (the first in the Middle-East) and South Africa.

Presently, there are 25 NCPCs operating in the UNIDO / UNEP NCPC Programme. However, UNIDO has been flexible in its design of projects, establishing other types of CPCs or cleaner production programmes. For instance, while all NCPCs have a multi-sectoral focus, UNIDO is experimenting with sector-specific centres. A self-funded CPC was set up in Russia in 2001, which focuses on the oil and gas industry. Preliminary work is underway to launch a centre focusing on cleaner fuels in Pakistan. UNIDO is also experimenting with centres that look at cleaner production as well as waste management. A centre with this scope was established in St. Petersburg in 2001, with funding from Austria and the United Kingdom. In 2001, a National Network (as opposed to a centre) was created in Cuba (with Austrian funding). This was tailored to Cuba's economy, wherein most enterprises are owned by line ministries (for example, sugar factories are owned by the Ministry of Sugar).

### 2.3 Lessons Learnt

Many countries have requested assistance from the NCPC Programme in developing their own cleaner production capacities. A frequent request from countries is for advice and know-how on how to establish a self-sufficient cleaner production centre. It therefore becomes important for us to learn from the experiences of established NCPCs. This is what we shall aim to do in this particular section of the Manual.

At the outset, it is important to note that there is no set recipe for establishing a CPC. Countries are at different stages of socio-economic development, with different industry structures, socio-economic profiles,

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8 Users of the Manual are encouraged to read the report “Learning from the Experience of National Cleaner Production Centres.” Available from the Cleaner Production Publications Catalogue: Changing Production Patterns at: www.unepic.org/pc/cp/library/catalogue/catalog_general.htm. Note that the report applies equally to CPCs.
cultures and challenges. Thus, what may work in one country will not necessarily work in another.

Initially, it was thought that establishing and operating an NCPC was going to be an easy task. However, in many cases the experience was different. Today, the UNIDO/UNEP Programme requires centres to develop business plans that plan activities around basic business principles, and adapt them according to local conditions.

Becoming self-sustainable has become rather critical for all the NCPCs today. Generally, on average, five years of sustained funding is needed to enable a centre to become financially sustainable. Few donors accept to continue funding a centre for more than three years and hardly any will fund it for more than five. Therefore, centres have a “window of opportunity” of three (possibly five) years in which to create a sufficient market for themselves in cleaner production and become financially sustainable after the initial funding ends. All of the first generation NCPCs have made this transition to financial sustainability, some much more successfully than others. They are now financing their activities from various sources such as domestic funding (national or local government grants or contracts), operational income (Cleaner Production Assessments or CPAs, training programmes, consultancy fees, membership fees, publication sales, etc.), and international funding (other multilateral / bilateral agencies – World Bank projects, bilateral assistance, etc.).

Not all activities of an NCPC have the potential to become self-financing, raising difficult questions for each centre about balancing income-earning activities with the less profitable goals of a cleaner production centre (e.g., helping small- and medium-sized enterprises, policy dialogue, etc.). However, as a centre matures, the need for external technical assistance declines, reducing the proportion of external funding needed, and centres become more adept at obtaining domestic or bilateral donor funding for non-income generating activities.

Therefore, from the point of view of financial sustainability, CPCs need to explore providing services to an ever wider range of stakeholders, and deploying new strategies for “market development”.

Historically, NCPCs have expanded their services from Level 1 to Level 2 as shown in Figure 2.2. The general trend is that recently established NCPCs focus on Level 1, with plans to move to Level 2, while mature NCPCs graduate from Level 2 to the more strategic Level 3.

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*The transition from being donor-financed to becoming self-sustainable can be best summarized as ‘desperate’! We will be covering between 20 and 25% of our costs this year, and maybe next year will be able to reach up to 50%. Many things are not paid for, for example, policy work and dialogue.*

- NCPC, Mexico
At the strategic level (or Level 3), it is important to realize that cleaner production is much more than just reducing waste and emissions. Cleaner production today is also about EMS, increasing energy efficiency, improving health and safety conditions of the work force and the neighborhood, redesigning products by carrying out life cycle analysis; most importantly, it is about sustainable consumption patterns. These wider aspects of cleaner production need to be integrated into both the communication of the concept as well as the delivery of services. This can be effectively done by creating strategic partnerships and operating through networks.

Companies having or aspiring towards ISO 14001 certification, for instance, may be more receptive to cleaner production if it is integrated into the development of environmental management systems. In another example, company employees may be more enticed by a health and safety approach to cleaner production. Energy efficiency savings may open the door more easily to cleaner production in small and medium-sized enterprises, which often face high energy costs. Recognizing how cleaner production can be allied with other more familiar concepts and tools, will help to mainstream cleaner production within the decision-making process and to widen the client base of a centre.

“Our country is currently experiencing a lot of political and economic insecurities which has evidently had an impact on the centre’s activities. Broadening our activities beyond cleaner production (to), for example, energy audits, has helped us to keep running.”

- NCPC, Zimbabwe

Figure 2.2: Expansion of NCPC Services from Levels 1 to 3