THE INTERNATIONAL DRINKING WATER AND SANITATION DECADE 1981 - 1990 IN FINLAND

PART II FINNISH INTERNATIONAL ACTIVITY
TAPIO KATKO (ed.)

THE INTERNATIONAL DRINKING WATER AND SANITATION DECADE 1981 - 1990 IN FINLAND

PART II FINNISH INTERNATIONAL ACTIVITY

VESI- JA YMPÄRISTÖHALLITUS
Helsinki 1990
International Sub-committee's Report

National Action Committee for the International Drinking Water Supply and Sanitation Decade 1981 - 1990 commissioned by Ministry of Agriculture and Forestry is responsible for the contents of this publication and should therefore not be considered as an official view of the National Board of Waters and the Environment.

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HELSINKI 1990

Valtion painatuskeskus
Pasilan VALTIMO
Helsinki 1990
Official Finnish development aid has increased substantially over the Decade. In 1989 the goal of 0.7 percent of gross national product was reached. The share of water supply and sanitation in Finnish development aid went from 5 to 10 percent during the Decade. In 1989 the sector outlays amounted to FIM 170 million (45 million USD). Earlier the emphasis was on rural projects but lately assistance has also been given to the water supply and sewerage of cities. In the educational sector Finland has funded since the 1970s postgraduate courses in water engineering, applied to the conditions of developing countries. In the last few years support has been channelled also to education of shorter duration, especially in the area of environmental protection.

Finnish planning services exports were at their highest at the beginning and end of the Decade. Planning services exports to developing countries have been decreasing until recently. Foreign contracting in water supply and sanitation has been greatly reduced since the boom of 1978 - 1984.

During the Decade Finland has become increasing involved in the activities of the International Association on Water Pollution Research and Control (IAWPRC), the International Water Supply Association (IWASA) and the World Health Organization (WHO). Several international conferences on water supply and sanitation have also been held in Finland.
Juoksijat

Vesi- ja ympäristöhallitus

Julkaisun nimi

Kansainvälinen vesihuollon vuosikymmen 1981 - 1990 Suomessa

Osa II Kansainvälinen toiminta

Julkaisun osat I ja II ovat suomenkielisinä Vesi- ja ympäristöhallinnon julkaissua - sarjassa A 60

Huut tiedot

Julkaisun osat I ja II ovat suomenkielisinä Vesi- ja ympäristöhallinnon julkaissua - sarjassa A 60

Sarjan nimi ja numero

Vesi- ja ympäristöhallinnon julkaisuja - sarja A 61

Kokonaisuusmäärä

39

Kieli

Suomi

Hinta

Kustantaja

Valtion painatuskeskus

PL 516 00101 HELSINKI

PL 250 00101 HELSINKI

Vesi- ja ympäristöhallitus

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Luottamuksellisuus

Julkinen


Loulutussektorilla Suomi on rahoittanut kehitysamuiden olosuhteisiin sovellettuja vesiteknikoihin post-graduate-kurssesseja 1970-luvulta lähtien. Viime vuosina on ryhdytty tukemaan myös lyhytkaikaisempaa, erityisesti ympäristön suojeluun liittyvää koulutusta.


Vuosikymmenen aikana Suomi on osallistunut enemmän määrin kansainvälisen jätevesien tutkimuksen ja valvonnan järjestön (IAMPROC), kansainvälisen vesilaitosjärjestön (IWSA) ja Maailman terveysjärjestön (WHO) toimintaan. Suomessa on pidetty lukuisia kansainväliäisiä vesihuollon konferensseja.
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<td>38</td>
</tr>
</tbody>
</table>
1 ACTIVITIES OF THE INTERNATIONAL SUB-COMMITTEE

1.1 GOALS OF THE SUB-COMMITTEE

The first actual meeting of the National Action Committee for the International Drinking Water Supply and Sanitation Decade (IDWSSD) on 25.11.1980 stated that Finland can participate in the activity of the Decade mainly through development cooperation. It agreed that exerting influence on Finnish development cooperation, to make it take into consideration the goals and implementation of the programme of the Water Decade as well as possible, should be one of its tasks.

An international sub-committee was established for defining more closely the objectives. Its task is to determine how the decisions on the government's development cooperation appropriations and policy are made, especially within the Ministry for Foreign Affairs and how that decision-making can best be influenced.

The original sub-committee consisted of the following persons:

Anttola Raimo, Finnish International Development Agency (FINNIDA) (until 9/1983)
Kangas Ilppo, (Lic. Agr.For. National Board of Forestry
Mustonen Seppo, D.Eng. Water Research professor

The sub-committee was supplemented by:

Liimatainen Jouko, (Lic.Tech.) Association of Finnish Urban Municipalities
Kurtén Gunilla, Senior Prog. FINNIDA FINNIDA (14.1.1982 - 30.3.1987)
Viitasaari Matti, Prof. Tampere University of Technology (TUT)(since 14.1.1982)
Ikonen Hannu, Dept Head FINNIDA (1987)
Wihuri Heikki, advisor FINNIDA (since 14.12.1987)

In its meeting 4/1982 the sub-committee adopted as its main operational goal

- to serve as an expert in problems related to international cooperation in water supply
- to assist, when requested, in the development of water supply projects by developing countries and to evaluate present undertakings

The sub-committee set the following special goals for the first half of the Decade:

- to draw up "Guidelines for Finnish activity in developing water supply in developing countries"

- to conduct a survey on international cooperation in water supply and sewerage in collaboration with industrialized countries and to strive for furthering Finnish representation in international water supply and sewerage cooperation organizations

- to issue statements on questions related to the sector as requested

- to monitor research and development projects connected with international water supply and sanitation

1.2 MAIN ACTIVITIES OF THE SUB-COMMITTEE

In the course of the Decade the sub-committee tried to monitor and advance as well as influence the content of the following international modes of activity in water supply and sanitation:

- official Finnish development cooperation

- international organizations of cooperation in water supply and sanitation and Finnish participation in their work

- dissemination of information about water sector research in international forums

- promotion of international activity in Finland

Official Finnish development cooperation

At the beginning of the Decade FINNIDA, for one, deemed it necessary that Finland introduce and offer its available resources for the increasing water supply and sanitation sector activities in developing countries during the Decade. On that basis the sub-committee started planning directives for development cooperation in water supply and sanitation. One goal was to ensure that the expertise outside of state government could also be utilized.

A working seminar based on the work of the sub-committee was held in Helsinki on 17.5.1983 attended by approximately 20 experts in addition to the members of the sub-committee. The Decade work group submitted
the sub-committee's work and a draft prepared on the basis of the seminar called "Guidelines for Finnish Development Assistance in the Water Supply and Sanitation Sector" to the Foreign Ministry in 1984. The development of these directives was the main function of the sub-committee in the first years of the Decade.

The sub-committee, for its part, made an effort to have Finland's resources in the water supply and sanitation sector surveyed. The sub-committee monitored the appraisals and evaluations as well as research and development related to development cooperation projects in water supply and sanitation.

International cooperation organizations in water supply and sanitation

In 1982-85 the sub-committee commissioned a survey called "International cooperation organizations in water supply and sanitation and Finnish involvement in them." The survey covers the activities of Nordic and UN organizations and other international cooperation.

International reporting on water sector research

The sub-committee commissioned a survey on "Reporting on water sector research in international forums" in 1986-87. The survey covers the fields of 48 professional water sector journals and contact addresses as well as the publication directives of 29 journals.

Furtherance of international activity in Finland

In 1983-85 the sub-committee had a series of slides prepared titled "Water supply and sanitation suited for developing countries." The series consists of about 500 slides which were catalogued and also described in more detail. The series of slides includes material from different development cooperation projects. There are two sets of the slides which can be loaned from the library of the National Board of Waters and Environment and Tampere University of Technology.

The series of slides has been used in developing-country-oriented training and in the dissemination of information about development cooperation in various connections, home and abroad.

The sub-committee collaborated with the main working group in putting together a series of 80 slides on "Water supply in developing countries in 1985." The series was shown as a slide version at a community development exposition in 1985 and as a video version at the Aqua '86 exposition.

The sub-committee assisted in the compilation of a Finnish-English-Finnish vocabulary based on a draft
prepared at Tampere University of Technology. The vocabulary should be available in 1990.

International monitoring of the Decade

Together with representatives of the Foreign Ministry the sub-committee followed the monitoring and consultation meetings of development cooperation organizations held during the Decade. The chairman of the sub-committee attended the mid-Decade review seminar in Turkey in April 1986. The members of the sub-committee attended conferences of the sector's international cooperation organizations, especially those of IAWPRC AND IWSA.

During 1990 the sub-committee is supposed to give presentations on the topic of Finland's international cooperation in water supply and sanitation in meetings connected with the end of the Decade and monitoring.

Other activity

The sub-committee followed the sector research and development projects and gave feedback on several projects.

Other matters taken up by the sub-committee were, for instance, the development of a databank for research in water supply and sanitation that could not, however, be taken any further due to the lack of resources. The need to make use of foreign data registers was also noted.

1.3 PUBLICATIONS AND REPORTS ON THE SUB-COMMITTEE'S ACTIVITY

The following reports and publications have come out on the sub-committee's activity:


Slide series on water supply and sanitation in developing countries dealing with technology suited for them (1985). About 500 slides including detailed account, 118 pp.


2 OFFICIAL FINNISH DEVELOPMENT COOPERATION IN THE WATER SUPPLY AND SANITATION SECTOR

2.1 GENERAL GOALS AND TRENDS IN DEVELOPMENT COOPERATION

Development cooperation is an essential component of Finnish foreign policy and relations with developing countries. It is determined by the general goals of our foreign policy and the principles of the UN. We strive for promoting the welfare and economic independence of developing countries.

Development cooperation aids the receiving countries' efforts at autonomous development by intensifying the use of their own resources. It also alleviates the actual hunger and distress from difficult natural conditions. Development cooperation is based on the countries' own development plans and primarily tries to satisfy the basic needs of the poorest and most seriously afflicted people. At least 30 percent of Finnish bilateral aid goes to countries the UN has classified as least developed (LLDC's). Special attention is given to improving the lot of women and the environmental impact of cooperation projects. The experiences collected during the Decade, however, do indicate that developing countries' own development programmes have not been entirely successful or realistic. This has increased the responsibility of the financiers of development aid and the need for coordination.

Official development cooperation is monitored and implemented by the Finnish Ministry of Foreign Affairs, Department of International Development Cooperation, usually called the Finnish International Development Agency (FINNIDA).

At the start of the Decade FINNIDA emphasized, based on the guidelines approved by the UN water conference in Argentina in 1977, especially the following measures in the water supply and sanitation sector:

- selection of the proper technology
- training of personnel
- operation and maintenance
- health education

Finnish official development aid has increased strongly in the 1980s. In 1980 it amounted to 0.22 percent of GNP and in 1989 it reached the United Nations
Fig. 1. Finnish official development cooperation outlays in 1975 and 1980-1990 and their share of the GNP.

target of 0.7 percent of GNP (Fig. 1). The share of bilateral aid has been about 60 percent and 40 percent has been multilateral assistance.

Development cooperation is practiced in three main areas:

(1) agriculture and forestry and related industry
(2) social development, and
(3) economic infrastructure and other fields

Water supply and sanitation together with health care and education comprise the social development sector. Equal aid to all three of the above sectors is a target set for the early 1990s.

Now that the volume of development aid has been increased strongly it is time to pay attention to qualitative requirements.
2.2 BILATERAL WATER SUPPLY AND SANITATION ACTIVITY

Projects

Both the absolute and relative shares of Finnish bilateral aid in the water supply and sanitation sector have increased during the Decade. In 1981 the sector's relative share of bilateral aid was less than 7 percent, but in 1987 almost 10 percent (Table 1). The goal is to use about 10 percent of the bilateral appropriations for the water supply and sanitation sector. As the total volume of development aid and the funds earmarked for the water sector increased, FINNIDA hired two water supply sector advisors at the end of the Decade.

Table 1. Finnish bilateral development aid for the water supply and sanitation sector in 1981-1990.

<table>
<thead>
<tr>
<th>Year(s)</th>
<th>Outlays Mill. FIM/year</th>
<th>Share of bilateral air %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972-73</td>
<td>2 *)</td>
<td></td>
</tr>
<tr>
<td>1974-76</td>
<td>8 *)</td>
<td>4.5 *)</td>
</tr>
<tr>
<td>1978-79</td>
<td>10 *)</td>
<td>3.5 *)</td>
</tr>
<tr>
<td>1980</td>
<td>20 *)</td>
<td>5.0 *)</td>
</tr>
<tr>
<td>1981</td>
<td>23.1</td>
<td>6.8</td>
</tr>
<tr>
<td>1982</td>
<td>31.1</td>
<td>7.5</td>
</tr>
<tr>
<td>1983</td>
<td>35.1</td>
<td>6.8</td>
</tr>
<tr>
<td>1984</td>
<td>47.4</td>
<td>7.3</td>
</tr>
<tr>
<td>1985</td>
<td>65.0</td>
<td>8.2</td>
</tr>
<tr>
<td>1986</td>
<td>80.9</td>
<td>8.5</td>
</tr>
<tr>
<td>1987</td>
<td>108.5</td>
<td>9.4</td>
</tr>
<tr>
<td>1988</td>
<td>146.3</td>
<td>9.2</td>
</tr>
<tr>
<td>1989</td>
<td>42.6</td>
<td>7.6</td>
</tr>
<tr>
<td>1990</td>
<td>about 160</td>
<td>about 9 *)</td>
</tr>
</tbody>
</table>

*) estimate

The first bilateral water supply project began in Tanzania in the early 1970s. The project continued in the form of general planning and implementation. The follow-up stage that is advisory in nature will continue in the 1990s. The next water supply and sanitation projects were started at the beginning of the Decade in Sri Lanka, Kenya and Vietnam. In the second half of the Decade projects were launched in Mozambique, Nepal and Tanzania (Zanzibar) (Table 2). The Ethiopian project is planned to start in 1991. The location of the target countries is shown in Fig. 2.
Table 2. Bilateral ongoing development cooperation projects financed by Finland in 1970-1989 (September 1989 situation).

<table>
<thead>
<tr>
<th>Target country</th>
<th>Project</th>
<th>Stage</th>
<th>Year</th>
<th>Amount of aid (mill. FIM)</th>
<th>Implementor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>Mtwar-Rendi Rural Water Supply</td>
<td>Identification</td>
<td>1970 - 1971</td>
<td>4</td>
<td>Ministry of Water Development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Water Master Plan Implementation</td>
<td>1974 - 1977</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phase I</td>
<td>1978 - 1980</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phase II</td>
<td>1980 - 1981</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phase III</td>
<td>1982 - 1984</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phase IV</td>
<td>1985 - 1987</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Follow-up Phase (V)</td>
<td>1987 - 1990</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technical assistance to handpump</td>
<td>1989 - 1992</td>
<td>2</td>
<td>Joint venture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>factory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technical assistance</td>
<td>Sectoral advisory</td>
<td>1989 - 1991</td>
<td>3</td>
<td>Ministry of Water Development</td>
</tr>
<tr>
<td></td>
<td>team (3 experts)</td>
<td></td>
<td></td>
<td></td>
<td>UNDP</td>
</tr>
<tr>
<td></td>
<td>Zanzibar Urban Water Supply</td>
<td>Development Plan</td>
<td>1989</td>
<td>6</td>
<td>Plancenter Ltd.</td>
</tr>
<tr>
<td></td>
<td>Programme</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Sanitation Project</td>
<td></td>
<td></td>
<td></td>
<td>Drainage Board; Ministry of Local Government; Housing and Construction;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Revised Feas. Study</td>
<td>1983 - 1987</td>
<td></td>
<td>Plancenter Ltd.</td>
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<tr>
<td></td>
<td></td>
<td>Implementation</td>
<td></td>
<td></td>
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<tr>
<td>Kandy District Water</td>
<td>Supply and Sanitation Project</td>
<td>Phase I</td>
<td>1987 - 1990</td>
<td>65</td>
<td>Soil and Water Ltd.</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Development Project in Western</td>
<td>Phase I</td>
<td>1983 - 1985</td>
<td>39</td>
<td>KEPINCO</td>
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<tr>
<td></td>
<td>Province</td>
<td>Phase II</td>
<td>1986 - 1988</td>
<td>75</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Phase III</td>
<td>1989 - 1992</td>
<td>126*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phase II</td>
<td>1988 - 1990</td>
<td>105*</td>
<td>Public Works,</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>YME-Group</td>
</tr>
<tr>
<td>Egypt</td>
<td>Badr City Water</td>
<td>Planning</td>
<td>1989</td>
<td>47*</td>
<td>Ministry of Housing,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Implementation</td>
<td>1990 - 1993</td>
<td></td>
<td>Reconstruction and New Communities; National Organization for Potable</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Water and Sanitary Drainage;</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>YIT Ltd.</td>
</tr>
<tr>
<td></td>
<td>Raas el Bar Wastewater</td>
<td>Construction</td>
<td>1989 - 1991</td>
<td>42*</td>
<td>Ministry of Housing,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Reconstruction and New Communities; National Organization for Potable</td>
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<tr>
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<td>Water and Sanitary Drainage;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>YIT Ltd.</td>
</tr>
<tr>
<td></td>
<td>Sharm El Sheikh desalination plant</td>
<td>Pilot experiment</td>
<td>1982 - 1989</td>
<td>12*</td>
<td>Sinai Development Authority</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aquamax</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Bahar Dar Water Supply Phase I</td>
<td></td>
<td>1989 - 1992</td>
<td>47*</td>
<td>Local organizations</td>
</tr>
<tr>
<td></td>
<td>and Sanitation</td>
<td></td>
<td></td>
<td></td>
<td>Finnconsult Ltd.</td>
</tr>
<tr>
<td>Mozambique</td>
<td>Beira Town Water Supply Phase I</td>
<td></td>
<td>1989 - 1990</td>
<td>14*</td>
<td>Ministry of Water and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Construction, supervisor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FINNRA, Plancenter Ltd.</td>
</tr>
<tr>
<td></td>
<td>Project in the Western Development Region</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cameroon</td>
<td>Small Town Water</td>
<td></td>
<td>Open, about two years</td>
<td>30**</td>
<td></td>
</tr>
</tbody>
</table>

* reservation
** soft loan
Fig. 2. Target countries of Finnish bilateral development cooperation in the water supply and sanitation sector in autumn 1989.
Especially earlier, water supply and sanitation projects concentrated on rural water supply and sanitation, but as the Decade has progressed cities have also been included (Vietnam, Egypt, Tanzania (Zanzibar), Mozambique, Cameroon). Support to the projects has been in the form of grants, except in the case of Cameroon.

Technical assistance

Finland gave technical assistance in water supply and sanitation in the 1970s by sending experts, for instance, to Ethiopia, Kenya, Zambia and Tanzania. During the Decade expert aid was given to the three last-named countries. The total aid during the Decade has amounted to some tens of man-years of labour, but its relative share has diminished as project activity has increased strongly.

2.3 COOPERATION WITH INTERNATIONAL ORGANIZATIONS

International programmes

Finland has supported, for instance, the following international water supply development programmes:

- The world-wide hand pump testing and development project in 1981-1987 that was coordinated by UNDP/World Bank.

- UNDP/World Bank water supply and sanitation sector's development units in Kenya and Thailand; one advisor for both since 1988.

- UNDP/African female water users; part of the "Promotion of the Role of Women in Water and Environmental Sanitation Services" project, mainly in East African countries in 1987-1989.

About 15 international development cooperation organizations and tens of handpump manufacturers took part in the handpump development project. The model pumps were tested, for instance, in a water supply and sanitation project in Tanzania that was funded by Finland (Fig. 3).

The water supply and sanitation sector development units in Kenya and Thailand have also participated in the assessment and evaluation of several water projects financed by Finland.

Programmes of social development

Part of the aid given to United Nations Development Programme (UNDP), other UN programmes of social development and international development financing institutions has been targeted at the water supply and sanitation sector.
Fig. 3. Nira direct-action pump developed in Finland and tested in the global hand pump development project. The pump is manufactured by Vammalan Konepaja Inc. Local manufacture in developing countries is planned (Photo: J. Viiala).
In 1988 the Finnish aid to UNDP amounted to 137 million FIM. In the field of social development Finland has given support especially to UNICEF (94 million FIM in 1988).

That year Finland was the fifth largest contributor to the fund. A significant share of the total budget of UNICEF is channelled into the water supply and sanitation sector. UNICEF has also received funds through the activity of the Finnish national UNICEF association.

Development financing institutions

Finnish payments to the World Bank, its Africa fund and the International Development Agency (IDA) were about 160 million FIM in 1987. In addition, Finland supported the Asian Development Bank, the African Development Bank and the Latin American Development Bank. A portion of this assistance was received by the water supply and sanitation sector.

Technical assistance

Some Finnish experts have worked, for instance, for the World Bank, the World Health Organization (WHO) and UNICEF during the Decade.

Associate expert activity

Finland has financed the work of a total of four associate experts for the water supply and sanitation sector during the Decade. They have worked in UN development projects in the Cayman Islands, Malawi and Sierra Leone.

2.4 EDUCATION AND RESEARCH IN WATER SUPPLY AND SANITATION

Education

Finland has financed the following educational undertakings in water supply and sanitation:

- Postgraduate Courses in Water Supply and Sanitation adapted to the conditions in developing countries

- the "Technological Transfer Programme in the Field of Industrial Wastewater" conference in Kenya in 1989

- A cooperation programme with the Asian Institute of Technology (AIT) located in Bangkok, Thailand

The first postgraduate course was arranged at Helsinki University of Technology in 1972-1974. The later courses since 1979 took place at Tampere University of Technology. Altogether six postgraduate courses
have been held by 1990. The seventh will take place in 1990-1992. The 1.5 year course is taught in Finland except for the work for the Master's thesis which takes place in East Africa. By 1990 about 100 persons had earned their Master of Science in Engineering Degree from the course. In addition, three doctorates in water engineering were earned in the personal educational programme (Fig. 4). An international expert group evaluated the course in 1985. A B.Sc. programme in Civil Engineering was started in 1989 in Tampere for Namibian students. It also covers water supply and sanitation to some degree.

Through a programme of the Asian Institute of Technology Finland provides scholarships for Asian students to study water and environmental engineering and finances education given by Finnish experts. The Helsinki University of Technology is responsible for the practical implementation of the latter.

In the autumn of 1989 Tampere University of Technology organized, in collaboration with United Nations Environment Programme (UNEP) and UNIDO (United Nations Industrial Development Organization), an environmental protection course (about 2 months) for 20 people responsible for industrial environmental protection in several Asian countries.

Moreover, training has been given in various forms as a part of development cooperation projects, mainly in the target countries.

We should also mention the local government development seminar given by the World Bank in 1988 in Mozambique which also dealt with water supply and sewerage.

Supplementary training of various types has been arranged in order to improve the competence of Finnish sector personnel. A total of 16 postgraduate students worked as trainees and assistant training officers in southern Tanzania in 1978-86 for about a year as part of a water supply and sanitation project financed by Finland. This has facilitated the organizing of the above-mentioned postgraduate course. The postgraduate course of 1979-81 had 12 Finnish students, many of whom have later worked in development cooperation. The limited scope of Finland's personnel resources became apparent at the end of the Decade as the activity has expanded.

FINNIDA has itself organized several training and development seminars during the Decade. These have, for instance, dealt with the operational principles of water supply and sanitation systems and the development of the sanitation sector. Invitational seminars have also been held in connection with the water supply sector coordination meetings of Nordic development cooperation organizations.
Fig. 4. Finland has financed postgraduate education in water engineering adapted to the conditions in developing countries in 1972-74, 1979-81 and from 1982 on. Students and staff of the 4th course organized in 1984-86 by TUT are shown above.
Developing country studies

The Foreign Ministry has financed, out of its research and development funds, a survey on the role of cost recovery in the water supply of developing countries. The same source is used to finance study on the treatment of industrial wastewaters. A project was launched at the end of 1989 that concentrates on the institutional development of water supply and sanitation and, especially, on the water supply and sanitation services for the poorest inhabitants of cities. The project also looks at the institutional alternatives in water supply and sanitation and their development trends.

FINNIDA and the Academy of Finland have jointly financed a project focussed on technology transfer which also touches on water supply and sanitation.

The Academy of Finland has provided funds for a 1983 study on rural water supply and sanitation suited for developing countries and for a related project on the transfer of responsibility in 1984 and 1985-1987.

2.5 NON-GOVERNMENTAL ORGANIZATIONS (NGOS) IN THE WATERSUPPLY AND SANITATION SECTOR

The Finnish UNICEF association has been especially active in the sector and has conspicuously campaigned for decades for collecting funds. Water supply and sanitation has also been developed by, e.g., the Finnish Red Cross. Support through missionary organizations has been extended to rural water supply and sanitation in Ecuador, Ethiopia, Kenya, Nepal, Senegal and Zimbabwe among others. Toward the end of the Decade several other NGOs have started assisting small-scale sector projects, for instance, in Bolivia, Cameroon and Nicaragua.

Finnish NGOs receive part of their financing from the government's development cooperation budget.

3 PLANNING SERVICES EXPORTS AND FOREIGN CONTRACTING IN WATER SUPPLY AND SANITATION

3.1 PLANNING SERVICES EXPORTS

Fig. 5 depicts the development of Finnish planning activity in 1974-1989 on the basis of domestic and foreign invoicing. The real value of domestic invoicing has grown whereas the real value of exports has been diminishing. Developing countries' relative share of total export invoicing has gone down and the
Fig. 5. Development of planning services as indicated by domestic and foreign invoicing in 1974-1989.

The share of the OECD countries has increased correspondingly (Fig. 6). However, the relative share of developing countries seems to have grown towards the end of the Decade.

Development cooperation-related commissions account for more than 20% of foreign invoicing for planning services (Table 3).

Table 3. Development cooperation commissions' share of foreign invoicing for planning services provided in 1985-89.

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<tbody>
<tr>
<td>Commissions (mill. FIM)</td>
<td>40</td>
<td>80</td>
<td>96</td>
<td>113</td>
<td>164</td>
</tr>
<tr>
<td>Share of foreign invoicing</td>
<td>8.6</td>
<td>17.7</td>
<td>18.8</td>
<td>18.9</td>
<td>23.0</td>
</tr>
</tbody>
</table>
Water sector planning activity

The share of water supply and sanitation and water engineering of total planning services invoicing has grown slightly, from 2.7 percent to 3.6 percent, in 1981-89 (Table 4). Correspondingly, the share of water supply and sanitation in foreign invoicing has ranged between 2.8 percent and 6.5 percent. Water supply and sanitation would seem to play a more important role in foreign than in domestic activity. Part of the foreign invoicing is based on development cooperation activities, but no accurate statistics are available.

Table 4. The share of water supply and sanitation and water engineering of total and foreign invoicing for planning services in 1981-89.

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</thead>
<tbody>
<tr>
<td>Share of total invoicing (%)</td>
<td>2.7</td>
<td>2.7</td>
<td>3.2</td>
<td>3.0</td>
<td>3.5</td>
<td>3.6</td>
<td>3.3</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>Share of foreign invoicing (%)</td>
<td>2.8</td>
<td>4.5</td>
<td>3.9</td>
<td>5.7</td>
<td>6.5</td>
<td>6.0</td>
<td>5.4</td>
<td>5.9</td>
<td></td>
</tr>
</tbody>
</table>
3.2 FOREIGN CONTRACTING

Figure 7 presents foreign water supply and sanitation contracts completed by Finnish companies since 1958 by three-year periods. The figure only includes individual sector contracts, not subprojects that were part of larger plant contracts (e.g. Kostamuksha, Svetogorsk). The sums are not adjusted to the current price level.

During the indicated period water supply and sanitation projects were carried out in the following countries: Cameroon, Egypt, Kenya, Kuwait, Liberia, Libya, North Korea, Qatar, Saudi Arabia, Soviet Union, Syria, Tanzania, United Arab Emirates, Vietnam and Yemen Arab Republic.

Other commercial activity worth noticing is the expansion of Finnish water supply and sanitation sector firms abroad via acquisitions and/or subsidiaries. These companies manufacture, for instance, water pipes and water treatment chemicals.

Fig. 7. Contract prices of foreign water supply and sanitation projects completed by Finnish contractors since 1958. Included are individual water supply and sanitation sector projects, not subprojects of industrial projects.
Fig. 8. A summary of Finnish activity in the water supply and sanitation sector in 1971-1989 adjusted to the 1989 price level using the cost-of-living index. (a) Official Finnish development cooperation, domestic investment in water supply and sewerage and foreign contracting in water supply and sanitation (b) Finnish planning services exports, related exports to developing countries and development cooperation in water supply and sanitation.
3.3 OVERALL ASSESSMENT OF FOREIGN ACTIVITY

Fig. 8 presents a summary of all Finnish activity in the water supply and sanitation sector. The volumes are adjusted to the 1989 price level using the cost-of-living index. Official Finnish development cooperation has grown strongly in real terms. Foreign contracting in water supply and sanitation has diminished radically from the peak volume in 1978-1984. Overall planning services started have risen towards the end of the Decade as have the exports to the developing countries. The great demand from the oil producing countries in the early 1980s and the subsequent decline has had a relatively smaller impact on exports of planning services than on contracting.

4 INTERNATIONAL COOPERATION ORGANIZATIONS IN WATER SUPPLY AND SANITATION

4.1 MAJOR COOPERATION ORGANIZATIONS

Finnish international cooperation has been most active with the International Association on Water Pollution Research and Control (IAWPRC) and the International Water Supply Association (IWSA). The World Health Organization (WHO) has been another important partner in cooperation.

International Water Supply Association (IWSA)

The Union of Finnish Towns has been the Finnish corporate member in IWSA since 1969. Finnish associate members of the organization are the Helsinki Regional Water Company, the Turku City Water Supply and Sewage Works and the Association of Finnish Water Supply and Sewage Works.

Researchers and experts from waterworks have attended the general conferences of IWSA held every other year, the special symposia of IWSA and special committees under its auspices. IWSA also used to have a committee for developing countries called COCODEV. There are plans for continuing that activity by giving professional supplementary training in the developing countries. At the end of the Decade a special technology transfer fund was created through which professional training and education will be given in and for developing countries. Finland has had representation in said committee and the fund. Finland has a representative in the executive secretariat for questions related to water quality.

International Association on Water Pollution Research and Control (IAWPRC)

The Water Association is a national member of IAWPRC. Finnish corporate members are the National Board of
Waters and Environment and Tampere University of Technology. IAWPRC has supported many international symposia held during the Decade (Table 5). Cooperation in the form of symposia has started during the Decade.

Researchers and experts in the wastewater sector have attended the general conferences of IAWPRC held every other year, the special symposia of IAWPRC and the work of expert groups under IAWPRC. At the end of the Decade IAWPRC extended its activities into developing countries, especially in Africa.

The World Health Organization (WHO)

During the Decade the National Board of Waters and Environment and, in problems related specifically to water quality, the National Board of Health, have cooperated with WHO. Likewise, Finland has actively participated in the monitoring of the Decade (Seech. 4.3) and has organized a meeting of water supply and sanitation experts as part of WHO's European activity (See table 5).

Several persons have worked as experts in WHO programmes for developing countries. Especially in education and research directed at developing countries contacts have been maintained with the monitoring group for the Water Decade administered by WHO.

Other UN organizations

The activities of UN organizations in international development cooperation have been dealt with in chapter 2.3. In addition to taking part in their work, Finland has also participated in, for instance, the following programmes of cooperation:

- International Hydrological Programme (IHP)
- United Nations Environment Programme (UNEP)

IHP activity in Finland is coordinated by an IHP committee which is also a section of the committee for agriculture and forestry of the Academy of Finland. The National Board of Waters and Environment, FINNIDA, and Tampere University of Technology, for instance, have participated in UNEP activity.

Nordic cooperation

Specific examples of Nordic cooperation are:

- the Nordic Council of Ministers' official committee on environmental questions
- Nordforsk

The Ministry for the Environment and the National Board of Waters and Environment have taken part in the activities of the above organizations.
Fig. 9. Struja water treatment unit originally developed as a Finnish-Soviet cooperation project. It is especially suited for treatment of turbid surface waters.
In the field of development cooperation the related Nordic organizations have held annual coordinating meetings alternately in each country.

Other cooperation between governments

The Baltic Sea protection agreement is an example of other cooperation between governments. The international secretariat located in Helsinki monitors compliance with the agreement.

Finland has been involved in COMECON environmental protection programmes, for instance in developing technology for wastewater purification, since 1970. Tampere University of Technology and the State Technical Research Centre have coordinated the activities of the Finnish party to these cooperation programmes. An example of Soviet-Finnish technological and scientific cooperation is the Struja water treatment unit that is especially well suited for the treatment of turbid surface waters. It was originally developed as a Soviet-Finnish cooperation project.

Towards the end of the Decade the interest for the protection of waters and the environment has increased considerably, especially in the states around the Baltic Sea and also in Eastern Europe in general. The related forms of cooperation are being worked out. European integration will require more stringent pollution control measures from practically all European countries.

4.2 INTERNATIONAL CONFERENCES HELD IN FINLAND, 1981-1990

Table 5 shows the major water supply and sanitation conferences and symposia held in Finland during the Decade. The topics of the conferences have mostly been concerned with the purification of forest industry wastewaters. Many other international water conferences have been also held in our country, especially in hydrology (See table 6). The IHP committee of UNESCO, the National Board of Waters and Environment and the Water Association have been actively involved as organizers.

In addition, several Scandinavian seminars have been held in the water supply and sanitation sector. The cooperation between Finland and COMECON has included several cooperation meetings and seminars dealing with wastewater purification.
Table 5. Major water supply and sanitation conferences and symposia organized in Finland in 1981-1990.

<table>
<thead>
<tr>
<th>Name and venue (supporting organization)</th>
<th>Date held</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Conference on New Technology for Wastewater Treatment and Sewerage in Rural and Suburban Areas. Helsinki; Hanasaari (Academy of Finland, Nat'l Board of Waters, Tampere University of Technology)</td>
<td>3-6 Oct 1983</td>
</tr>
<tr>
<td>The First IAWPRC Symposium on Forest Industry Wastewaters. Tampere University of Technology</td>
<td>11-15 Jun 1984</td>
</tr>
<tr>
<td>Småskalig VA-teknik i kallt klimat. Luleå, Pudasjärvi (Nordic organizers, University of Oulu)</td>
<td>1-3 Oct 1984</td>
</tr>
<tr>
<td>The Second IAWPRC Symposium on Forest Industry Wastewaters: Biological Treatment and Environmental Effects of Pulp and Paper Industry Waste waters. (Tampere University of Technology)</td>
<td>9-12 Jun 1987</td>
</tr>
<tr>
<td>International Symposium on Groundwater Microbiology: Problems and Biological Treatment. Kuopio (Water Association, Nat'l Board of Waters Environment, University of Kuopio, IAWPRC)</td>
<td>4-6 Aug 1987</td>
</tr>
<tr>
<td>Who Meeting of Intersectoral Cooperation in the Development of Post Decade Activities. (Tampere University of Technology, Water Decade Sub-Comittee)</td>
<td>23-27 May 1989</td>
</tr>
<tr>
<td>Seminar on Nutrients Removal from Municipal Wastewater. Tampere University of Technology (Helsinki Commission, Nordic Council of Ministers, Nat'l Board of Waters and Environment, Ministry for the Environment)</td>
<td>4-6 Sep 1989</td>
</tr>
<tr>
<td>Industrial Wastewaters '89 Nairobi, the First IAWPRC Eastern Africa Regional Conference on Industrial Wastewaters, Nairobi (Kenya's Ministry for Waters, University of Nairobi, Tampere University of Technology)</td>
<td>25-28 Oct 1989</td>
</tr>
</tbody>
</table>
The Third IAWPRC International Symposium on Forest Industry Wastewaters: Nutrients and Slowly Biodegradable Compounds. (Tampere University of Technology)

Table 6. Major international conferences on water supply engineering in Finland, 1980-1990.

<table>
<thead>
<tr>
<th>Name and venue</th>
<th>Date held</th>
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<tbody>
<tr>
<td>The Influence of Man on the Hydrological Regime. Helsinki (UNESCO, IAHS, Nat'l Board of Waters)</td>
<td>23-26 Jun 1980</td>
</tr>
<tr>
<td>First IAWPRC Symposium on Off-Flavours in Aquatic Environment. Espoo, Hanasaari (Water Association, National Board of Waters)</td>
<td>14.18 Jun 1988</td>
</tr>
<tr>
<td>Seminar on the Recent Development in the Technological Field in Respect to Prevention of the Pollution of the Baltic Sea Area (Helsinki Commission)</td>
<td>1983</td>
</tr>
<tr>
<td>The Vth Northern Research Basins Symposium. Vierumäki (UNESCO/IHP, Nat'l Board of Waters and Environment)</td>
<td>19-32 Mar 1984</td>
</tr>
<tr>
<td>Seminar on Dam Safety. Rovaniemi (ECE, Water and Environment Committee; Nat'l Board of Waters and Environment)</td>
<td>13-25 Sep 1987</td>
</tr>
<tr>
<td>Meeting of Technical Committee 147 (Water Quality). Helsinki (ISO, Nat'l Board of Waters and Environment)</td>
<td>1988</td>
</tr>
<tr>
<td>XV Nordisk Hydrologisk Konferens (NHK-88). Rovaniemi (Nordisk Hydrologisk Förening, National Board of Waters and Environment)</td>
<td>1-3 Aug 1989</td>
</tr>
</tbody>
</table>

Conference on Climate and Water. Helsinki (WMO, Ministry for the Environment, Academy of Finland, Ministry for Waters and Environment) 11-15 Sep 1989

The Dynamics and Use of Lacustrine Ecosystems. Helsinki (SIL, Limnological Society of Finland) 6-10 Aug 1989

4.3 OTHER INTERNATIONAL ACTIVITY

Professional organizations and associations that have organized seminars dealing specifically with development cooperation are the Association of Finnish Building Engineers, the Water Association and the Association of Finnish Engineering Geologists. In 1988 the Water Association created a separate subcommittee for developing countries.

The universities of Kuopio and Oulu and Tampere University of Technology are institutions of higher learning that have organized seminars and supplementary training courses in the field of water supply and sanitation.

5 INTERNATIONAL ACTIVITY IN THE 1990s

5.1 DEVELOPMENT COOPERATION

The Committee for World Environment and Development (the so-called Brundtland committee) pondered global developmental and environmental problems in its report completed in 1987. It stated that, for instance, the rural and urban populations in developing countries are going to grow quite unequally. According to UN forecasts the rural population will start to diminish during the first decade of the next century in most developing countries. Nearly 90 percent of these countries' population growth will take place in cities whose total population is expected to increase from 1.15 billion in 1985 to 3.85 billion in 2025. Especially the African population is growing strongly and Asia is not much behind.

The large cities of developing countries are expanding too fast for authorities to be able handle the situation. An ever increasing portion of city-dwellers live in slums and shanty towns, many of which are vulnerable to polluted air and water and industrial and natural calamities. The environment will probably
continue to deteriorate since the biggest cities are experiencing the largest growth.

To alleviate the pressure on large cities, smallish urban centres should be developed. If we are to avoid the threatening urban crisis, we must help the poor build housing and organize services for themselves. At the same time the attitude towards the unofficial sector must become more tolerant. In addition, sufficient funds must be earmarked for water supply and waste disposal.

An expert group that evaluated Finnish economic relationships with developing countries in the 1990s gave, for instance, the following suggestions:

- Finnish development aid should not be spread over too many countries
- the preconditions for effective development aid are controlled population growth, environmental consciousness and easier credit terms

Environmental protection has occupied an important position in our development cooperation and also more widely within the framework of our foreign policy and international activity. Water supply and sanitation including sewerage and wastewater treatment represent the oldest technology for protection of the environment. Finland is one of the leaders in this sector and therefore it would be natural to utilize this experience also in the developing countries.

Fig. 10 presents a mid-Decade assessment of the stress placed on the water supply and sanitation sector and its subsectors, and the changes in them in the last decade and in the 1990s. Cities are expected to enjoy more extensive water supply, sewerage and waste management services. Now, at the end of the International Drinking Water Supply and Sanitation Decade, it would appear that cities' water supply is going to stay at a relatively high level for longer than the assessment suggested. The assessment mainly depicts the bilateral development between countries. In multilateral water supply and sanitation cooperation the relative share of cities is larger.

The official Finnish development cooperation in water supply and sanitation has changed (Table 2) in the direction of the estimate of Fig. 10.

The FINNIDA principles for water supply and sanitation from 1989 present the following operational goals for the sector:

* to support projects promoting comprehensive social development in collaboration with other sectors of social development
* to improve the use, maintenance and protection of water sources and systems
Fig. 10. An assessment of the stress given to the subsectors of water supply and sanitation sector in developing countries in the 1980s and 1990s.

* to strengthen operational organizations so they can independently develop water supply and sanitation
* to support projects based on people's involvement and consciousness created through health education
* to continually improve the planning and implementation of water supply and sanitation projects
* to improve the coordination in international cooperation and between those giving assistance

According to the principles future development cooperation in water supply and sanitation will have to

* find technical solutions adaptable to various cultures, various groups of people and various water uses that must also be affordable to the beneficiaries
* ensure the sustainability of implemented water supply and sanitation systems by developing operational and maintenance systems and their economy
* improve developing countries' capabilities in the technical and economical fields and those required in the development of systems
that provide and secure services according to the needs of population trends and production needs
*
increase international cooperation in planning so that the combined effects of various projects could be taken into account to promote balanced development
*
to increase collaboration between scientific, economic and political communities for the purpose of finding workable and lasting solutions

The Foreign Ministry aims to use 10 percent of the appropriations for bilateral development cooperation for water supply and sanitation. This would amount to about one third of all the appropriations for social development in the 1990s. Rural development projects will continue to receive assistance, but alongside them water supply and sanitation projects for cities and wastewater projects serving the goals of environmental protection will get more funding. The creation of conditions favourable to sustained development must be the goal of all sector support. Quantitative goals must not dominate qualitative ones.

5.2 OTHER INTERNATIONAL ACTIVITY

Finnish participation in the activities of the international sector organizations has increased during the Decade. At the same time information on research conducted in Finland has been increasingly presented in international forums and contacts have been established with foreign R&D institutions.

In the 1990s environmental problems will get more emphasis, especially in Eastern and Southern Europe. The most central question will be water supply and sanitation and wastewater treatment. In Finland it has been evident for quite some time that it is necessary to develop water treatment technology, which will also increase the need for international contacts. The requirements of environmental protection in Eastern and Southern Europe will also provide potential markets for commercial planning services, exports and contractors.

5.3 RECOMMENDATIONS FOR THE DEVELOPMENT OF INTERNATIONAL ACTIVITY

The experience gained so far from international cooperation in water supply and sanitation indicates that Finland has a lot to give in international forums in various roles.

The sub-committee suggests the following measures for the development of international cooperation in water supply and sanitation in the 1990s:
1. Training and research institutions of developing countries should be developed and gradually supplementary and continuation education should be given and applied research conducted in the target countries. Sufficient material and human resources are required for this. Especially postgraduate education will have to be given for a long while in Finnish institutions and universities. Development cooperation projects should also include components of training, research and development. Such components could support the training and research units of the target countries.

2. The share of water supply and sanitation should be emphasized in the research on developing countries.

3. Involvement of Finnish water supply and sewerage utilities in development cooperation should be encouraged, for instance, on a twinning basis.

4. Finnish human resources in development cooperation should be promoted. This should be realized through education at various sector levels and in projects implemented in target countries.

5. Finnish participation, especially in the activities of IAWPRC and IWSA, should be increased by sponsoring attendance in conferences, symposia and special committees and by recruiting new corporate and private members. In the longer run the goal should be for the organizations to merge their activities.

6 SUMMARY

Official Finnish development aid has increased substantially over the Decade. In 1989 the goal of 0.7 percent of gross national product was reached. The share of water supply and sanitation in Finnish development aid went from 5 to 10 percent during the Decade. In 1989 the sector outlays amounted to FIM 170 million. Earlier the emphasis was on rural projects, but lately assistance has also been given to the water supply and sewerage of cities. Finland has also supported several international water supply and sanitation development programmes, for instance, ones coordinated by the World Bank. Our country is one of the major supporters of UNICEF. In addition, Finnish experts have worked on various types of international assignments for the sector in various fields.
In the educational sector Finland has funded postgraduate courses in water engineering, applied to the conditions of developing countries, since the 1970s. In the last few years support has been channelled also to education of shorter duration, especially in the area of environmental protection. A relatively small share of the studies on developing countries has so far dealt with water supply and sanitation. Missionary, and later also other non-governmental, organizations have supported water supply and sanitation as part of their development programmes.

Actual Finnish planning services exports were at their highest at the beginning and end of the Decade. Planning services exports to developing countries have been decreasing until recently. Foreign contracting in water supply and sanitation has been greatly reduced since the boom of 1978-1984. Simultaneously, domestic investment in water supply and sewerage has decreased in real terms.

During the Decade Finland has become more involved in the activities of the International Association on Water Pollution Research and Control (IAWPRC), the International Water Supply Association (IWSA) and the World Health Organization (WHO). Several international conferences on water supply and sanitation have also been held in our country.

As regards the 1990s, the sub-committee recommends that support be given to the educational and research establishments within the developing countries, so that they could gradually start providing supplementary and further education and conducting applied research. Our water supply and sewerage utilities could be more involved in development cooperation than they are at present. The Finnish sector know-how should also be actively developed. Finns should participate more intensively in the activities of the international water supply and sanitation cooperation organizations. As the oldest sector of environmental protection, water supply and sanitation has much to give in international cooperation.
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