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WORLD HEALTH ORGANIZATION
EUROPEAN CENTRE FOR
ENVIRONMENT AND HEALTH

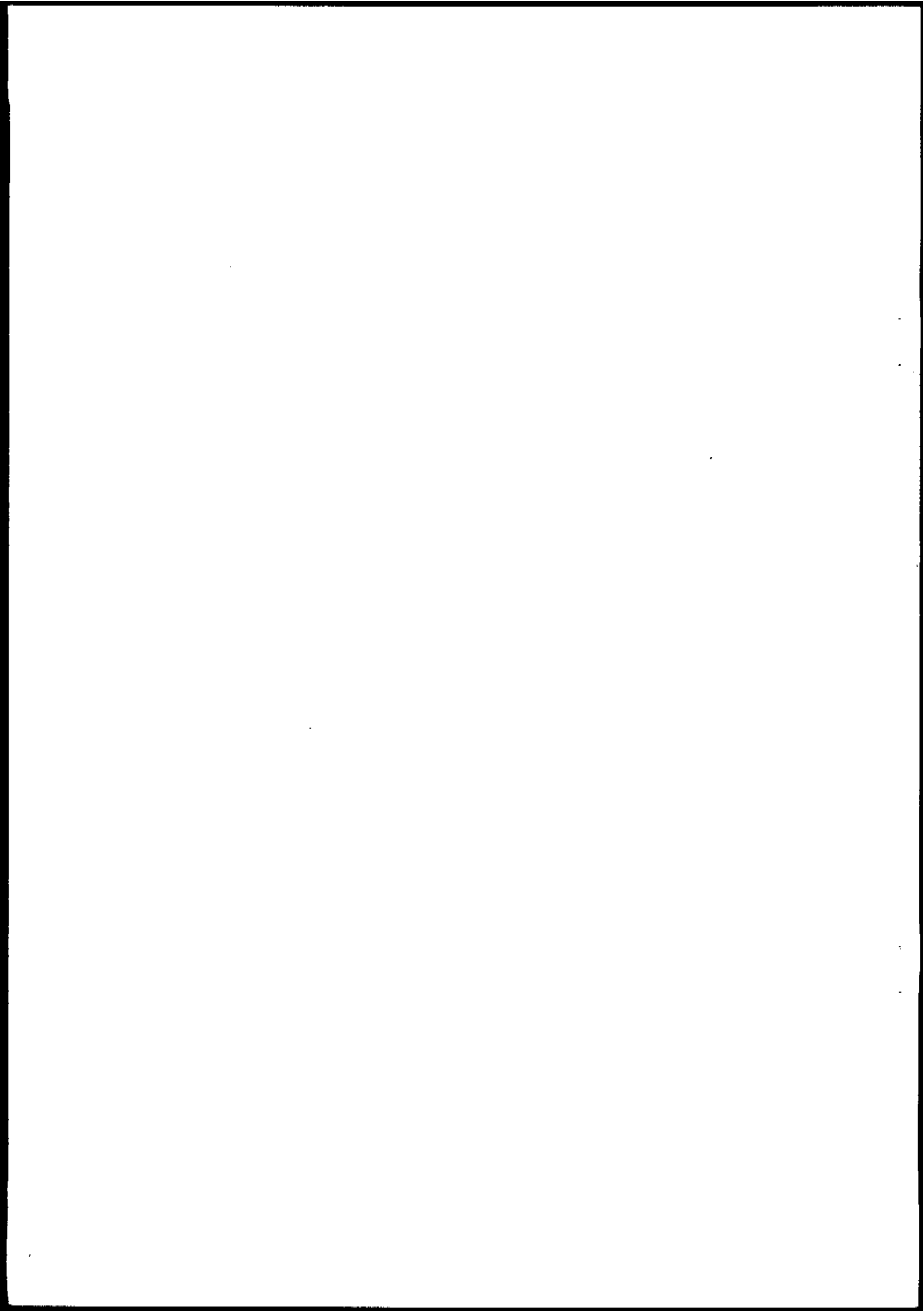
THE PROJECT OFFICE

Activity Report

October 1994

Feasibility studies and projects in :

- *Water supply and sanitation*
- *Wastes, soil pollution*
- *Local air pollution abatement*
- *Urban planning, municipal management*



World Health Organization

European Centre for Environment and Health

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Feasibility studies and projects in:

- water supply, sanitation
- waste, soil pollution
- reduction of local air pollution
- urban planning, housing and environmental health services

TARGET 20

By the year 2000, all people should have access to adequate supplies of safe drinking-water, and the pollution of groundwater sources, rivers, lakes and seas should no longer pose a threat to health.

TARGET 23

By the year 2000, public health risks caused by solid and hazardous wastes and soil pollution should be effectively controlled in all Member States

Keywords

ENVIRONMENTAL HEALTH
WATER SUPPLY
SANITATION
WASTE MANAGEMENT
URBAN HEALTH
CITY PLANNING

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CCEE

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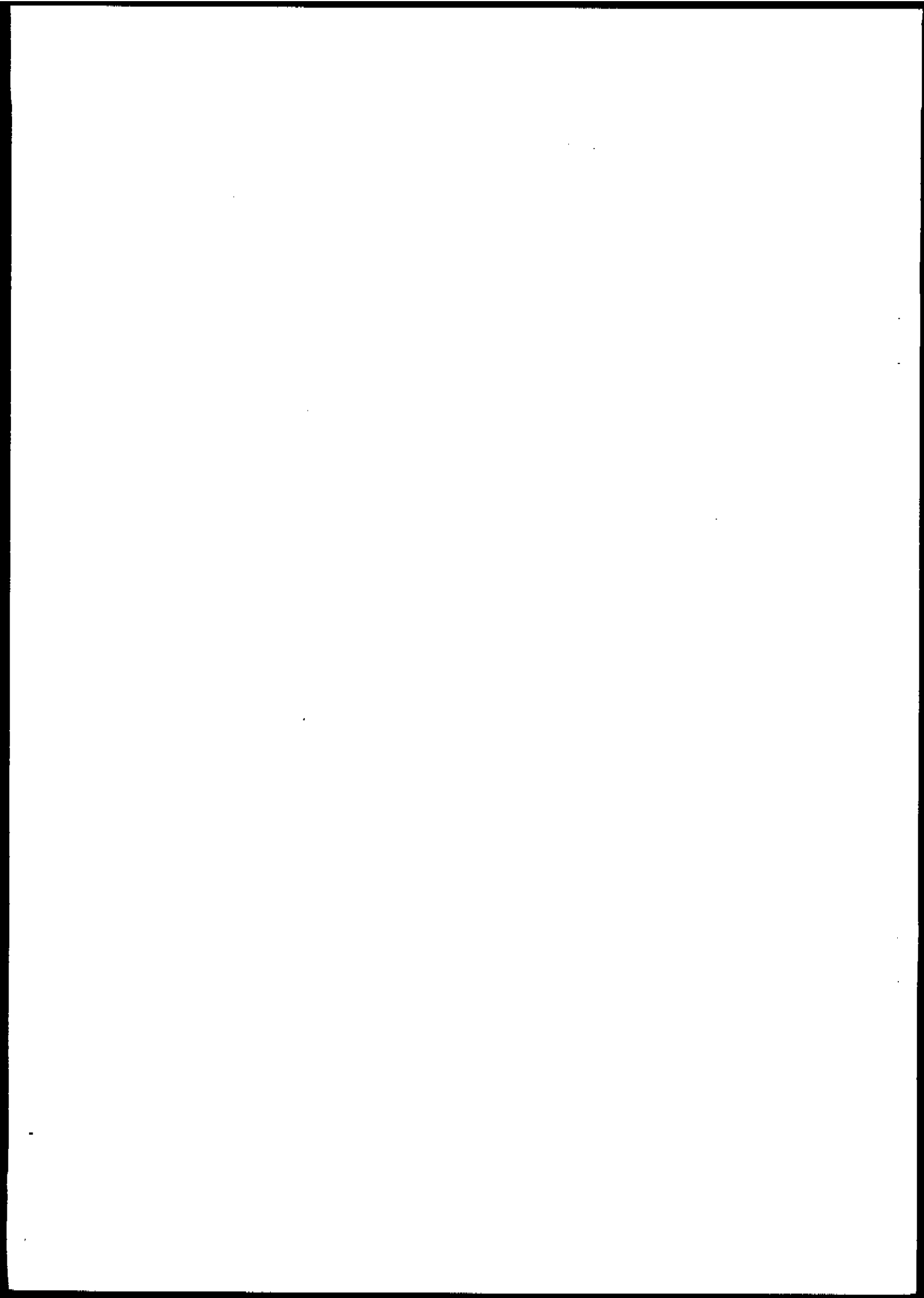
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Our Planet, Our Health

"In view of the fact that health issues are not attracting as much attention as purely ecological issues in contemporary discussion of the environment and development, it might be legitimately asked whether there is some kind of incompatibility or conflict between protecting and improving the environment and protecting and improving health. The Commission's conclusions are unequivocal: not only is there no conflict between these two objectives, but the kind of development needed to safeguard health and welfare will depend on many conditions, including respect for the environment, while development without regard to the environment would inevitably result in impairment of human health."

**Simone Veil, Chairperson
WHO Commission on Health and Environment**



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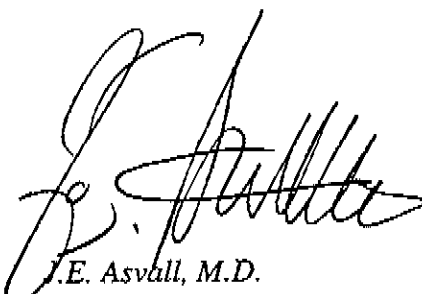
Preface

Recently, many ideas and views have been expressed on the role and strengths of the United Nations and its specialized agencies. It is important to build upon these strengths and to focus resources on realistic objectives. Such objectives should offer the prospect of improving the quality of life for the general public.

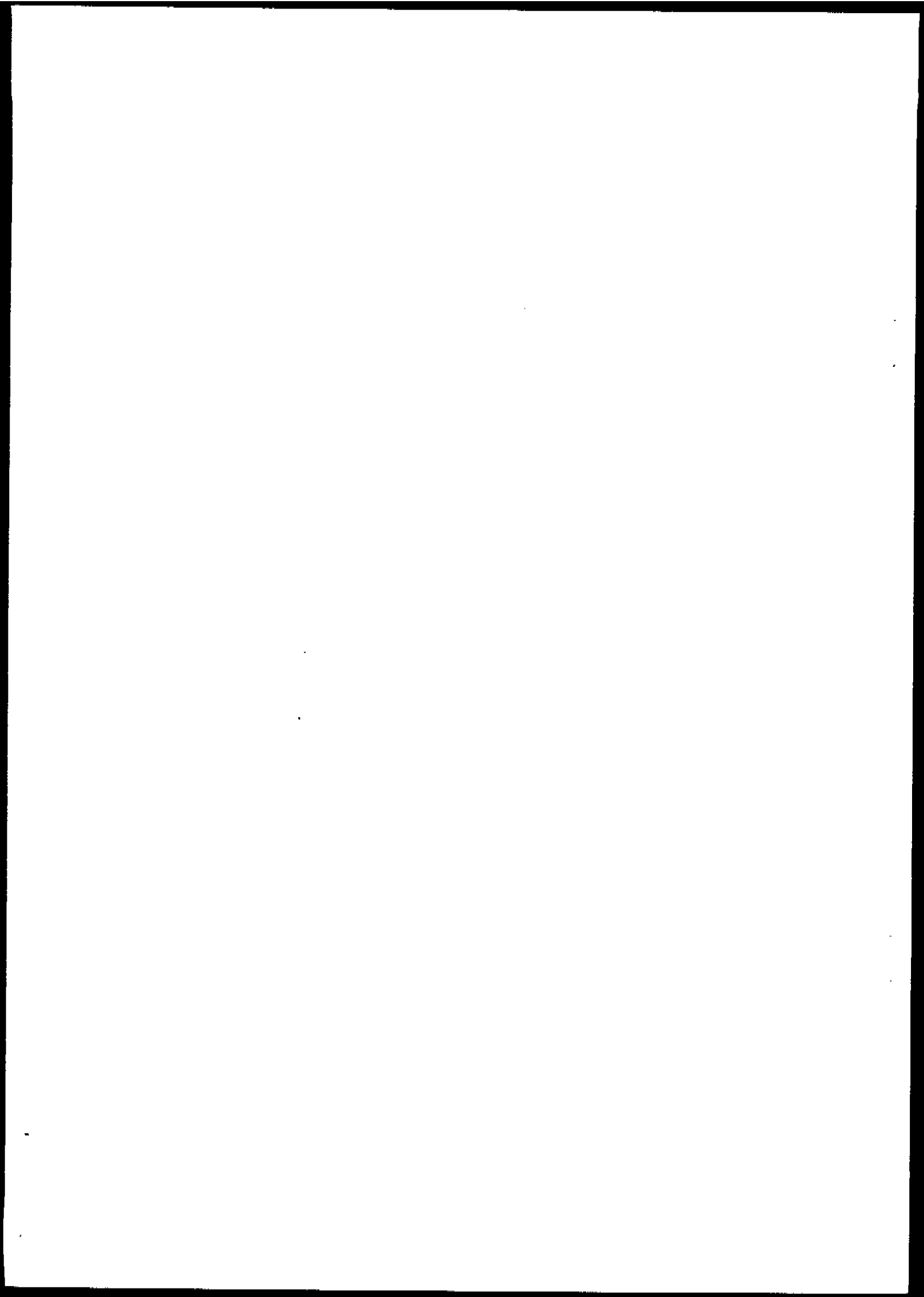
The work of the Nancy Project Office, a component of the European Centre for Environment and Health of the WHO Regional Office for Europe, has been specifically developed to achieve tangible improvements to towns and cities. Its broad range of activities are all intended to form part of realistic demonstration projects within the countries of central and eastern Europe and the newly independent states of the former Soviet Union.

This progress report, the first prepared by the Nancy Project Office, describes many of the public health engineering activities in which the Office has been involved throughout the European Region. Preventing disease by setting up and maintaining a safe and efficient municipal infrastructure is essential to achieving an acceptable standard of living. The Project Office specializes in field-based projects working with governments and municipalities in the fields of water supply, sanitation, solid waste management and urban development. Their activities range from technical assistance and advice to feasibility studies, project implementation and training. The Project Office works in unison with specialist scientific and medical disciplines in the other divisions of the European Centre for Environment and Health and with the staff in Copenhagen.

This progress report shows that a strong spirit exists within WHO to provide environment and health assistance where it is most needed: that is, to the inhabitants of our European Member States.



J.E. Asvall, M.D.
Regional Director



Chapter 1

The Project Office

Creation and objectives

Chapter 1. The Project Office: Creation and objectives

1.1. The genesis of the Project Office

The Ministers of the Environment and of Health of the 29 Member States of the European Region of the World Health Organization, meeting together for the first time at Frankfurt-am-Main on 7 and 8 December 1989, adopted the European Charter on Environment and Health. They also agreed upon the principles and strategies laid down therein as a firm commitment to action. In view of its environmental mandate, the Commission of the European Communities was specially invited to participate and, acting on behalf of the Community also adopted the Charter as a guideline for future action by the Community in areas that lie within Community competence [1].

The Charter is a further extension of the WHO European Health for All policy and targets adopted by the Member States of the European Region of WHO and incorporates the basic philosophy of the World Commission on Environment and Development. The Charter sets out recommendations as well as definitions of the fundamental principles for public policy, strategy elements and priorities. In particular "the WHO Regional Office for Europe is invited to in collaboration with the governments of the European countries, examine the desirability and feasibility of establishing a European Centre for the Environment and Health" [1].

Following the provisions of the Charter on Environment and Health, the Government of Italy and the Government of the Netherlands each offered to finance and accommodate a component of the European Centre for Environment and Health. These components were created in 1991 and thus the Centre came into operation.

With this new development, the Department of Environment and Health of the WHO Regional Office for Europe based in Copenhagen concentrates on:

- environmental health policy
- improvement of the urban environment
- environmental health services
- information networks
- occupational health.

The divisions of the European Centre for Environment and Health are mainly technically oriented, focusing on:

Bilthoven (Netherlands)

- air quality
- chemical safety and toxicology
- environmental epidemiology
- environment and health information systems
- integrated environment and health programmes

Rome (Italy)

- environmental epidemiology
- food safety
- radiation protection
- water quality.

As the initial components of the European Centre for Environment and Health were mainly scientifically and epidemiologically oriented, the Government of France proposed that the WHO Regional Office for Europe develop a technical assistance component for the Centre. This approach would contribute to environmental rehabilitation in a situation that could deteriorate and threaten public health. A feasibility study, started in September 1990, examined how realistic this general objective would be.

1.2 Conclusions of the feasibility study

The study, undertaken by NANCIE (WHO Collaborating Centre for Decade Data Processing and Inland Recreational Waters Control), the International Centre for Water and the WHO Regional Office for Europe from September 1990 to April 1991, concluded that the project was feasible and drew the following conclusions:

1. The Project Office would be an integral unit of the Environment and Health Department of the WHO Regional Office for Europe.
2. Its first and foremost function would be to plan technical assistance projects to assist the towns and cities in Member States to improve their environment and health conditions. These projects will seek to reduce drinking-water, air and soil pollution. They would also deal with the improvement of water quality, the water supply system, and the collection of and provision for the treatment and disposal of wastes, including hazardous waste. The projects could be at a country, regional or municipal level.
3. The second function of the Project Office would be to identify and collaborate with international lending agencies.
4. The third function of the Project Office would be to begin a reference system that efficiently compiles a verifiable register of treatment technologies for water, liquid and/or solid wastes, and for gas and smoke; of other technical processes for reducing water, air and soil pollution; and of the sites themselves.
5. A fourth function could be to establish an informatics database for the Healthy Cities Project.

These conclusions, followed by negotiations with the various partners involved in the WHO European Centre for Environment and Health, led to the preparation of an agreement between WHO and the Government of France.

1.3. The agreement between the World Health Organization Regional Office for Europe and the Government of France

This agreement, signed on 20 March 1992, specifies the work assigned to the Project Office (in addition to administrative arrangements):

"The principal task of the European Centre for Environment and Health as a whole is to strengthen scientifically based support at international level for attaining the aims and objectives of the European Charter on Environment and Health, within the overall programme of the Environment and Health Department of the Regional Office for Europe of WHO. The areas of work are encompassed under Targets 11 and 18-25 in support of the European regional strategy for Health for All. In accordance with the policies of the Regional Office for Europe of WHO, special emphasis shall be placed on assistance to the countries of central and eastern Europe.

The Project Office shall be an operational unit of the Centre, and its purpose shall be technical cooperation in relation to the environment and health dimensions of urban living conditions and infrastructure, including public health engineering aspects of water supply, sanitation and waste management, together with other aspects of the urban environment. This work is expected to strengthen technical support to the Healthy Cities Programme and to complement the existing skills and capacities of the Centre. The programme shall be to provide advice on technical solutions and to carry out feasibility studies and pre-investment projects without prejudice to project development in the Bilthoven and Rome divisions of the Centre. Special emphasis shall be given to the priorities of the countries of central and eastern Europe. Support to other Regions of WHO, on request, should be considered."

1.4 Conclusion: Objectives of the Project Office

The orientation proposed by the feasibility study and defined in the agreement between the WHO Regional Office for Europe and the Government of France outlines the objectives for the Project Office given in the box below.

The Project Office commenced activities after agreement was reached by all parties. A Director was appointed in August 1992.

In addition to the objectives defined in the basic agreement, in January 1994 the Project Office put forward a proposal to develop a special project in the former Yugoslavia: "Preparation of rehabilitation of urban centres in Bosnia and Herzegovina and the UN-protected Areas in Croatia". This proposal was studied and accepted after the identification of voluntary donations by the WHO Regional Office for Europe. Since May 1994, public health engineers have been based in Bosnia and Herzegovina to continue the activities started during a preliminary mission undertaken in March - April 1994.

The activities developed since the Project Office opened are described in the following chapters.

Objectives of the Project Office:

Technical cooperation with local authorities - principally urban communities - of central and eastern Europe by studying technological projects in their feasibility and pre-investment phases in the fields of:

Water

- supply of drinking-water to population
- sewerage and treatment of waste water in urban areas
- water resource quality

Waste

- Collection, treatment and disposal of domestic, industrial and hospital wastes

Soil

- decontamination of soil

Air pollution

- reduction of pollution by improving industrial processes

Urban planning, housing and organization of community environmental health services (in collaboration with the Healthy Cities Project)

- master plan
- regulations
- organization and management of municipal and environmental health services

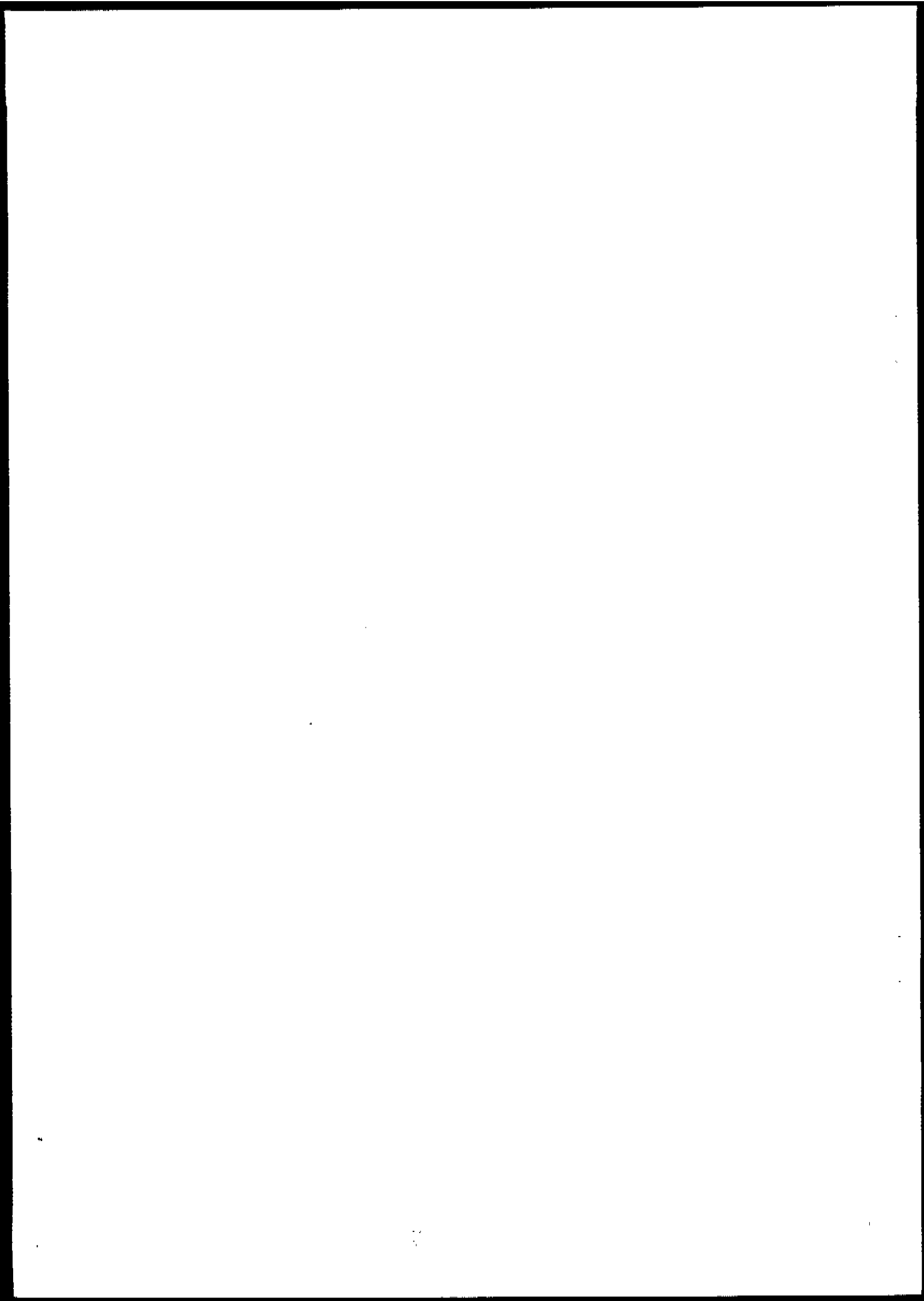
References

1. *European Charter on Environment and Health*. Copenhagen, WHO Regional Office for Europe, 1990.

Chapter 2

The Project Office

Activities



Chapter 2. The Project Office: Activities

2.1. The human resources

The Project Office commenced activities in August 1992 when a director was appointed. He held the post for one year and was replaced in September 1993.

A programme assistant was appointed in October 1992, and a secretary was recruited in May 1994.

The primary objective was, and remains, to assemble, depending on the available funding, a team of engineers and related disciplines specialized in the Project Office's technical fields:

- waste management and decontamination of soils
- water
- urban planning, habitat and municipal technical services
- air pollution reduction.

A short-term consultant engineer was recruited in September 1992 until June 1993 to fill the post of project manager for waste management and soil decontamination. An engineer was then appointed to this post for a period of 11 months from June 1993.

An engineer, specialized in the water field, was seconded to the Project Office by the French Ministry of Equipment for a period of three years, starting in January 1993.

Since commencing activities, resources of 113.5 person/months have been available to the Project Office. They can be categorized as follows:

Category	person/month
Management, administration and secretariat	53
Water	23
Waste	27.5
Other (special project Bosnia and Herzegovina, Croatia)	10

The urban planning, housing, municipal environmental health services and air pollution reduction sectors will commence activities during the second half of 1994 or in the beginning of 1995.

2.2. The activities

Activities have been developed by current staff in three principal areas:

- water management
- waste management
- rehabilitation in Bosnia and Herzegovina and the UN-protected areas in Croatia.

This chapter will only list the activities undertaken; detailed descriptions of selected activities are given in the following chapters.

2.2.1 Water management

- a) Participation in an agreement between the cities of Moscow and Paris on the reorganization of the water supply in Moscow, with emphasis on the qualitative aspects of production and supply.
- b) Participation in a health mission in Bosnia and Herzegovina for water supply and sanitation issues.
- c) Study on the water quality and supply requirements of the town of Ufa (Russian Federation).
- d) Provided assistance and advice on public health problems that could result from the collapse of the retention wall at a toxic mine waste lagoon in Mojakovak (Montenegro).
- e) Identification of technical water supply and sanitation projects in the Khanty Manssijsk district in Siberia and in the towns of Constanta and Iash (Romania). Identification of funding for feasibility studies and pre-investment studies in connection with the Constanta project, which is considered as a priority project by the national authorities in Romania.
- f) Collaborative study with the town of Vilnius (Lithuania) to audit and improve its water quality monitoring laboratory.
- g) Preparation of an ad hoc training programme in France for Latvian public health engineers.
- h) Definition of possibilities for collaboration with the Green Partnership Programme financed, among others, by the United Nations Development Programme (UNDP) in Poland.
- i) Preparation of a training programme for urban water management in the Russian Federation.
- j) Definition of a water supply development programme in central and eastern Europe (participation of the Civil Society programme) to be realized in collaboration with UNDP and the International Secretariat for Water (identification of funding underway).
- k) Preparation of a study in Lithuania on groundwater pollution caused by military sites.
- l) Fact-finding mission in Poland to identify the towns where the Project Office could provide assistance: official requests from the local authorities are expected.
- m) Delivery of two presentations (drinking-water quality guidelines and the role of the

private sector in drinking-water supply and sanitation) at a national seminar on water management in the urban environment held in Tashkent, Uzbekistan, and organized by the United Nations Economic Commission for South East Asia and the Pacific.

- n) Participation in the preparation of an emergency action plan for cholera epidemics.
- o) Assistance in the control of a cholera epidemic in Albania.
- p) Participation in a seminar on urban water management organized by the Principality of Monaco for national officials from central and eastern Europe.

2.2.2 Waste management

- a) Pre-investment study on hospital waste in Moscow submitted to the World Bank.
- b) Preparation of pre-investment studies on hospital waste management in the Kielce region (Poland).
- c) Expertise provided in response to an urgent request from the Turkish Government following the collapse of the Umraiynye waste dump (approximately 30 fatalities).
- d) Extensive involvement in a World Bank technical group on waste treatment in Turkey: coleadership of a waste management workshop, drawing up terms of reference for the present waste management sectoral study and identification of subsequent field projects for future implementation.
- e) Preparation of guidelines on healthcare waste management in Europe at the request of the European Commission and participation in its priority waste stream working group on healthcare wastes.
- f) International workshop on mine wastes and the preparation of a mine waste manual at the request of the United Nations Environment Programme (UNEP).
- g) Preparation of an international symposium in Luxembourg on military site decommissioning (autumn 1994), in conjunction with the Government of Luxembourg and NATO.
- h) Preparation of a national strategy for healthcare waste treatment in Poland.
- i) Preparation of draft guidelines on healthcare waste treatment in Hungary.
- j) Preparation of waste management training guidelines for managers in Estonia, Latvia and Lithuania.
- k) Preparation of a manual on hospital waste management in low-and middle-income countries in collaboration with WHO Headquarters in Geneva and the International Solid Waste Association in Copenhagen.
- l) Preparation and implementation of four projects in Romania: study on the acute

environmental health problems from waste management; national atlas of existing waste disposal facilities; urban area waste management assessments in Brasov and Timisoara; and waste management training activities.

- m) Presentation given on waste management in central and eastern Europe at an international conference on waste management problems in Greece and organized by the Association of Communities and Municipalities in Attica (Greece).

2.2.3 Special mission in Bosnia and Herzegovina and Croatia

Past experience has shown that, once hostilities cease, international and national funding has to be made available for the rehabilitation of the affected areas. This funding often has not been disbursed swiftly due to the lack of clearly defined technical projects.

The overall objective of this mission has been to prepare a portfolio of technical projects dealing with drinking-water supply, municipal sanitation, collection and treatment of solid waste, and restoration of medical buildings.

Such projects need to be defined in order to rehabilitate urban centres in Bosnia and Herzegovina and the UN-protected Areas in Croatia once hostilities have ceased. These projects are submitted to potential funding agencies, which, depending on their field of interest, commit themselves to funding projects identified by the public health engineer who is presently visiting towns in these areas.

A total of 15 towns have been visited so far, and 55 projects have been identified in collaboration with local officials. Preliminary specifications have been prepared for each of these projects.

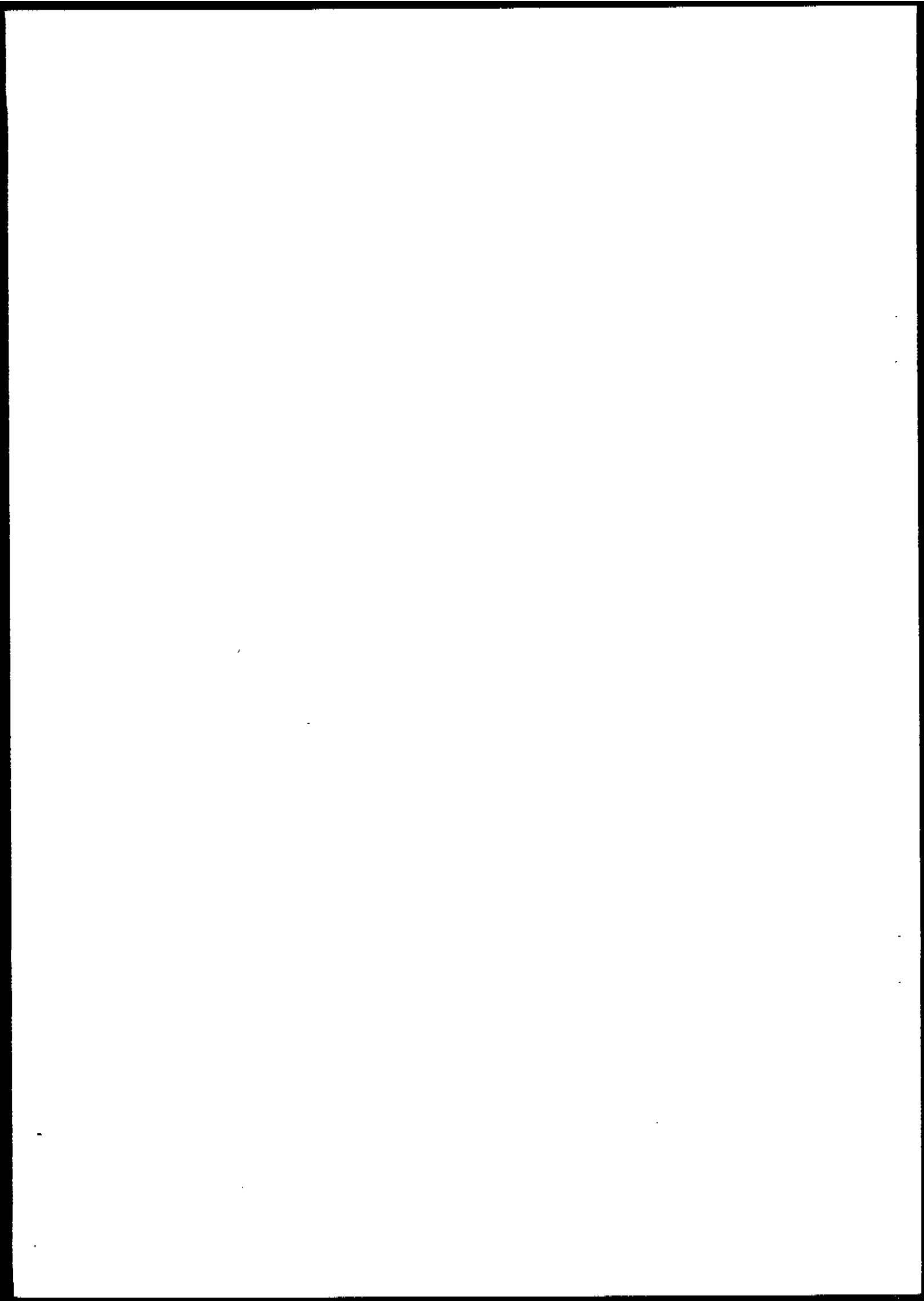
2.2.4 Other activities

- a) Represented WHO during a fact-finding mission to Kyrgyzstan at the request of the WHO Regional Office for Europe.
- b) Mission to study the organization of environmental health services in the Russian Federation at the request of the WHO Regional Office for Europe.
- c) Preparation of technical documents on waste management technology for the Second European Conference on Environment and Health, Helsinki, 20-22 June 1994.
- d) Contribution to the implementation of National Integrated Programme on Environment and Health in Romania in the waste and water sector in coordination with the World Bank and possibly the European Bank for Reconstruction and Development.
- e) Participation in working groups preparing the Second European Conference on Environment and Health (20-22 June 1994, Helsinki).
- f) Participation at the Second European Conference on Environment and Health.

- g) Participation at the General Assembly of the European Association for Human Ecology, Toulouse, France.
- h) Participation at the International Committee for the Organization of the European Nature Conservation Year, 1995 organized by the Council of Europe.
- i) Participation at the sessions of the Parliamentary Assembly of the Council of Europe dealing with environment and health.
- j) Participation at events held by the French National School of Public Health on international cooperation in the field of environment and health.

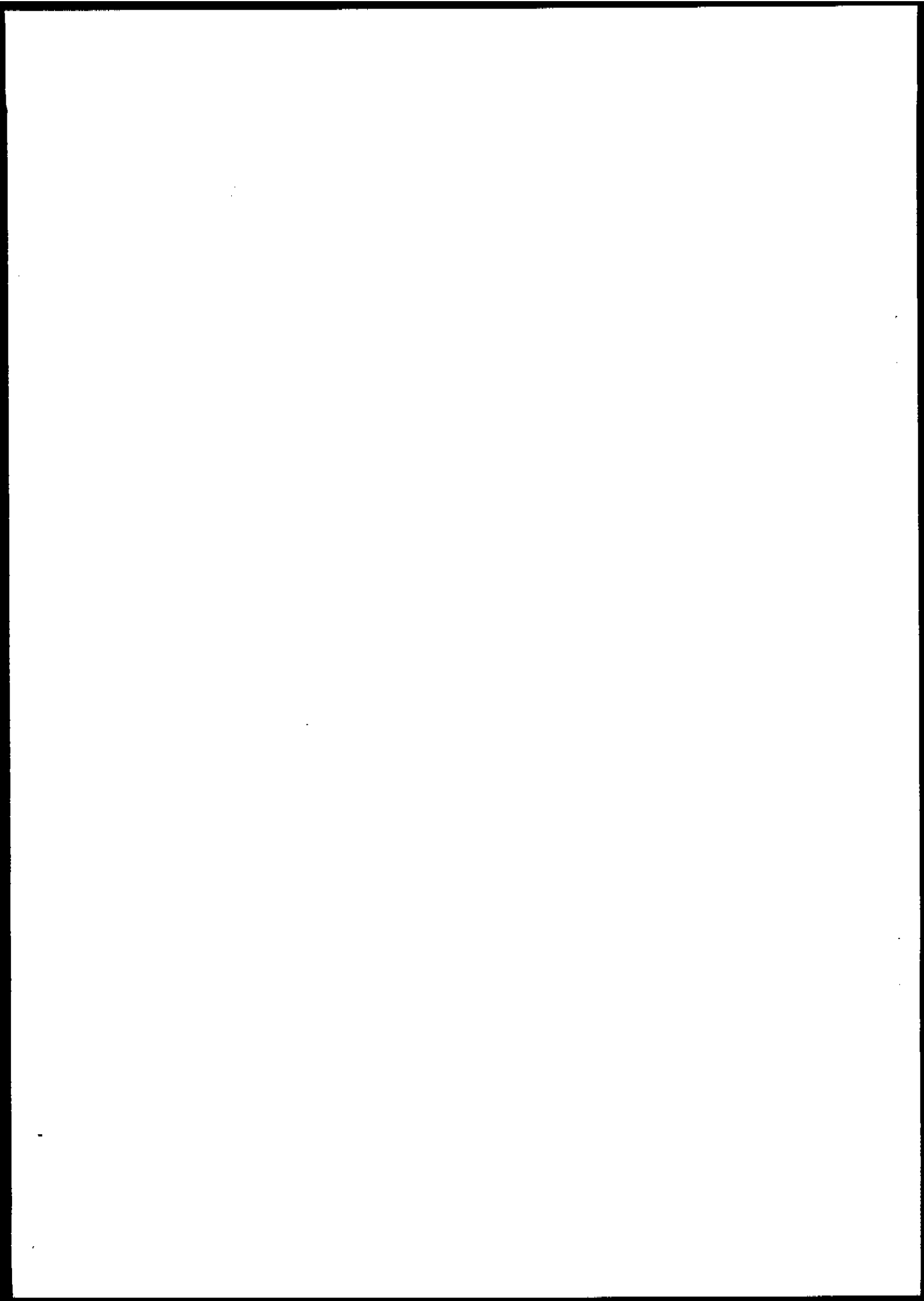
2.3 Conclusions

Despite a limited operational period, the activities presented above convey the considerable commitment of the Project Office to support and cooperate with the countries of central and eastern Europe and with Bosnia and Herzegovina and Croatia through its public health engineering work. Nevertheless, it is important to identify the multilateral or bilateral institutions and other organizations that are ready to commit funds to complete and act upon the feasibility and pre-investment studies. The example of the town of Constanta, Romania (see section 3.2.1), shows how issues identified at the local level can be resolved by the implementation of projects submitted to funding agencies by the national authorities. The working relationship between these institutions and countries is of mutual interest to the Project Office and the funding agencies, and they should be reinforced.



Chapter 3

The water and sanitation programme



Chapter 3. The water and sanitation programme

The elements presented in the previous chapters give the following overview of the objectives and activities of this programme:

Objective:

After having assessed the current situation, technological projects should be prepared that aim to improve public health standards by providing assistance in water technology and management.

The areas covered:

- management and protection of water resources
- drinking-water supply: quantity, quality and service continuity
- collection and treatment of municipal and/or industrial wastewater
- protection and improvement of the quality of water bodies

Use of appropriate techniques according to:

- equipment size
- scientific and systematic analysis of current situations
- urgency of situation

Implementation by:

- implementation study, structural and organizational improvement of the sectoral institutions
- training and proficiency of sector personnel
- efficiency of the technical installations and quality control of product (conforming to the existing specifications or according to the recognized criteria which could be retained in future specifications)
- information on public behaviour and waterborne diseases.

3.1 Activities in progress

The activities developed so far serve to demonstrate the Project Office's skills. The activities conducted can be grouped into four complementary categories (Sections 3.1.2-3.1.5) and, in addition, include actions corresponding to requests from the WHO Regional Office for Europe.

3.1.1 Scope and purpose

Information is aimed at local authorities and utilities in central and eastern Europe. Information is communicated in a variety of ways:

- Conferences and publications
 - Drinking-water quality guidelines (Nancy, November 1993)
 - Water issues in central and eastern Europe (Warsaw, May 1993; Budapest, August 1994)
 - Water: a health resource (Sophia-Antipolis, February 1994)
 - Water management (Tashkent, April 1994)
- Studies in targeted countries
 - The water and sanitation situation in the district of Khanty Manssyjsk (Siberia)
 - Study of environmental health services in the Russian Federation
 - The water and sanitation situation in the towns of Cracow, Katowice, Ostrowiec, Poznan, Warsaw, Suwalki and Szczecin (Poland)
 - Evaluation of water and sanitation problems in Bucharest, Constanta and Iash (Romania).

3.1.2 Emergency situations: immediate response and/or action

A Member State can be faced with specific issues that require emergency action. Requests for assistance may be directly concerned with the Project Office's objectives (water and cholera, for example) or may require a contribution from the Project Office. All such types of activity enable the Project Office to demonstrate its skills to national or local partners. Some examples are given below:

- Participation in a preparatory mission for the Bosnia and Herzegovina project (water distribution and sanitation field).
- Assistance and advice on public health issues that could result from the collapse of a hazardous waste dam (Mojakovak, Montenegro).
- Advice on water quality and treatment (Estonia, Greece, Lithuania, Portugal, Slovenia and Turkey).
- Preparation of a general contingency plan in the event of a cholera outbreak, and implementation of the plan during a recent epidemic in Albania.

3.1.3 Evaluation of current situations

This category of activities corresponds directly to the Project Office's long-term objectives and should result in the preparation of feasibility studies and pre-investment studies. Their implementation depends on the identification and availability of ad hoc funding as they cannot be funded by the Project Office's regular financial resources. Some examples are given below:

- Quality of production and supply of water in Moscow: an agreement between the cities of Paris and Moscow for the reorganization of the water supply in Moscow.
- Study on the water supply quality in Ufa (Russian Federation) with regard to controlling industrial pollution.

- Identification of technical projects on water supply and sanitation in the town of Constanta (Romania).

3.1.4 Country and intercountry projects

This category groups projects that correspond directly or indirectly to the Project Office's objectives (training of specialists in the water and the health sector) or that will be adopted by potential collaborative partners. In particular, the following can be mentioned:

- Collaborative study with UNDP within the framework of its "Green Partnership" programme in Poland.
- Preparation of an ad hoc training programme for seven Latvian public health engineers at the National School of Public Health in Rennes, France.
- Feasibility study on creating training centres to improve local expertise in water system and water management (supply and sanitation) assessment in the Russian Federation.
- Municipal water and sanitation systems: dialogue between national and local officials from central and eastern Europe for the improvement of public services.
- Preparation of a programme on public participation in central and eastern Europe for the improvement of water supply (in cooperation with UNDP and the International Secretariat for Water).

3.1.5 Activities requested by the WHO Regional Office for Europe

- Participation in a WHO fact-finding and collaborative mission in Kyrgyzstan.
- Survey on the organization of environmental health services in the Russian Federation (preparation of the Second European Conference on Environment and Health, Helsinki, June 1994).

3.2 Selected projects

This section gives a detailed description of representative projects. It presents a broad outline of the types of project implemented and corresponding work. A project to evaluate current situations (drinking-water and sanitation in Constanta, Romania), a country project resulting from emergency action (master plan for water in Albania) and an intercountry project (municipal water and sanitation systems) are described.

3.2.1. Feasibility study on the rehabilitation and development of drinking-water supply and sanitation systems in Constanta, Romania

General objective:

In collaboration with the Romanian authorities, a feasibility study will be undertaken in Constanta with the aim of improving water management in a pilot region.

Following examination of the drinking-water supply system and the sanitation system, the general objective is to define, together with the local authorities, the priorities for improving local water and sanitation facilities, taking into consideration staff training, social and informative factors, and the technical, institutional and regulative aspects of the capital investment and operational costs necessary to provide the public with a sufficient and continuous supply of drinking-water and to protect water resources according to their intended use.

Background:

The region and town of Constanta intend to implement this pilot study on the basis of the following findings:

- Constanta is faced with issues similar to those in other Romanian regions and in other countries
- the local authorities wish to improve the current situation
- the geographical location of Constanta promotes rapid development in the region (links to the Rhine and Danube rivers, the Black Sea coast)
- the local economic activities could lead to a possible conflict in water use (large industrial zones, expanding tourist resort).

The present situation: 1. Drinking-water supply

There are two sources. The principal source consists of deep underground water aquifers in high-quality physicochemical karstic areas. Only chlorination treatment is provided for this water supply. The second originates from the Danube waterway and Black Sea. Its quality is not guaranteed. The water is treated by the standard procedure of neutralization, coagulation, clarification, filtration and chlorination.

Following treatment, water from the two sources are mixed and supplied through a mainly steel distribution network. The reservoirs allow for slight adjustments in the supply (a daily average rate of less than four hours).

Between 30 to 40% of the production corresponds to industrial needs, while some industrial complexes have independent supplies.

Leaks and losses correspond to 60% of the abstracted volume. This can be explained by the fact that there are only a limited number of water meters and by fixed payment invoicing. Hence citizens have little incentive to economize on water use. Consumption reportedly reaches 1000 litres per inhabitant per day in some of the tourist areas.

The quantity produced is not always sufficient to serve consumers residing in the higher suburbs of the municipality.

The present situation: 2. Sewerage system

The municipality has several sewerage systems:

- A primary treatment plant (700 l/s): separator system
- A biological treatment plant (3200 l/s): unitary system (development project of 1600 l/s)
- A biological treatment plant (250 l/s): unitary system (development underway of 150 l/s)
- A biological treatment plant (800l/s): unitary system (development underway of 250 l/s).

The sewage plants are equipped with sludge digestors. The municipality also has lower capacity plants.

Wastewater is disposed of in the harbour area. A plant in North Constanta supplies an irrigation system during the summer period.

The specific objectives:

1. Define a strategy for the rehabilitation of the water supply system that:

- sets up an equilibrium between abstracted volumes and the volumes distributed through a reduction in the losses through network leaks, before increasing production
- improves the reliability and security of overall production (reticulation, storage basins)
- improves the water quality supply.

2. Optimize the operation of the sanitation system by taking into account the:

- state of the sanitation networks and their possible rehabilitation
- health issues in connection with bathing and tourism activities
- re-use of wastewater for irrigation
- sludge conversion.

The study should enable the evaluation of the necessary implementation costs, the establishment of a clear list of the priority actions and the organization of a more efficient operation of the water utility service.

Study contents:

By studying the condition of Constanta's principal water systems, future problems can be anticipated, such as:

- numerous network leaks
- lack of water at peak hours
- insufficient pressure in some areas
- absence of efficient meters and management data
- water quality not guaranteed
- level of generated costs (which seem excessive)
- realisation of present master plan

- identification of and response to present and future needs.

The following actions are suggested:

1. In the drinking-water network: A diagnostic study that accurately highlights the principal deficiencies and their relative importance in order to find economically acceptable solutions.
2. For the municipal waterworks: Preliminary specifications for the modernization of existing waterworks in order to increase their efficiency and reliability.
3. The sewerage system: An analysis of the pollution flux in order to assess the quality of the effluents and the possible introduction of additional treatment.
4. For the sewerage plants: Preliminary specifications for development to follow current work being undertaken to improve overall efficiency.
5. For the quality of coastal waters: Examine the existing data and develop a sustained programme.

The total cost of the study is estimated to be US\$1 075 000.

Extensive dialogue is necessary to prepare such a project. The objectives of the project must be defined and funding identified, together with national authorities and bilateral or multilateral cooperation and funding organizations, such as: Romanian authorities on a national and local level; Ministry of Water, Forestry and Environmental Protection; World Bank, Washington; European Bank for Reconstruction and Development, London; United Nations Development Programme, Bucharest; WHO headquarters, Geneva, and Regional Office for Europe, Copenhagen; French Embassy, Bucharest; Ministry of Foreign Affairs, Paris; and the Ministry of Economy.

3.2.2 Master plan for evaluation and improvement of water quality in Albania

Background:

Waterborne diseases (hepatitis A, diarrhoeal diseases) are a major issue due to the microbiological contamination of drinking-water that can result from treatment techniques and/or water supply system deficiencies. The recent cholera epidemic in Albania has made the national authorities aware of this major issue due, in particular, to the deficiency of the Albanian water supply system.

General objectives:

1. To develop improved systems adapted to:
 - production and supply of drinking-water
 - collection and treatment of waste water.
2. To protect water resources.

3. To examine the national legislation on water quality and waste water disposal and make amendments that adapt foreign standards to Albanian conditions.
4. Following an accurate assessment of the current situation, to list, in degree of importance, the needs and plans for improvements to be undertaken:
 - for the treatment and supply of water
 - for sanitation.

The project objectives:

The overall project is split into three complementary subprojects:

Subproject 1. Water quality assessment - Specific objectives:

1. To carry out, at national level, a comprehensive evaluation of serious environment and health issues resulting from water quality (drinking-water, water for bathing and irrigation purposes) based on current health indicators and national statistics.
2. To establish the potential and recognized causes of identified problems and evaluate their probable impacts.
3. To put forward options, policies and techniques capable of reducing the environmental health risks posed by water consumption.

Subproject 2: Rehabilitation and development of water supply and sanitation systems - Specific objectives:

1. To estimate the cost of rehabilitating and developing the water supply system (in sufficient quantity and of satisfactory quality), sanitation and treatment. (As the town of Tirana is dealt with in other projects, it is not included in this estimation).
2. To propose a project to develop water systems with the aim of covering 95% of the population during a period of 15 years.

Subproject 3. Management of water services - Specific objectives:

1. Supply the public with water of sufficient quality and in sufficient quantity on a continuous basis (technical, financial, policy and social aspects).
2. Provide the actors with information on the operation, maintenance and management of water services.

The project contents:

The following actions are proposed:

1. In subproject 1:

- data analysis on health risks caused by varying forms of water use and an evaluation of health risks caused by substandard practices
- cartography of the principal contaminated areas and pollution sources.

2. In subproject 2:

- a cost analysis of five representative areas
- a country-wide extrapolation
- the implementation of a programme for a 15-year period and a priority action plan.

3. In subproject 3:

- a workshop (two weeks, eight people, field visits)
- training (four months, two people).

These two types of training would focus on legislation, water service management and feasibility studies.

The cost of the study is estimated to be US\$ 210 000 (not taking into account the Albanian contribution).

Considerable consultation for the preparation of the project has taken place with, for example the Albanian authorities; the United Nations Development Programme, New York and Tirana; World Bank, Washington; European Union, Brussels; the Ministry of Equipment, Paris, Ministry of Environment, Paris; and the Ministry of Health, Paris.

3.2.3 Municipal water and sanitation systems (intercountry project)

Municipal water management:

During the past year contacts with several European Member States has underlined differing water management trends in eastern and western Europe. Many local authorities will need considerable investment and efficient management, as well as the necessary expertise, to improve their present situation.

The objectives:

1. To develop a communal forum in order to identify water and sanitation issues.
2. To develop a dialogue between the local and national representatives in central and eastern Europe to seek ways of improving public water and sanitation services.
3. To prepare a methodological guide based on the experience of various partners and illustrated by case studies.

4. To build up a network of reference towns, comprised of towns and countries likely to fulfil all, or some, of the proposed criteria.

Project implementation:

Approximately 20 countries will participate (15 from the east and 5 from the west), and a core group will be responsible for developing the project and editing the methodological guide. Each country will be represented by three water officials (one on a national level and two from pilot towns).

International organizations such as the European Union, European Bank for Reconstruction and Development, World Bank, UNDP and UNEP are also expected to be involved.

The programme will cover a 5-year period. Two to three meetings will be held annually.

The total cost (over a period of 5 years) is estimated to be US\$1 100 000.

Proposed study areas

Field	Local level action	National level action
Development of facilities <ul style="list-style-type: none"> • water supply not standardized • untreated wastewater pollution of receiving waters and limitation in water use • Insufficient servicing rates (drinking-water and sanitation) • lack of warning system in case of accident in resources at risk 	Inventory of problems, resources used, resources available, protection, treatment and warning systems Master plan to develop water supply and drainage.	Defining operational quality standards. Laws and decrees on protection parameters and on sanitation objectives. Starting a phased plan for nation-wide access to services
Renewal of facilities numerous leaks, discontinuous service, pollution	Promotion of maintenance and diagnostic methods. Analysis of investment duration problems	Training skills Manufacturing quality
Service management Develop the responsibility of management and consumer services	Take into account the economic value of water. Develop varying types of service management.	Implementation of the various management methods Define procedure and control methods. Financial incentives.

Contacts have been made with the following organizations to identify funding for the implementation of this project: German Embassy, Paris; Ministry of Equipment, Paris; and WHO headquarters, Geneva, and Regional Office for Europe, Copenhagen.

Action will begin on these objectives with a seminar on municipal water and sanitation systems to be organized by the Project Office in collaboration with the WHO Collaborating Centre, NANCIE, in Nancy, 7-10 December 1994.

3.3 Conclusions

More than an estimated 100 million people in the WHO European Region lack access to reliable supplies of safe drinking-water. An even greater number are not provided with sanitation services. Furthermore, waterborne diseases are a major problem in the eastern part of the Region where microbiological contamination of the water supply results from insufficient maintenance of waterworks and/or supply systems. Moreover, the flow of wastewater from domestic sources and industrial effluents, without satisfactory prior treatment, contaminates the surface water often used for water supply production.

Thus, water systems, at least in this part of the Region, should be looked at from two complementary points of view: on the one hand, the quantity; and on the other, the quality of water supply. The quantity is a necessity for both the Region's rural and urban areas. The quality, which cannot be dealt with until a sufficient quantity is guaranteed, is a fundamental factor in public health.

The supply and treatment systems are essential. Suitable facilities and technology are also necessary, as are the guarantees of service quality and of regular maintenance.

The objectives of the water and sanitation programme are summarized in the above paragraphs. Technological projects have been identified. However, the implementation of their corresponding activities relies on identification of funding and funding agencies are being contacted for this purpose.

The funding of several local demonstration projects are sought in the medium term.

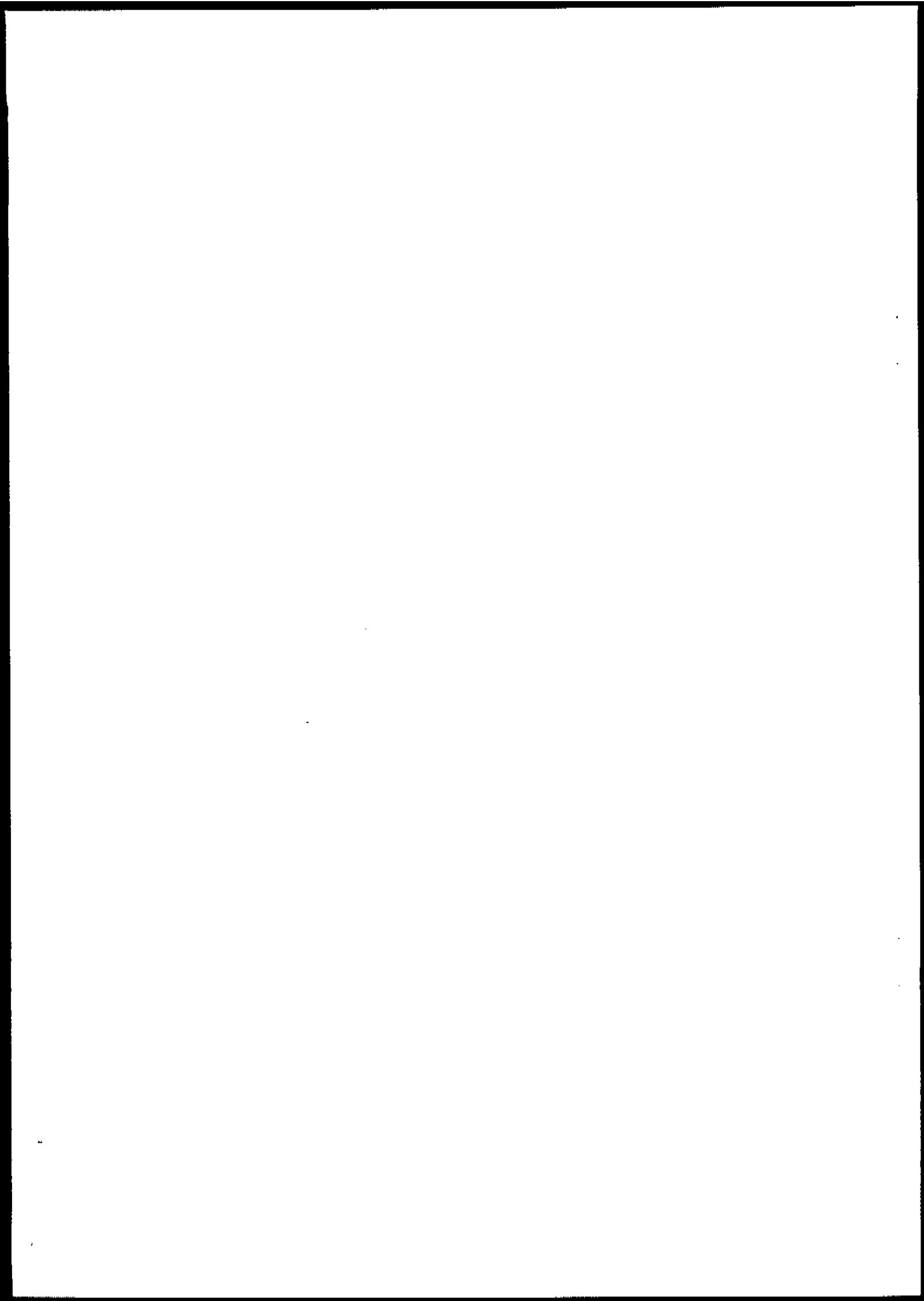
To contribute to the awareness of national and local officials in central and eastern Europe and to demonstrate the relevance of the programme's general objectives, activities are being developed that demonstrate the importance of water in public health and the technological operations to be implemented. These demonstrate the Project Office's skills in emergency response and evaluation of existing situations.

While continuing to identify funding for large and costly projects, other activities can be undertaken, such as:

- technical assistance to local officials in analysing proposals and projects that have been submitted to them and on which they must take a decision
- feasibility and pre-investment studies on behalf of rural and semi-urban communities that do not involve the large-scale budgets necessary for larger towns.

Chapter 4

The solid waste management and soil pollution programme



Chapter 4: The solid waste management and soil pollution programme

4.1 Introduction

The elements presented in the previous chapters give the following overview of the objectives and activities of this programme:

Objective:

To seek tangible improvements in the quality of life, environmental protection and public health by the improvement of waste management and soil pollution control.

Solid waste management and soil pollution control:

- management and control of the collection, treatment and disposal of solid waste
- inspection, surveillance and rehabilitation of soil pollution
- identification and control of disease transmission from biological and toxic waste sources and the provision of information to the public
- options to minimize and re-utilize waste safely.

Application of appropriate techniques for the:

- evaluation of existing systems for solid waste (operation, management, etc.)
- evaluation of contaminated sites and analysis of techniques implemented
- response to emergency situations.

Implemented by:

- feasibility studies involving financial and technical evaluation
- project supervision and its implementation in the field
- specialized training programmes
- workshops for information and technology transfer
- finalizing information and advisory documents in collaboration with local organizations
- institutional support and appointment of technical advisors
- publications and reports.

The public is concerned about the impact of wastes and their disposal on environment and health. There is little proof that waste has directly caused disease in residents living in proximity of waste storage sites. However, the public perception that wastes are unhealthy is very strong. Historically, uncollected wastes led to serious public health problems in pre- and Industrial Revolution towns. Various forms of pollution (especially odour, landfill gas, leachate contamination and noise) up to this day still pose considerable problems in some places and reduce the wellbeing of affected inhabitants.

During the past 15 years, technological progress has been made in the areas of collection, treatment and disposal of wastes. In particular, public exposure or environmental health

impacts could be reduced considerably by regulated waste management and an adequate standard of operation of incinerators and other treatment and disposal facilities.

However, many potential environment and health risks are due to the inadequate practices of past decades that have caused numerous problems throughout the whole of the European Region. These vary from microbiological risks associated with accumulation of, or unsafe storage of, household wastes to toxic risks resulting in uncontrolled disposal of hazardous waste and contaminated industrial areas.

Furthermore, there are evident problems of a lack of resources and deteriorating waste management standards in some countries of central and eastern Europe as well as the newly independent states of the former Soviet Union.

Leaks from rubbish dumps have contaminated soil and ground water. In some cases, the long-term presence of certain polluting agents in groundwater entails inevitable potential public health risks for many years to come.

Studies undertaken on refuse disposal workers show they face occupational health risks through exposure to pathogens in wastes and unsafe physical conditions on disposal sites.

For decades European countries have buried their waste without taking precautions. At the end of the 1970s, management of problem sites gave rise to a number of concerns due to:

- soil and groundwater contamination (for example, by heavy metals, arsenic, pesticides, halogenated organic compounds and solvents)
- potential risk to the health of those exposed.

In many cases, groundwater pollution has interrupted water supply or has prevented its use in developing of drinking-water abstraction projects.

Precise data on conditions in central and eastern Europe do not exist, but considerable and widespread problems are reported. Pollution is also caused by industrial chemicals, hazardous chemical deposits and their breakdown products, resulting from past military activities. This is a little-understood area of work which is increasing in importance as bases are closed down.

In general, western Europe has few waste-related health risks. However, in central and eastern Europe and the newly independent states, waste has become a public health risk due to erratic waste collection, unsuitable treatment facilities and dubious disposal practices.

The principal problems observed are:

- irregular collection
- contamination of groundwater and soil due to leakages and chemical migration
- little control of incinerator emissions
- insidious and long-term effects of soil pollution
- establishment of unachievable emissions standards, paralysing many improvement initiatives.

In addition, ineffective municipal service management plays a significant role. The resources allocated to waste management vary greatly from country to country in the Region. Hence, there is cause for concern in several parts of central and eastern Europe and the newly independent states. The technical evolution in the waste management field over the past 15 years has nevertheless provided the means of reducing public exposure and possible health effects.

Target 23 of the Health for all strategy, the foundation for which was laid at the World Health Assembly in 1977, takes into account the risk posed to public health by waste and soil pollution. The work undertaken in central and eastern Europe and the newly independent states falls under this target. Target 23 on waste management and soil pollution specifies that:

“By the year 2000, public health risks caused by solid and hazardous wastes and soil pollution should be effectively controlled in all Member States. This target can be achieved if all Member States:

- introduce effective legislative, administrative and technical measures for the management of municipal and hazardous solid wastes
- introduce effective measures for soil conservation and the rehabilitation of contaminated soil
- adopt effective measures to eliminate the health risks due to accumulation of waste and soil pollution.”[1]

4.2 Activities in progress

Public health priorities in central and eastern Europe as well as in the newly independent states can be divided into three areas of solid waste management and two areas of soil pollution control. Solid waste management covers municipal (household) wastes, healthcare (also known as medical, clinical or hospital) wastes and industrial (hazardous) wastes. Soil pollution control covers industrial and institutional sources of contamination.

It is in these subject areas that the Project Office seeks to bring about tangible improvements in the quality of life, public health and environmental protection.

Solid waste management and soil pollution activities can be summarized in four broad categories:

1. *Waste management project activities*: Feasibility studies, supervising or implementing field projects, training programmes, technology transfer, practical guideline preparation by waste type, institutional support through technical advisors, publications and symposia.
2. *Soil pollution control activities*: Similar actions to item 1 above are undertaken but are focused on individual types of pollution where there is a known public health risk.
3. *Emergency assistance*: On the spot emergency assistance. Work at the Umraiyné landfill in Turkey and public health engineering in Bosnia and Herzegovina are two examples of this “quick response” role.

4. *Advice*: Regular and diverse enquiries from municipalities and government departments, researchers, WHO liaison officers, WHO field personnel and academic training organizations. Examples include:

- toxic waste problems in Croatia and Bosnia and Herzegovina
- potential public health impacts from waste incineration in France
- strategic waste planning and development of a recycling testing facility in France
- healthcare waste advice to Israel and countries in the SEARO (South East Asia) and EMRO (Eastern Mediterranean) regions
- revision of a questionnaire on wastes designed for Pacific Basin countries.

4.3 Selected projects

This section gives a detailed description of three representative projects: two related to waste management and one to soil pollution. It presents a broad outline of the types of project implemented and the corresponding work: a project related to improving healthcare waste treatment and collection in Poland; a project on the preparation of national guidelines for healthcare waste treatment in Hungary; and an intercountry project, relevant to both western and eastern Europe, dealing with public health concerns resulting from soil pollution at military sites and the safe rehabilitation of these places for civilian uses.

4.3.1 *Feasibility study on the regionalization of healthcare waste collection and treatment in Poland*

Background:

The existing healthcare waste treatment system in Poland is based on small hospital incinerators and similar facilities. In contrast, the national authorities feel (but have not yet proved) that the concentration of treatment of healthcare wastes at regional facilities intuitively offers numerous advantages in terms of organization and security of disposal, technical and environmental protection, and capital and operating costs budgetting.

Such facilities would have a wider catchment area and could receive sufficient quantities of waste needed to maintain them, continuously, at their optimum operating conditions. Compared to the existing system (incinerator in each hospital, where there is a high number of low capacity facilities and short periods of use), regionalized treatment should bring about a more productive, cost-effective use of treatment facilities and reduced air pollution.

General objective of feasibility study:

The project, devised jointly by the Polish authorities and the Project Office, examines the potential advantages of a regional approach to healthcare waste collection and treatment. The final study will include, for both regionalized and localized healthcare waste collection and treatment in Poland, an assessment of the technical, security, transport, environment and cost issues.

Study content:

The work to be undertaken comprises three tasks: data collection, data assessment and interpretation, and regional strategy and case studies.

Data collection includes the following approaches:

- questionnaires
- data available from the Ministry of Health and Social Welfare and from the Ministry of Environmental Protection, Natural Resources and Forestry
- field surveys
- audits
- directories
- international bibliographies
- studies undertaken by the World Bank, the PHARE programme, other agencies.

Assessment and analysis of data covers:

- assessment of the reliability of data and identification of missing data
- cartography
- assessment of the volume of future healthcare waste generated
- proposed location of regionalized treatment sites
- cost assessment
- comparison of local and regional treatment.

Regional-level strategy and case studies includes:

- analysis of present management of healthcare waste on the local level
- regional strategy: organization, techniques, security, environment, costs and a first case study: possibly the Voivodship of Katowice.

Expected products:

The following documents will be produced: data used, data interpretation, maps, local and regional approaches, and interim report defining a proposed regional strategy.

Development of activities:

Since the commencement of the project in June 1994, a comprehensive collection of reliable and useful data has been produced. Future activities will involve:

- setting up of a database
- preparation of cartography, including the types and quantities of healthcare waste produced
- comparison of the cost of local and regional treatment, including transport
- identification of possible sites, including collection areas, depending on the size of the hospitals and the types and quantity of waste produced
- assessment of future waste quantity
- assessment of investment and operational costs.

Project team:

The project team is comprised of:

- five Polish professionals full-time
- six Polish professionals half-time, complemented by an engineer from the Project Office and two Irish hospital engineers as a contribution in kind from the Department of Health in Dublin (Ireland).

The work should be completed by the end of 1994.

4.3.2 Preparation of national guidelines on healthcare waste collection and treatment in Hungary

Background:

The Ministry of Environment and Regional Policy and the Ministry of Health have both requested the Project Office to assist them with guidance on management of healthcare waste produced by hospitals.

In Hungary, healthcare waste must conform to the new environmental legislation that has been implemented. The law imposes direct responsibility on waste producers and stipulates that medical waste should be collected by the hospital that produced it. The hospitals are badly equipped to handle their wastes at a higher standard and do not have trained personnel. Immediate practical assistance is necessary for 160 Hungarian hospitals.

Project implementation:

The Project Office offered to prepare and support a working group conducted by the Hungarian authorities in order to prepare realistic guidelines, taking into account resources and skills available in Hungary. The Assistant Director of the National Institute of Hygiene was designated to lead the working group, which assembled 15 experienced professionals representing all the sectors concerned with hospital waste (hospital managers, waste treatment firms, doctors, engineers responsible for waste management on a local level, environmental regulators, public health specialists and technical personnel from central government).

The Department for Hospital Management in the French Ministry of Health and Social Affairs and the London Waste Regulation Authority, United Kingdom, each offered a hospital waste specialist as "in-kind" assistance to the Project Office.

The Hungarian working group, the two technical advisors and a Project Office engineer met unofficially in Esztergom to prepare a first draft of the guidelines based on clear terms of reference. They had extensive discussions and prepared a first draft that was submitted for successive review by the project team, the project team and the ministerial departments concerned, and finally by other hospital managers and hospital waste management specialists. The review procedure will be completed at the end of 1994.

In parallel, the Hungarian Government has nominated an interministerial committee to seek the ways and means to implement the guidelines and to train medical personnel to apply them.

Study contents:

The principal role of the Project Office, and in particular of the two technical advisors, consisted of encouraging the Hungarian participants to produce their own first draft of the guidelines. The preparation of the first draft enabled the working group members to discuss the matter at length with their colleagues. It was agreed that the recommendations should be intended for:

1. hospital managers
2. medical personnel
3. auxiliary hospital personnel
4. waste management officials.

The guidelines mainly deal with:

1. healthcare waste classification
2. packaging, sorting and labelling of waste
3. waste storage in hospitals
4. transport documents and transportation of waste
5. treatment methods and possible disposal
6. occupational health
7. preparation of healthcare waste management plans at an institutional level.

4.3.3 Rehabilitation of military sites: International Symposium - Luxembourg, November 1994

Background:

During 1993-1994, some central and eastern European countries and newly independent states informed the Project Office of governmental concerns about environment and health risks posed by several former military sites. The Project Office, in collaboration with NATO and the WHO liaison officers in the countries concerned, examined the requests for assistance and studied the decontamination methods in military sites that take into account public health and environment issues.

General objectives:

- to give practical assistance to agencies currently involved in rehabilitating sites
- assist the process underway of bringing ex-military sites back into productive and beneficial use.

Specific objectives:

- take into account the public health issues and physical dangers involved in arms and munitions destruction
- take into account insidious environment and public health problems found in military sites, including contamination of ground water sources and drinking-water as well as agricultural land and crops polluted by chemicals.

Implementation:

The Government of Luxembourg and a specialized branch of NATO offered to cosponsor a symposium on military and environmental health issues with the WHO Project Office. This symposium took place in Luxembourg from 14 to 18 November 1994. The symposium addressed a large range of topics concerning the conversion of military sites to civilian uses and the protection of public health and environmental safety:

- munitions removal and destruction
- materials recovery and reuse
- investigation and clean up of chemically contaminated land
- case studies and market assessments within western and eastern Europe
- groundwater protection
- waste treatment and disposal
- health and safety issues.

The first half of the Symposium programme was organized by NATO, and the second half of the Symposium by WHO Project Office.

Participation:

Approximately 200 participants attended the symposium. A total of 63 papers, including six case studies from WHO-sponsored participants from central and eastern Europe, were presented. Among the many countries represented were Belgium, Canada, Denmark, France, Germany, Italy, Netherlands, United Kingdom and the USA. In addition, Albania, Bulgaria, Croatia, Hungary, Latvia, Lithuania, Romania, the Russian Federation and the Ukraine were invited by the Project Office and their representatives (10 persons) were requested to identify specific activities that, potentially, could be followed up by the Project Office.

The Prime Minister of the Grand Duchy of Luxembourg, the Assistant Secretary General of NATO and the Executive Director, Department of Environment and Health, WHO Headquarters made keynote addresses during the symposium.

4.4 Conclusions and prospects

During the past 18 months, most emphasis has been given to developing and executing projects in those countries whose economies are most likely to be able to sustain the increased costs and/or organizational changes arising from the eventual implementation of the projects. This has inevitably led to more activities being developed in central European countries: that is, Czech Republic, Hungary, Poland, Romania and Turkey. The Project Office has started a database on the projects, completed and in progress, in these countries. This is seen as essential to fulfil the objectives, and to establish the credibility and recognition of the Project Office.

During the next two years, special efforts will be made to develop an expanded range of activities in the newly independent states. Particular care will be taken to ensure that the Project Office confines itself to developing projects in places where the authorities are willing to improve waste management practices and their financial discipline, in order to ensure that improvements made are sustained in the future. To seek both the "will" and the "discipline"

in the same town certainly presents a challenge. Projects based on more sustainable medium-level technology and, as far as possible, on activities using local resources are two approaches that should be followed. The experience acquired during the projects presently underway in Romania will be especially valuable for these two objectives.

Based on the experience of the past 18 months, the Project Office plans to further develop the five sectors of work in waste management and soil pollution. Furthermore, there is a growing consensus on one further problem - that of waste management now affecting, both in medium- and high-income countries of the European Region. Increasing quantities of sewage sludge are being produced and disposed of through land spreading or in waste dumps. Therefore, an additional sector is planned to the five sectors already being dealt with. This would cover public health protection from the risks from sludge produced by wastewater treatment plants and sewerage plants.

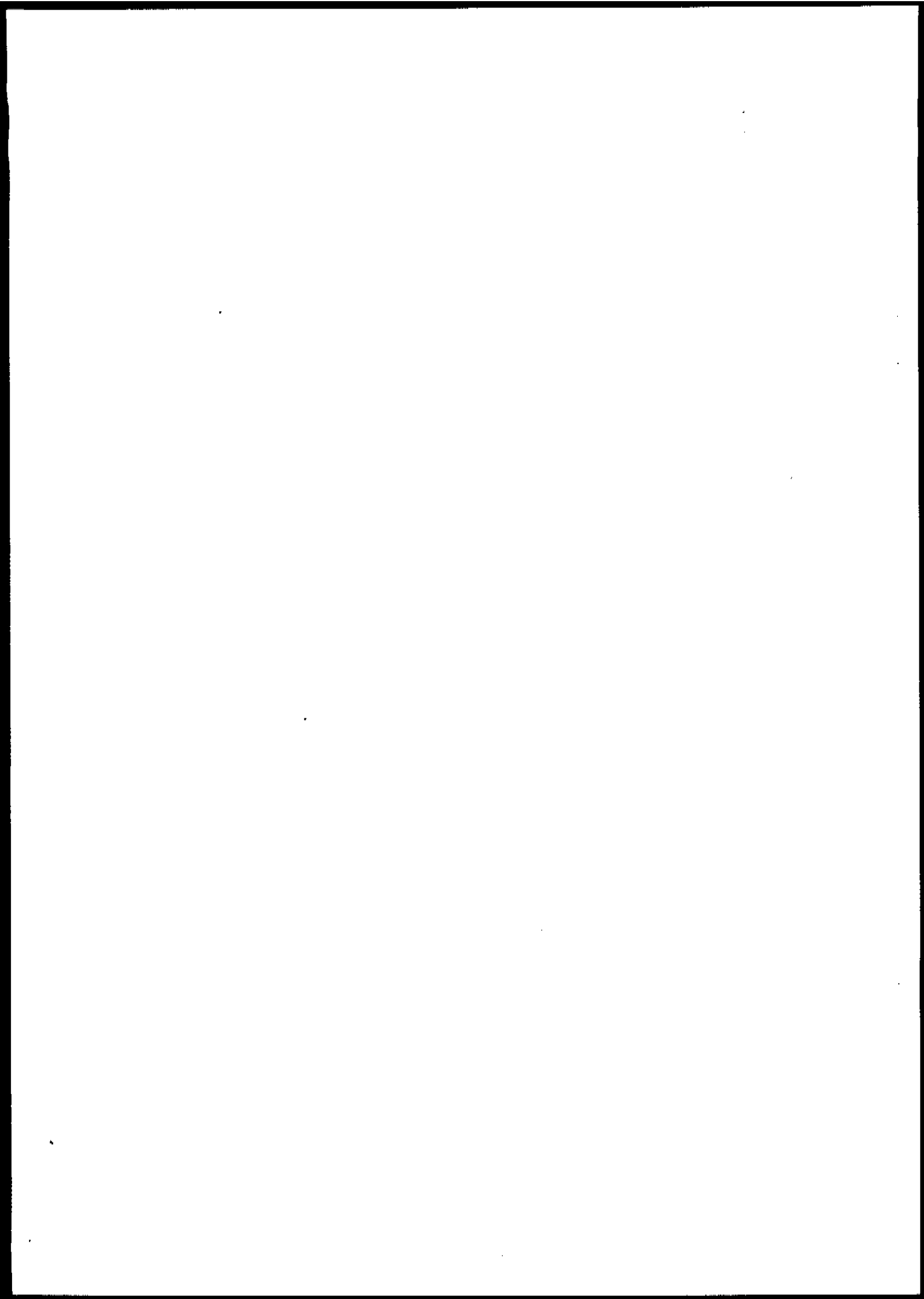
A standard approach has been developed for solid waste management and soil pollution projects within the Project Office to try to get the maximum "value for money" from the funds committed. The financing approach followed by the Project Office almost always involves complementary three-way funding:

1. "Seed money" from the Project Office's budget.
2. Contribution from the recipient country as a measure of its commitment. The contribution in cash equivalent (local currency) is expected to be equal or greater than the Project Office sum.
3. Third-party contribution, in cash or in kind, from a western donor country, lending agency, international organization, national body or local organization.

By following this strategy, it has been possible to execute a larger programme of waste-related projects than would have been possible by using solely Project Office funding.

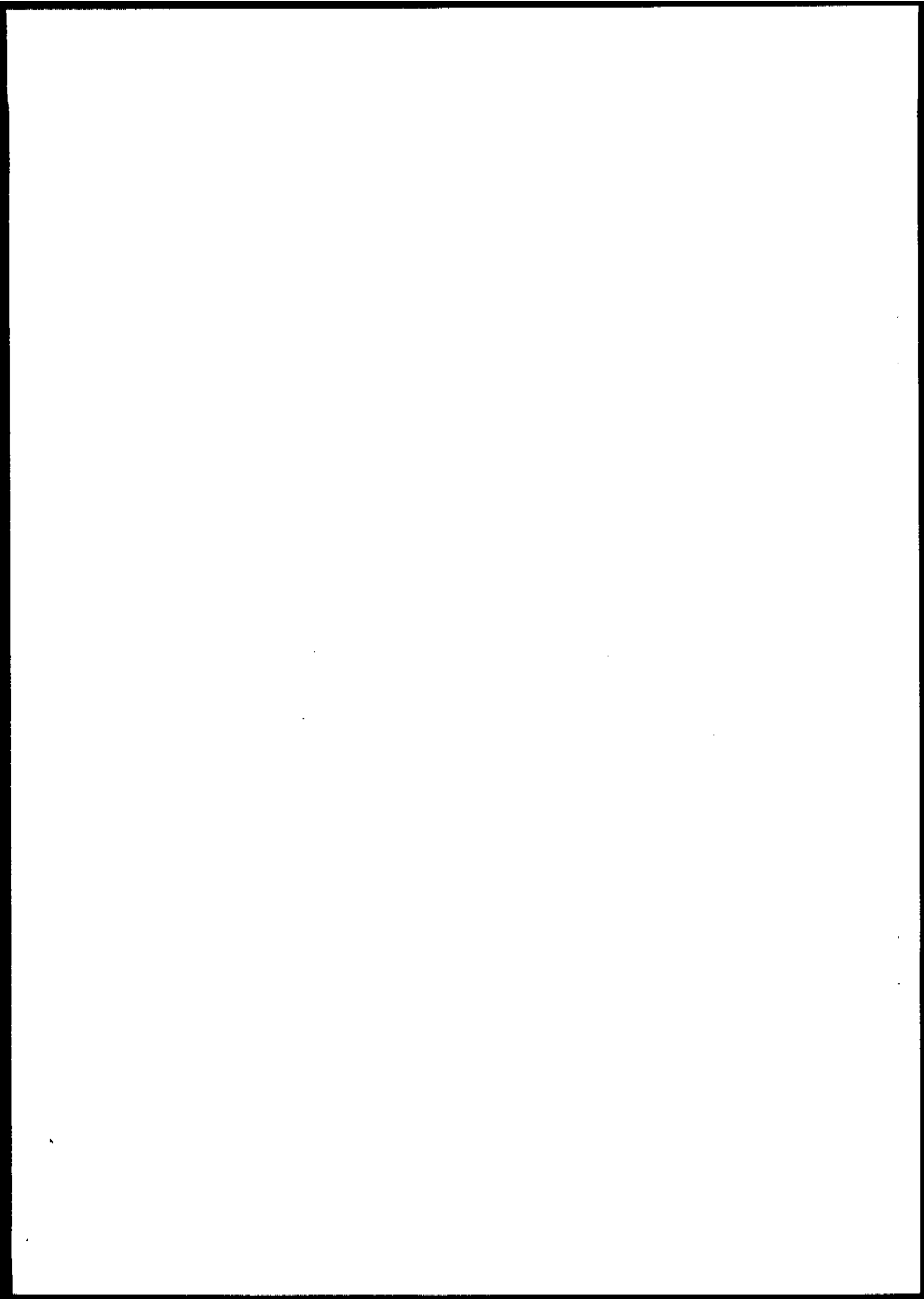
References

1. *Health for all targets - The health policy for Europe*. Updated edition, September 1991, Copenhagen, WHO Regional Office for Europe, 1992.



Chapter 5

Special project in Bosnia and Herzegovina and Croatia Rehabilitation of sanitary equipment and hospital infrastructure



Chapter 5. Special project in Bosnia and Herzegovina and Croatia: Rehabilitation of sanitary equipment and hospital infrastructure

The following overview gives details of the activities and objectives included in this special project, which were presented in Chapter 2. Funding is presently covered by voluntary donations from various donor countries.

5.1 Objectives

5.1.1 General objective

To prepare local infrastructure rehabilitation projects in the principal towns in Bosnia and Herzegovina and in the United Nations Protected Areas in Croatia in order to be able to restore as rapidly as possible an acceptable standard of life when hostilities cease.

5.1.2 Specific objectives

- Identify projects in collaboration with international organizations and nongovernmental organizations present in the field and to visit the towns concerned.
- In collaboration with local authorities and technical services, identify a maximum of five priority projects in each town visited in the following fields of public health engineering: water supply, sanitation and purification, waste management and hospital infrastructure.
- Prepare a detailed description of each project that includes its technical components, organizational requirements and the necessary resources for its implementation, a programme of work and a cost estimation.
- Identify the potential skills and resources available for project implementation.
- Prepare a report on each city that summarizes the project details, the corresponding calculations as well as all information of interest provided by the local organizations.

5.1.3 Project selection criteria

The following criteria were selected (in descending order of importance) for identifying projects:

- A clear "life or death" situation.
- The pre-war infrastructure. (Entirely new development is not being considered unless it offers obvious cost or time advantages.)
- A minimum level of public health is attained.
- Preventive action to avoid further public health deterioration.
- Extension of facilities to new residential areas.
- Improved management of facilities.

5.2 Activities in progress and initial conclusions

At the end of 1993 a fact-finding mission evaluated the feasibility of the project (security, travel possibilities in Bosnia and Herzegovina, administrative details, role of organizations already in the field, possibility for coordination, etc.) A first mission took place in March-April 1994 and commenced activities. A public health engineer from the French Department of Health to Sarajevo was subsequently appointed in May 1994 for a 6-month period.

In the 15 towns visited up to the middle of 1994, 55 projects were identified, with costs varying from US\$ 55 000 to US\$ 3.3 million. They mainly deal with water systems (water supply, 71%; sanitation, 49%; and purification, 22%), hospital buildings renovation (18%) and, finally, waste management (11%).

5.2.1 Water sector: Initial conclusions

Buildings have been seriously damaged and repair is not always feasible. Installations such as water works, treatment plants and water towers are the most vulnerable. In some cases, a total replacement of the operational technology would be more cost efficient due to either the state of their destruction or to dilapidation resulting from an absence of routine maintenance or inefficient operation.

Some other installations with satisfactory operational systems also need re-equipping as equipment has often been destroyed or stolen.

Electricity supplies should be restored in all plants.

Possible frontier changes will result in water resources being located in the opposing "camp": water supply to communities situated downstream will rely on the good will of the authorities and/or inhabitants who might be hostile and cut, or reduce, water availability. When hostilities have ceased, it will probably be necessary to identify some alternate water resources and implement other systems which could be connected to existing networks.

The buried networks (water supply, sanitation), however, do not seem to have been seriously damaged. Leaks occurring in the network are in all likelihood caused by long-term poor maintenance before the war. Nevertheless, the leaks should be traced and dealt with.

5.2.2 Waste management: Initial conclusions

Most, if not all, of the refuse collection vehicles in some towns have been destroyed or commandeered by opposing military forces. Almost all the waste management facilities do not correspond to European standards. The majority of dumps are not controlled, thereby posing a considerable potential health risk due to leaks into the water supply systems and air pollution resulting from continuous combustion. There are no municipal incinerators.

Numerous buildings have been destroyed and should be totally demolished. Removal of considerable amounts of debris is necessary; UNPROFOR could provide emergency assistance to clear communication routes and urban areas. Disposal areas in the proximity of urban areas should be provided for the dumping of "inactive" debris.

The removal of putrescible waste from inhabited areas should be undertaken as quickly as possible. For the time being, resumption of waste collection services are essential for the protection of public health. A fleet of refuse collection vehicles should be restored and existing dumps used as in the past. In the medium term it will be beneficial to close down uncontrolled dumps and to establish modern controlled landfills.

5.2.3 Hospital buildings: Initial conclusions

Many buildings have been damaged or destroyed. It is necessary to ascertain if these buildings are worth salvaging and whether they still correspond to public needs as a significant percentage of the population has migrated. Possible rehabilitation work would include weather-proofing of buildings, restoration of the principal services such as electricity, cold water, hot water, wastewater drainage, gas and heating.

5.2.4 Continuation of activities and evolution of identified projects

Other towns were, and will, be visited and corresponding projects defined. Once available, a comprehensive set of projects will be presented to potential funding agencies. The initial set of 55 available projects were circulated at the end of September 1994 (other projects are being prepared and will be available at the end of the year). Two projects have already been accepted. Norway and the USA have each indicated they will finance a selected project and have earmarked the corresponding funds.

5.3 Selected examples

5.3.1 Drinking-water supply project in Zenica

Current situation:

Zenica has a population of 150 000 inhabitants and is one of the most industrialized centres in the region (27 000 were employed in the steelworks alone). The maintenance of urban infrastructure, in particular the supply mains network, is substantially reduced due to hostilities (fuel shortages, supply difficulties and transfrontier transactions). It is reasonable to expect, however, that maintenance could quickly recover when war-time constraints are removed.

A supply of 320 litres/per habitant/per day is needed. Heavy restrictions exist at present mainly because of considerable leaks in the network.

Project objectives:

General objectives:

1. Reduce network losses, which are estimated to be more than 40%.
2. Maintain a standard level of filtration.

Specific objectives:

Rather than extending the water supply by using new resources, in agreement with the municipal authorities it has been considered more realistic to rehabilitate the existing infrastructure and to:

- detect and reduce the leaks from the supply mains and from the water distribution network
- implement a filter sand replacement for the Babina Rijeka water works
- replace the mechanical and electrical plant for the Babina Rijeka works.

A subproject outlining specific objectives has been prepared.

Subproject contents:

Subproject 1:

1. Identify the areas where major leaks occur: installation of flowmeters at the beginning and end of the main lengths of the supply mains and the main nodes of the distribution network.
2. Establish priorities, depending on the size of losses, practicability and cost of repairs.
3. Identify and renovate the most deteriorated sectors by defining limited geographical zones in each priority area.
4. Repair the supply mains, the distribution network and connections to buildings in parallel with the work foreseen in point 3.

The losses, presently at 40% or more, could be reduced to 25% for the equivalent cost of replacing 5% of the mains.

Subproject 2:

The sand filters in the Babina Rijeka works have suffered customary levels of abrasion and loss, but over an unusually long period. As a result, filter capacity is substantially reduced, with an average run of only 24 hours before backwashing. There is a serious risk of complete failure of the filtration in the near future and a need for the following actions:

- Rapid renewal of 80 m³ of sand to keep the filters in operation.
- To replace, as soon as possible, the total volume of filter sand. A quantity of 240 m³ is required, plus an allowance for the first year of operation. An overall total of, say, 300 m³.

The sand should be free from shells, abrasion resistant, and of an average granulometric system of 1 mm with a uniformity coefficient of around 1.5.

Subproject 3:

The new plant in Babina Rijeka was built before the war and was to have been equipped with mechanical and electrical equipment supplied by a factory in Sarajevo, which has since been

destroyed. The sampling is on a manual basis and is not effective: 150 l/s instead of the planned 250 l/s. The following action needs to be taken:

1. Specify the mechanical and electrical equipment that should be installed in order to avoid an overload of filter sand and a reduction in the works capacity.
2. Purchase and install the required equipment.

Cost and schedule of the subprojects:

<i>Subproject 1</i>	US\$ 860 000	12 months
<i>Subproject 2</i>	US\$ 90 000	6 months
<i>Subproject 3</i>	US\$ 450 000	15 months
<i>Total*</i>	US\$ 1 450 000	

* This figure does not include project management costs.

5.3.2 Waste management project in Tuzla

Current situation:

Tuzla is located above salt deposits, which have been subject to extensive mining activities for many centuries. In addition, coal mining has been undertaken, covering an area of approximately 1700 hectares.

Several industries have been established in the area that use both coal and salt. These include soda, chlorine, plastics, chemicals and metallurgy production, electric motor manufacture, food processing and brewing.

In 1991 the population was estimated to be 135 000 inhabitants.

Since the start of hostilities, waste collection has been erratic due to the risks from sniping, the absence of fuel and spare parts for local vehicles, and commandeering of trucks by military forces. As a result, waste has regularly accumulated at street corners.

It is necessary to supply the town with new storage containers and collection vehicles, as well as a replacement landfill at some point in the near future.

Purpose of the project:

The municipality does not have the means to carry out systematic waste collection and disposal. Even if fuel becomes available, the lack of storage containers, collection vehicles and a safe landfill will not allow the resumption of this essential public health service.

The project has two specific objectives:

1. To supply waste containers and refuse collection vehicles.
2. To assist in designing, constructing and operational planning of a new landfill.

Subprojects have been prepared for each specific objective.

Subproject contents:

Subproject 1: Replacement of lost equipment

Since the beginning of hostilities, a large number of waste storage containers and vehicles have been damaged, destroyed or lost. The inventory of losses is as follows: 6 skip vehicles. 100 four- and five-cubic-metre skips. 14 refuse collection vehicles (with onboard compaction), 600 wheeled waste storage containers and most vehicle spares. In the medium term it may not be necessary to use compaction vehicles.

Subproject 2: To assist local design institutes, geological and hydrogeological specialists to design a modern landfill

Assistance could be provided when the municipality has decided on the location of a controlled landfill, and should recommend plants that could operate on local resources.

Cost and schedule of subprojects:

<i>Subproject 1</i>	US\$ 1 960 000	6 months
<i>Subproject 2</i>	US\$ 41 000	8 months
<i>Total*</i>	US\$ 2 000 000	

* This amount does not include project management costs

5.3.3 Restoration of sanitation system in Lipik (United Nations Protected Area, Croatia)

Current situation:

Lipik is a spa town in close proximity to the larger town of Pacrac. Before the war it was a tourist and health centre with a population of approximately 5000 with a further 10 000 in surrounding villages. The centre of the town was situated around a health and recreation resort centred on a thermal spring and a hotel complex.

In addition, the town has a glass factory that prepared glass for car windscreens, a spring water bottling plant and a widely respected horse stud farm.

Lipik suffered considerable damage during the war: over 50% of its housing stock was destroyed beyond all repair and all parts of the hospital and spa complex were heavily damaged.

The municipal services are functioning at a makeshift level. Re-establishment of urban services and facilities are necessary for the town to regain its former vitality.

In 1992 there were 23 official cases of typhoid arising from the contamination of drinking-water from poor arrangements for domestic sewage disposal. A new sewage works was built but not commissioned, and the sewage currently flows directly into the Pacrac river since the sewage collection main was never installed in Lipik to carry waste to the new treatment plant.

Project objective:

The general objective is to improve the management of sewage, which is essential to ensure an acceptable standard of life and reduce health risks. It involves the implementation of two specific, interdependent objectives:

1. Examination, repair and restarting operation of a sewerage plant.
2. Installation of a sewer main 2.7 kilometres in length between Lipik and the treatment plant.

Subprojects have been prepared for each specific objective.

Subproject contents:

Subproject 1:

The majority of the mechanical equipment in the sewage plant is still in place and will not be very expensive to operate. However, the electrical equipment and pumps have been removed or destroyed, and roofing and windows in the building have also been destroyed. The following actions will be necessary:

1. Examine all the mechanical and electrical equipment as well as the buildings.
2. Identify and prioritize feasible repairs, replacements and essential purchases.
3. Start repairs after having identified the local labour force and organized the purchase of materials, equipment and facilities available locally.
4. Plan the installation of new equipment and fix delivery dates with the suppliers.
5. Adopt and implement an operational programme.
6. Preparation of manuals on operating modes and training of plant managers.

Subproject 2:

1. Identify the existing network features and plan essential alterations.
2. Designate a local contractor to be responsible for equipment and material purchase as well as for work implementation.
3. Where necessary, examine and repair the existing network.
4. Place the sewer main between the town of Lipik and the sewerage plant.

Cost and schedule of subprojects:

<i>Subproject 1</i>	US\$ 230 000	6 months
<i>Subproject 2</i>	US\$ 1 083 000	18 months
<i>Total*</i>	US\$ 1 313 000	

* This figure does not include project management costs.

5.4 Conclusions and prospects

Rehabilitation will certainly play a central role in future assistance and support given to Bosnia and Herzegovina once peace is restored. Food and equipment supply should be

continued, but progressively efforts will concentrate on community rebuilding and the restoration of facilities and services.

A synergy of local effort and international assistance is necessary for the public health engineering projects to become reality. Projects identified by WHO have been submitted to potential funding agencies. Work can commence rapidly in some towns, while in others it is necessary to prepare only the first phases of the project for speedy implementation subsequently once conditions become favourable.

WHO's public health engineering activities will continue. The engineering personnel, based at the WHO Office in Sarajevo, have started to identify new projects for towns that were not previously visited. These have been divided into three groups, defined in terms of known or expected war damage:

- First group: Travnik, Novi Travnik, Vares, Jablanica, Bihac, Srebrenica, Zepa, Gorazde, Maglaj, Tesanj
- Second group: Brcko, Doboj, Tomislavgrad, Velika Kladusa
- Third group: Visegrad, Biljeljina, Trebinje, Bileca, Foca, Benkovac.

The Project Office is continuing to add to its collection of reports on the cities studied. It also seeks to assist other organizations that are implementing identified projects involving public health issues (drinking-water quality, wastewater disposal and protection of water resources). In addition, the Project Office is ready to directly participate in the implementation of these projects.

In 1995 it is envisaged to expand the public health engineering activities. Depending on the resources available, it is suggested to continue the existing activities in parallel in the following three areas:

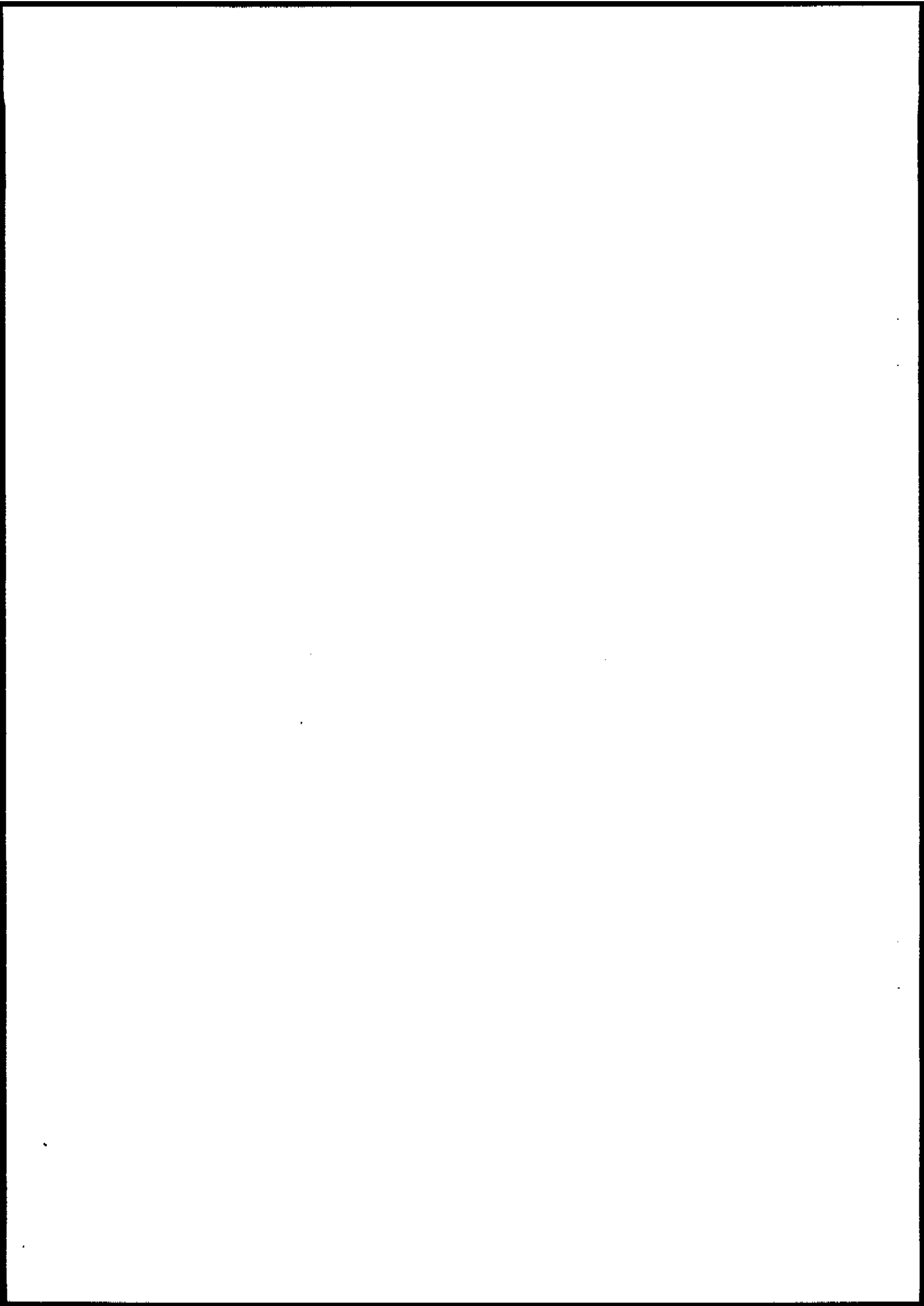
1. Collaborate with local organizations and international organizations to share available field resources.
2. Develop a strategic role with the central authorities to finalize a coordinated programme for the implementation of priority projects identified by the Project Office engineers and/or other organisations.
3. Develop a short-term aid programme in the areas of water analysis and, if possible, organizing regular disinfection of drinking water in Bosnia and Herzegovina.

In collaboration with various partners, the Project Office will seek to provide some towns in Bosnia and Herzegovina and the UN-protected Areas in Croatia with waste disposal vehicles: 15 to 20 repaired second-hand vehicles possibly donated by several French towns, are currently under discussion.

Firm commitments are currently being sought from donor towns and transport logistics are being planned for conveying vehicles to Bosnia and Croatia. Depending on the situation in these areas, the delivery of the vehicles is planned in 1995.

Chapter 6

General conclusions



Chapter 6. General conclusions

6.1 Funds and expenditures

The activities presented in this report have been made possible by the voluntary donation funding by the Government of France to WHO for the Project Office. The donations to date have been as follows:

1992	FF 2 100 000
1993	FF 2 584 000
1994 (up to October 31)	FF 2 805 000

The funds have covered the salaries of Project Office personnel, activity-related expenditures and the overhead expenditures entailed by local services and running costs.

The activity funds allow project development by covering duty travel expenditure outside of France and contributing to funding for project implementation. The contribution to project funding is a limited part of the overall cost and in fact acts as "seed money". Additional financing is provided by financial, in-kind, or staff time contributions from other international organizations, funding agencies, bilateral donations and national and/or local contributions from the project beneficiaries.

Expenditures were as follows:

1992	FF 156 000
1993	FF 270 000
1994 (up to October 31)	FF 300 000

A cost estimate, taking into account WHO staff time rates by hour, has shown that for Project Office funding of approximately 725 000 FF, other contributions have increased markedly to 3 660 000 FF. The coefficient multiplier is 5.23, varying from 1.75 to 12 depending on the project.

For every 6 FF spent on a project, only 1 FF originated from the Project Office budget (excluding salaries)

The implementation of the basic agreement will continue at the end of 1994. At the beginning of 1995, professionals will be appointed to fill the Urban Planning, Housing and Environmental Health Services Unit and Air Pollution Abatement Unit. Their project activities are listed below:

6.2 Urban planning, housing and environmental health services

This Unit will work in close collaboration with the Healthy Cities Project and its networks in diverse fields. In particular it will seek to:

- contribute to the evaluation of environmental health in the urban environment

- contribute to the identification of innovative and global methods and programmes that seek to combat the exclusion of population groups in cities regarding lack of facilities in some urban quarters (housing, water, sanitation, waste, transport, schooling, health and social services), desocialization of population groups, deterioration of housing, creation of ghettos, etc.)
- participate in the drafting of a general strategy for rehabilitation of disadvantaged areas in partnership with all social groups
- prepare general and technical recommendations for urbanization problems that promote environmental health for the rehabilitation of disadvantaged areas as well as the creation and development of new towns
- contribute to the creation and/or development of viable and efficient municipal technical services (management and maintenance in the fields of water, waste and transport): regulations, procedures, funding and cost recovery, technical capacity, preventive maintenance, personnel training, etc.).

6.3 Air pollution abatement

In collaboration with the Air Quality Unit of the Bilthoven Division, this unit will have the following objectives:

- identify towns where it is necessary to combat air pollution: for example, through public health engineering operations
- identify factories, industrial plants or individual facilities that contribute to or cause air pollution
- establish an air pollution monitoring network in towns where industry has requested or accepted an audit
- evaluate industrial processes in use in the specific factories
- propose technical modifications in order to improve processes and reduce emissions
- evaluate atmospheric conditions following the modification of industrial processes.

6.4 A potential strategy

A strategy is being prepared to counter the risk of an excessively broad geographical diversification in Project Office activities. It consists of systematic "prospecting" of all potential funding agencies (international, national, public, associative, private) in order to determine their geographical spheres of interest and their priority technical sectors.

A comprehensive analysis of the specific orientation of each funding agency should lead to two conclusions:

- first, identification of a group of countries and/or regions that are of interest to the funding agencies
- second, identification of technical sectors in these "common" regions that the funding agencies may be interested in financing.

Written contact will be made directly with ministerial officials and/or the local authorities and through the WHO liaison officers and the national and local coordinators of the Healthy Cities Project in the regions of interest.

Prospecting by Project Office staff members would then be limited systematically to these regions. National or regional level contacts should be undertaken methodically with ministries of health, environment, public works and foreign affairs; representatives from international organizations (e.g. UNDP, World Bank, EU); embassies of interested countries and the technical sector; and representatives of foundations where relevant.

Efforts should concentrate on implementing projects that could serve as demonstration projects for neighbouring countries and towns.

6.5 Potential development of the Project Office's technical programmes

The technical programmes, as defined in the basic agreement between France and the World Health Organization, are the following: water; waste; air pollution; and urban planning and housing, complemented by environmental health services.

The initial proposal for developing Project Office activities will not modify the basic protocol to any great extent. An urban transport specialist dealing with the improvement of public transport will join the urban sector project.

Feasibility and pre investment studies have already been carried out in some towns. The Project Office could develop its activities by evaluating these studies on behalf of the local authorities.

Furthermore, at least 17 countries of the 50 countries comprising the European Region consist of a mainly rural population (close to 110 million people, i.e. approximately 13% of the population of the whole European Region):

The Mediterranean	Albania, Greece, Portugal, Turkey, Bosnia and Herzegovina, Croatia
Central Europe	Hungary, Republic of Moldova, Poland, Romania
Central Asia	Azerbaijan, Georgia, Kazakhstan, Kyrgystan, Tajikistan, Turkmenistan, Uzbekistan

It is very likely that these populations lack technically reliable equipment. The broadening of the scope of Project Office activities to the rural field and the appointment of an engineer specialized in rural community facilities to work with the corresponding water and waste

sectors, would assist in the work to improve the environmental health conditions of a considerable proportion of the Region's population.

Finally, waterborne pollution is a growing problem in all areas of Europe. Concentrations of surface water and ground water have growing levels of, for example, nitrate and pesticide. A rural development, agricultural practices and public health specialist could deal with the agricultural impacts on public health. He/she would be responsible for the implementation of multifaceted action at the local level aimed at risk reduction.

These areas of technical development depend on the availability of funds.

6.6 General conclusions

The recent adoption at the Helsinki Conference of the Environmental Health Action Plan for Europe offers the Project Office further prospects for collaboration. Each Member State has been requested to prepare its own action plan for completion by 1997. In addition to developing national capacities, structuring environmental health services, and finalizing information systems for problem identification, policy definition, and programme choice, many countries will most likely need to find an acceptable equilibrium in the short-term between economic reality and expectations.

The concrete realization of projects promoting improved living standards and aspiring to western European standards falls within the remit of the Project Office's technical capacity (water, waste, air, town planning, etc.).

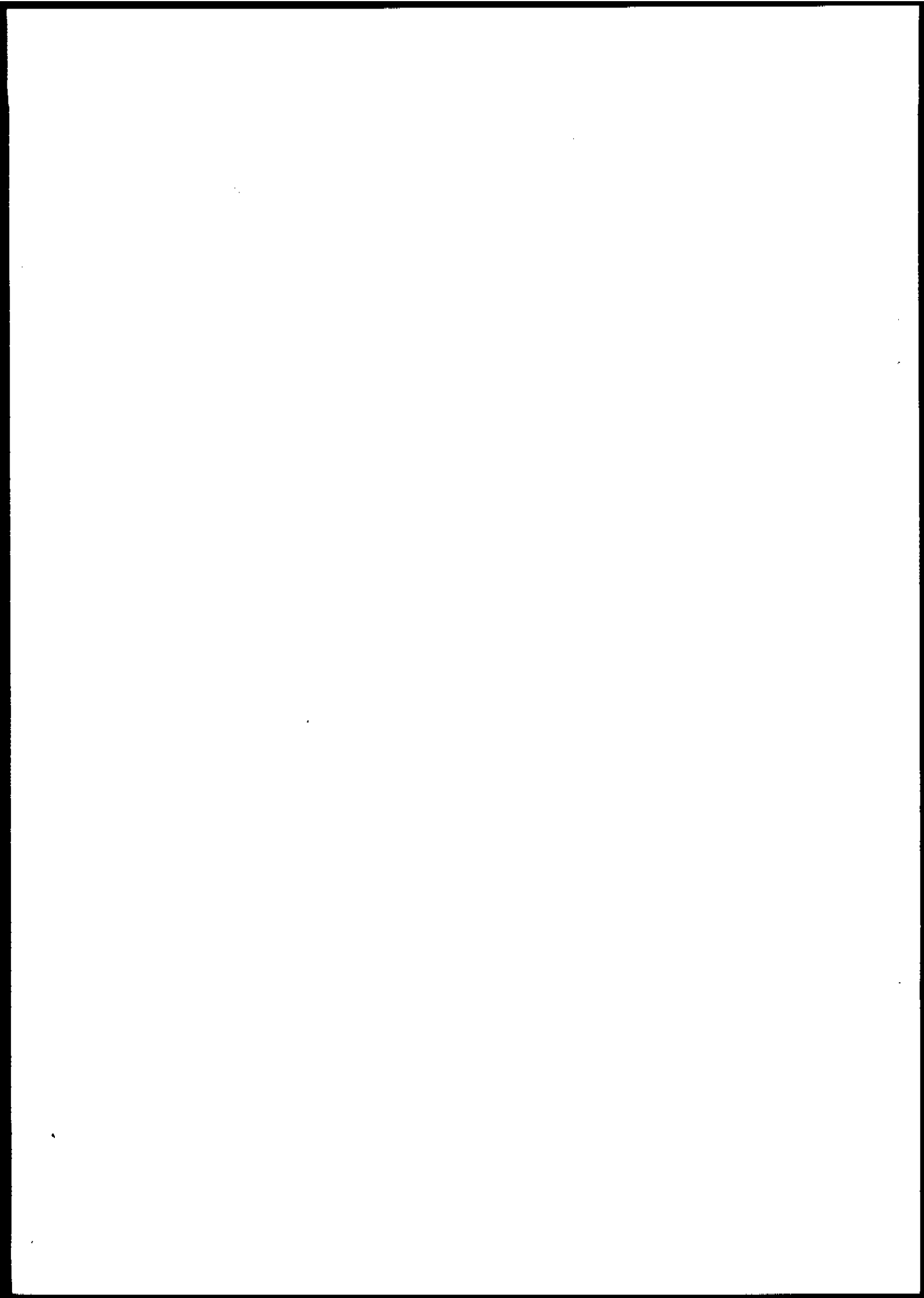
The Project Office should assist Member States in developing their action plans, into which technical projects could then be incorporated. These projects would not necessarily encompass the full scope of the action plan (local, regional, national and international investment capacity) but would respond to priority issues that could serve as demonstration projects for other towns, regions or countries. By contributing to the preparation of national action plans, the Project Office's activities will be strengthened and its subsequent involvement in feasibility and pre-investment studies will be more readily secured.

The European Environmental Health Committee will bring together Member State representatives, WHO, the European Union and funding agencies to consider projects and decide, in particular, on their eligibility for international funding. This important body should contribute to resolving the current principal difficulties of the Project Office (namely project funding).

The question of whether technological projects should be represented in project planning should be considered. Drinking-water supply, municipal sanitation, ambient air quality, the collection, treatment and disposal of waste, and town planning and the living environment are recognized as important factors in environmental health. However, these factors do not always seem to be taken into account. The staff of the European Centre for Environment and Health should be appointed as members of the Committee Secretariat, at least for projects falling within their technical competence. They could thus participate in identification of project funding and then contribute to their implementation.

Clearly, many countries need to develop their policies, programmes and planning of essential amenities for sustainable human development.

Finally, the Project Office, with its technical expertise, is available to work with Member States and to help provide assistance in carrying out their environment and health policies.



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