Intergovernmental Conference on Environmental Education

TBILISI 14-26 October 1977



Environmental Education in The Netherlands

Foreword

The contents of this portfolio have been specially prepared for the UNESCO Intergovernmental Conference on Environmental Education, Tbilisi(U.S.S.R.), 14 - 26 October 1977.

A general overview is given, first, of the state of Nature and Environmental Education in The Netherlands.

Secondly, you may find some cases of Environmental Education as given by the authorities and, notably, non-governmental organizations.
This selection is, of course, only a limited presentation of the many and manifold activities undertaken in this field in The Netherlands.

At the end of each case, names and addresses may be found of some organizations and bodies, which can give further information on the subject.

These cases, which have been presented by experts in their individual capacities, do not necessarily represent the opinion of the Dutch authorities, who are, therefore, not responsible for their substance and purport.

The members of the Dutch delegation will be pleased to elaborate on the contents of this portfolio.

Note

This portfolio has been printed on re-cycled paper.

ENVIRONMENTAL EDUCATION, PUBLIC ENVIRONMENTAL AWARENESS AND PUBLIC PARTICIPATION IN THE NETHERLANDS.

1. Environment in the Netherlands from a bird eye's view

Due to its geographical situation at the delta of three intensively used and highly polluted European rivers and the increasingly exploited North Sea, its crowded population (about 400 per square kilometer), its dense network of highways and immense traffic, its intensive agriculture with the highest yields per hectare in the world thanks to the immense amounts of fertilizers and the delicate canalisation-systems, its big electronic and petrochemical multinational industries some of which are leading in the world, its big harbours and trade centres of which Rotterdam is the greatest in the world and the rapid urbanisation of the rural areas, due to all that the Netherlands is among those countries that are well at the limits of growth and has good reasons to be conscious of its environmental problems.

Holland contains most types of European environments (except mountains) and all environmental problems in a nutshell.
This little corner of Europe of only 21.000 km^2 comprises, as in a miniature, about two third of all types of European landscapes and was reknown for its extremely rich flora and fauna: a mosaïc of Scandinavian elements brought in by glaciers from the ice-age, Middle European elements that came along the great rivers and South European elements that extended northward, favoured by the Atlantic Gulf Stream.

From the stone-age onwards Man has influenced the landscape by changing forests into meadows, digging ditches and canals, building dikes, and converting salt marshes into cropland.
Not one single hectare of the country seems to be untouched or altered by Man, and the intensity of its land-use is only matched by that of Java in Indonesia.
Yet it is still not entirely unpleasant and from the air mostly everything appears neat and clean.
At least it seems so.

The greatest change took place in this century, and has led to a tremendous alteration in the pattern and structure of a basically agricultural into an urban-industrial society.
The population has more than doubled since 1900 and the density of the population increased from 154 to about 400 per square kilometer.
In 1920 more than half of the people lived in villages and towns of less than 20.000 inhabitants.
This figure is now less than one third.
The continuing trends of demand for space for buildings, traffic and recreation result in a decrease of natural areas and loss of biotic diversity that is more rapid than the population growth rate.

Even agriculture became industrialized.
The labour force in this sector and the number of farms sharply decreased.
Farms became larger and productivity per hectare increased due to mechanization, specialization and the use of synthetic fertilizers and pesticides and an industry-like organization.
The impact on nature and landscape was tremendous.
The Central-Western part of the Country or broadly the triangle Alkmaar-Arnhem-Flushing together with the German Ruhr-Gebiet belongs to the most industrialized areas in Europe.
Sulphur dioxyde emissions will soon amount 1000 tons of SO_2 per square kilometer.
Only industrial areas of the neighbouring countries have an even higher SO_2 emission.
The density of cars is also extremest in the world: over 200 cars/km^2, and the oil refineries situated near Rotterdam have a capacity of over 100 million tons a year.
Although the Netherlands receive more and more from adjacent countries, it exports also an annually growing part of its air pollutants.

- air pollution

Air pollution was first abated by making always higher chimneys.
Then the country was favoured by the discovery of very great resources of extremely clean natural gas with almost no sulpher in it.

The country could quickly abandon oil burning for the heating of houses and offices and for the generation of electricity.
Within about 5 or 6 years the country's SO_2-emissions were reduced from about 900.000 tons per year in the late sixties to just about 400.000 tons per year in 1974 and 1975.
A figure of 500.000 tons per year is now set as the maximum limit for the future, even if natural gas is expected to run out soon and the dirtier oil and coal has then to cover the continuously growing energy demand.

A ten years plan on air pollution abatement has recently appeared. Great investments in desulphurisation and in energy conservation technologies seem unavoidable, since the government is hesitant about large scale use of nuclear energy.
Natural gas will become more and more restricted to heating of homes and offices.
Electricity generation plants and industries will shift back to oil and coal but with more devices for the containment of sulphur emissions.
Even if similar steps would be taken by all Western European countries it may be still difficult to meet the low level of SO_2 emissions, as demanded.
Traffic nowadays is and will increasingly be the greatest source of air pollution in all cities and villages.
Highways and roads have already destroyed much of the original open space, and many environmentalists are heavily concerned about these trends.
National policy plans for road constructions have been recently revised as to slow down the extension of national roads.
This, however, does not seem to slow down sufficiently the construction of provincial and municipal roads.

- water problems

Since history of this country has been recorded, the memory of large floodings has been kept alive; the last one which occured in 1953 was the stimulus to an extensive flood protection scheme in the southern delta area between Rotterdam and Antwerp and in the Wadden Sea area in the north.

The changes that such measures bring about in the natural environment aroused concern among many groups within the population that fight for the protection of the natural environment in particular of the Oosterschelde and the Wadden Sea.
The opposition against their closure by damming has found favourable resonance in parliament and the government.
Yet there are many conflicting interests involved in keeping these areas in their present valuable semi-natural state.
Another problem is the continuously increasing drainage of marshes and pastures for the growing agricultural production, which causes a great impoverishment of natural vegetation and habitats for birds, both the breeding and the migratory wintering species.
All surface waters are more or less heavily polluted.
The greatest sources of eutrophication are the leakage of agricultural fertilizers and the release of unsufficiently demineralized sewage water.
Some of the bigger cities still have no adequate sewage treatment and empty their sewage in the big rivers or in sea at the coast.
A ten year plan for water purification was started in 1975.
Many public actions have been devoted to the abatement of water pollution.
Recently a great number of non-governmental organizations have come together in the socalled "Water Alarm" action.
According to a recent policy plan to attack eutrophication by phosphates a wide array of measures should be taken, notably with respect to strict regulations about the agricultural use of fertilizers, the abandonment of phosphates in detergents and, eventually, dephosphatizing the effluent sewage treatment plants before it is released into surface waters.
A taxation on phosphates in detergents is envisaged, starting in 1985.

Drinking water is becoming more and more endangered, not because of lack of water but due to pollution.
The country was forced to establish big water reservoirs where to store large amounts during the season of high river flows when the pollution is most diluted, for being used at periods of low water discharge when pollution is most severe.
Negotiations with the neighbouring countries that border on the same rivers have so far not produced the desired effective improvement.

- the Rhine

In particular the quality of the Rhine water is a matter of continuous political concern for the government, the parliament, the various drinking water producers and many active private organizations that urge better purification, also of effluents within the own country.
The problems of the Rhine got particular attention of the mass media, when an international group of cyclists in the summer of 1977 made a "Tour du Rhin" from the clean sources in Switzerland through France and Germany along an increasingly polluted river to the mouth near Rotterdam.
A fairly recent menace to the rivers is its use for the cooling of power generation plants.
Even if - on the basis of the Rhine Treaty - the bordering countries would succeed within ten years or so to abate chemical pollution, the water temperature will have risen to about tropical temperatures, produced by the two dozen or so power-stations along its banks.
Although Salmon could effectively re-establish in a cleaned-up Rhine, it will be this thermal barrier in the water that will prevent these fishes from coming to spawn at the upper branches of that river.

- marine evironment

Drilling for oil and gas in the North Sea and the chemical pollutants that are carried to sea by the rivers, the dumping of chemical wastes into the sea, oil spills from ships and from accidents on platforms and tankers and all off-shore constructions for pipelines are, together, a multitude of disturbances of the marine habitat.
The rapid decrease of the Common Seal is just one indicator of the rapid deterioration of the coastal seas.

- threats to landscape and nature

Even greater are the disruptures of the flora and fauna and of entire landscapes on the land.

The beautiful landscape of lush green forests and pastures, pink heathes and blue waters with pearls of towns and villages in that colourful setting that inspired the great master painters throughout five centuries, is suddenly within two decades fading away.
Open space is torn to pieces by an ever growing number of new highways and wide horizons are struck with high-rise apartment- and office buildings.
This often could happen before the population even could fully realise what all these building activities in such a small country would mean to their daily environment.

- public concern for environmental issues

A fairly large proportion of the inhabitants is deeply concerned about the future of nature, resources and the environment in the Netherlands.
Approximately 300.000 people are member of one of the national organizations for the protection of nature and the environment. This is only at the national level, not to speak of the much greater number of people that is actively involved in local or provincial groups.
The existence and activities of many small local and some large private organizations is a consistent and very important aspect of the environmental issue in the Netherlands.
They make alternative plans, they buy nature areas, they play an active role in environmental education, in which they link education and action, they are considered by the government as a serious partner in official discussions and procedures, they even take the environmental issue to court.
They are supported by their own members and in some cases additionally by the government by means of subsidies.
Besides, many youth organizations and local societies study nature and the environment.
Also consumers organizations pay more attention to environmental aspects of products and of consumption. (see cases V, VI, VII).

Some organizations consider modern life, with its rash assault on nature, its overconsumption and pollution a danger to health and welfare.
There is an increasing cooperation between those who strive for environmental and health education and awareness.
They view that the roots of the threats to the environment are to be sought in certain developments in society itself.
To stop environmental derterioration it is necessary not only to organize actions at short notice, but also to accomplish changes in society and personal attitudes and behaviour to prevent future environmental evil.
According to their opinion therefore environmental care should include exertion with subjects such as: agriculture-policies, economic growth and unemployment, overconsumption and developments in third-world-countries.

2. Some characteristics of E.E. in the Netherlands

Pluriformity of approaches

Environmental education in the Netherlands can be said to have started in the twenties of this century by some foresighted teachers who found it essential to bring children but also their parents and other grown-ups in closer touch with the living organisms and the natural environment for the sake of nature as well as for their own well-being.
This original nature-oriented approach is still vivid but its scope has widened more and more because of the growing awareness that nature can not be protected in a polluted and down-graded environment.
Nevertheless ecological knowledge and an affective relationship with nature is still considered the heart of the matter of environmental education together with insight in human needs and social structures behind environmental problems.

As will be shown in the following paragraphs, there are now many different approaches to the broad issues of nature conservation and environmental protection, both within and outside the formal educational systems, from the level of children to the adult recurrent training, and from unilateral informative approaches, to the public participation in decision-making procedures about national policy plans.

In one of the national policy documents it reads that:

"the aim of environmental education is to foster a process of awareness that contributes to the development of a pattern of norms and values and to a structure of the society and the incumbent attitudes of the citizens that assure the sustainment and the quality of the natural environment, the landscape as a cultural heritage and therefore also the human environment, and that warrants a responsible use of natural resources and contributes to a harmonious relationship between man and his environment."

Within this broad scope and definition, 35 organizations, working nationally, are primarily involved in environmental education; 54 are partially and some other 46 incidentally involved, according to a census of 1975.

Between these organizations and the government are many good relationships, both at the national and the provincial and often local levels. The central government and most provinces are supporting many of them with respect to specific actions as well as overhead costs.

Characteristic for democratic rules in the Netherlands is that the authorities not only support their own bureaus that have to work out the various plans, but also set frames and provide means for the public debate on these plans on the basis of different views and expertises.

Many good initiatives are arising from concerned individuals and small action groups. They need logistic and organizational support for getting their ideas widely implemented. Take for example the initiatives of individual teachers that lay at the basis of many curriculum innovations. Much also happens unadvertised and silently thanks to the efforts and examples of those many individuals. Some will put an emphasis on energy conservation, others on food and nutrition, the third on selective car use because of its impact on nature and society (in particular on children and the old-aged). The great multitude of approaches and of organizations is not felt as an embarrassment but rather as a reflection of the complexity that is inherent to the environmental problems as outlined before.

Target groups

Several target groups have been recognized, notably those that can be approached through the school system at different levels and those that can not.

1. Children at primary and secondary schools:

They are mostly approached via the teacher or through school television. The educational content can be presented in formal oral lessons or through participation in action-oriented projects for certain classes or the entire school. The involvement of the teachers is essential and they should be trained for it in their basic training or through special refresher courses on environmental education. Many approaches still fail in practicallity and active participation. (see cases I, II and VI)

2. College and university students:

Environmental subjects should be included in their general and specific vocational training programmes and should be both formal and action-oriented with regard to their future vocations. Great emphasis should be laid on individual active participation.
Much can be improved, in particular at technical and social colleges and business schools. (see the specific annex on universities and colleges).

3. Youth out of school:

They can be approached through clubs for different activities such as scouting, sport, music, camping, community development, etc. Older youth that entered into a vocation can be approached through the partial-schooling hours and in-service training courses. This is a strongly neglected group.
(see cases III and IV).

4. Others:

This wide category can be subdivided as to specific groups that can be approached separately such as:
- trade unions,

-political parties-

- political parties,
- religious organizations,
- professional leagues,
- women's movements,
- consumers' organizations,
- environmental and recreational organizations etc..

Because of the great diversity these categories are often unsufficiently approached. Instead much effort is given to e.e. in the mass media, in particular through television. (see cases III, V and VII).

Educational form and content

In each case we should clearly distinguish between formal teaching of knowledge and training through participation in actions. This is decisive for the agogical and didactical presentation and organization, the measure of integration of different subjects or disciplines, and the amalgamation of knowledge, skills and attitudes. It is felt essential as it comes to exchange of experiences with environmental education that the target group, the educational objectives and the work form chosen should always be clearly formulated. Not only the educational objectives should be clearly stated but also the environmental content (conservation of specific ecosystems, abatement of a certain form of pollution improvement of the social environment within a certain area, etc.) This will avoid disappointments if the goals are set too wide.

Most environmental educators are now convinced of the importance of "participation" as an educational form that better conveys the message than any formal transfer of knowledge can achieve. This, as a consequence, may even bear on the form and functioning of the school as an organization in which the children assume an increasing responsibility, according to their skills and development.

3. Tentative policies regarding environmental education in The Netherlands.

From three policy documents to the government arise some overall aims for environmental education, saying that every citizen should

have knowledge of and affection for the environment and be conscious of the environmental impact of all individual and collective needs in order to participate actively in the decision-making process on all kinds of activities that influence the maintenance and or change of the natural and the built environment. Governmental Agencies have set up different ways and means through which the educated public can excert its influence on all important decisions to be taken. The government does not want to interfere with initiatives from interested citizens or action groups but feels it ar obligation to provide a framework for their participation and to promote that their actions be based on adequate knowledge. In particular the government has developed legislation to improve the publication of policy plans and procedures for public debate on them before they go to parlement or to provincial and municipal councils.

Regarding school curricula, the government assumes responsibility to provide ways and means for innovations, but leaves it to the school authorities to choose their content.
There is no compulsory curriculum on environmental education in schools. In primary schools the content of environmental education largely depends on the teacher's interest, knowledge and willingness to engage in experiments.

In secondary schools, time-tables on the one hand, schooltests and exams on the other may prevent teachers and pupils from taking part in field work and excursions.
The government sponsors the National Foundation for Curriculum Innovations (S.L.O.), the Central Institute for the Development of Examinations (C.I.T.O.) and several pedagogical advisory Institutes working nationally and regionally. The Primary Education Act provides for lessons on nature, environment and health. The S.L.O. is developing several initiatives on both environmental and health education, mainly for primary schools. Their implementation in the individual schools, however, is the responsibility of the school authorities in consultation with the inspectors.
(see case I)

A steadily increasing number of municipalities is offering facilities for school gardening and outdoor environmental activities. Although

the prime responsibility should remain with the local municipal authorities, their activities are becoming more and more co-ordinated by the Institute for Nature Conservation Education (I.V.N.) and this institute is strongly subsidized by the national government (see cases III and IV).
The establishment of a national center for environmental education as a focal point for training purposes and the dissemination of experciences and new views, as advocated by some environmental organizations, may be an important thing for the government to decide upon.
A more or less similar structure for the advancement of health education is also being considered (commission for the national plan on health education, G.V.O.).

Finally the government attaches great weight to the protection and education of consumers, both from the viewpoint of protecting the health of the consumers and of protecting the environment against pollution and depletion of resources (see cases I and V).

It seems that the opinion in the Netherlands is on a par with the opinions voiced in international fora.

A problem is, however, that there is often too little or hardly any contact between producers and consumers of environmental information. Consumers often do not know where to obtain the material they want, whereas producers may be ignorant of what happens with their materials that are sent unrequested to educational institutions and other groups of people.
Especially here it is important to provide a framework that allows for integration of information.

ENVIRONMENTAL STUDIES AT UNIVERSITIES AND TECHNICAL, AGRICULTURAL AND SOCIAL COLLEGES.

A. University level. (A masters degree requires a 5 years curriculum after a secondary school with a 6 years curriculum)

1. At the Faculty for Agriculture and Land Use (L.H. at Wageningen) Four specializations for a masters degree are particularly devoted to protection of nature and the environment:
   - environmental protection (particularly on air, water and soil pollution)
   - nature protection and wildlife management (ecological and management problems)
   - agricultural biology (biological control, genetic engineering)
   - environmental toxicology (impact of agricultural and industrial chemicals)

2. There are three Poly-technical Faculties at Delft, Eindhoven and Twente where students can get a masters degree in sanitary and environmental engineering.
   Delft is more specialized on environmental aspects of road- and waterworks, sewer systems and sanitation; at Eindhoven emphasis is on environmental aspects of electronic industries, and in Twente on the chemical and processing industries.

3. Other faculties
   No other university faculties offer a complete programme for a masters degree in environmental sciences, but students may take one or two semesters in environmental studies as part of their masters degree in law, economics, sociology, natural sciences, etc.

   Most universities have developed or are in the process of establishing an interdisciplinary unit or institute for environmental studies that cares for the series of environmental lectures and for the guidance to the individual studies of the students.

Integrated study projects are often subsidized by the provincial and central government to cover special overheadcosts and facilities that are needed for the field studies and the coordination.
The participants in these integrated environmental studies mainly come from biology (ca. 50%) geography (ca. 20%) and chemistry (10% but the number of participants from the social sciences and economy is steadily increasing.
A major stimulus is the series of basic lectures for all students, regardless of their faculty, and the fact that full participation in the series and the subsequent discussions is given credit points when the student decides to continue with an environmental subject in his masters degree studies.
Outsiders may also attend these lectures as a sort of refresher courses.

There are, thus, two tendencies at university level.
One is the formation of environment oriented engineers within the agricultural and polytechnical faculties, to assume fulltime jobs in these specializations.
The other is the formation of other sorts of scientists, each well trained in its own faculty (law, economy, sociology, physical sciences, life sciences, etc.) but sufficiently aware of environmental problems to be able to work in interdisciplinary environmental projects or in administration at local, provincial or national level.
There is nothing such as a training of environmental "generalists".

Further information about the universities environmental curricula:
- Commission on Academic Environmental Education
  The Academic Council
  P.O.-Box 590, Prinses Beatrixlaan 428
  Voorburg.

B. Technical, agricultural, social and business colleges.
(4 years curriculum after a 5 years secondary school, bachelors level)

1. There are a dozen agricultural colleges and thirty technical colleges in the Netherlands.
   Most of them incorporate environmental problems in their normal curricula, but notably two agricultural colleges (Groningen and Putten) and three technical colleges (Amsterdam, Heerlen, Twente) are particularly far ahead in offering special courses in environmental management and engineering.
   Twente is seeking within soon to make it a full 3 years specialization, and others have made it a one year programme.

2. There are several dozens of social colleges and business schools.
   Although the students have in principle similar opportunities to choose an environmental topic for their "practical stage" this is only rarely done because of slim facilities for "practical stages".
   This probably is also the reason that there are no specific lessons on the environment in the curriculum.
   Some professors, however, include environmental problems in their lessons on sociology, economy, health or in the so called "studium generale".
   Much can be improved when this would be done more systematically.

3. At teachers training colleges, both for primary schools and for secondary and vocational schools, environmental issues are gaining considerably attention, mostly in the lessons on biology, geography, societal and health education but generally not as a seperate subject.
   Several of these training colleges have integrated field studies in which the students are trained how to teach environmental issues with an integrated approach.
   Also in this respect much could be improved when this should happen more systematically as part of the official curriculum.

4. At most of the academic hospitals and the major city hospitals where the formation of hospital nurses is taking place, the curriculum also includes topics of environmental hygiene, sanitation, toxicology etc. which is of course of great importance for the fulfilment of these important functions.

Further information: H.B.O.-Council
Riviervismarkt 2
Den Haag.

C. Post-graduate environmental courses.

For those who are already in any higher technical, administrative, managerial or scientific position there is a wide array of courses for the application of new insight and information on environmental problems.
These course may be very specific, or rather general and varying in level and duration.

1. Seminar on Environmental Sciences. Course of four full weeks, spread with two months intervals and very broad in its scope from general ecological principles, pollution, energy, economy, landscape management, agriculture, urbanization and physical planning to political, legal and administrative implications. The courses are attended by 25-30 participants annually, mostly in higher administrative positions (industries, c.q. governments).

Information: N.I.P.O.
Wassenaarseweg 56
Leiden.

2. General course in physical planning.

The course comprises 14 Saterdays of 4 hours each, from October to May and is devoted to the principles and practices of physical planning and administrative implementation.

Information: N.I.R.O.V.
Van Speykstraat 25
Den Haag.

3. Post-academic courses in Sanitary and Environmental Engineering.

These are organized by the three Polytechnic and Agricultural faculties.
The duration is 3-5 days.

The character is that of refresher courses for engineers and technicians with experience in water works, sewage treatment, sanitation, drinking water supply and water management.
There are usually several parallel specialized courses with about 300-400 participants annually.

Information: Stichting Postacademiale Vorming Gezondheidstechniek
T.H. Delft, Gebouw voor Civiele Techniek
Stevinweg 1
Delft.

4. Holiday courses in sanitary and hydraulic engineering.
One or two days courses by the Polytechnic of Delft.

Information: T.H. Delft, Gebouw voor Civiele Techniek
Stevinweg 1
Delft.

5. Application courses in radiation protection.
These are organized at the university institutes of nuclear physics and radiation protection at Amsterdam, Leiden and Delft for bachelors and masters who wish to work in laboratories with radio-isotopes and other unsealed radio-active sources.
Annually about 100 participants.

Information: Ministry of Public Health and Environmental Protection
Dokter Reyersstraat 10
Leidschendam.
(Sector Radiation Protection).

6. Application courses in environmental protection/management.
These courses at the level of college graduates (bachelor) are given at the technical colleges of Amsterdam and Heerlen and the Agricultural colleges of 's-Hertogenbosch and Groningen.
They comprise about 30 evenings or Saterdays in one year.

Information: H.T.S.
Europaboulevard 23
Amsterdam.

R.H.A.S.
Prof. H.C. van Hall-straat 1
Groningen.

Heerlen and 's-Hertogenbosch:
Dr. Jaegersstraat 40
Heerlen.

7. Courses for environmental technicians.

Most courses are in writing at college level for technicians in provincial and municipal services for public works etc. and students that had no opportunities for full-day tuition.
There are different groups for culture technique, recreation and nature protection, others for environmental protection and sanitation technology or for landscape management and planning (10-12 hours in a week over about 10 months).

Information: P.B.N.A.
Velperbuitensingel 6
Arnhem.

Other similar courses of 4 lessons per month over two years are organized by the Netherlands Society for Sewage Treatment and Water Quality Management with particular emphasis of training of technicians in these fields.

Information: N.V.A.
K.I.W.A.-building
P.O.-Box 70
Rijswijk.

Oral courses on environmental technology for technicians with emphasis on abatement of water and air pollution, noise and the recycling of materials in the process industries, are organized by the Foundation for Special Courses (60 lessons over 3 weeks).

Information: S.B.C.
P.O.-Box 8, Staalindustrieweg
Alblasserdam.

Other oral courses on water pollution in the metallurgical industry (15 evenings over 4 months) are organized by the Corporation for Metal Surface Techniques.

Information: P.O.-Box 120
Bilthoven.

A very broadly oriented general course (in writing) on highschool level is organized jointly by two educational institutes and comprises 26 lessons (2 or 3 per month) for any one who is interested in a broad scope of environmental problems.

Information: I.V.I.O., Maerlanthuis
P.O.-Box 37
Lelystad.

I.V.N.
Plantage Middenlaan 41
Amsterdam.

D. International Courses for Sanitary, Hydraulic and Environmental Engineering (N.U.F.F.I.C.-courses)

These are three parallel courses for students from abroad at masters level.
Tuition is in English.
Each course comprises one full year.
Those for sanitary engineering have already a long standing reputation; those for environmental sciences are rather new.
The courses are organized by the Netherlands Universities Foundation for International Cooperation (N.U.F.F.I.C.) in conjunction with the Polytechnics at Delft.
Students are mostly from developing countries.
They may apply for financial support from N.U.F.F.I.C.

Information: N.U.F.F.I.C.
Molenstraat 27
Den Haag.

Case I. Primary Schools:

Using the Environment

Approach from the side of curriculum development

Professional curriculum developers have to help schools with the development of their own curriculum, based upon their own philosophy of education and their own situation in general.
Materials ought to be developed within the school context.
To people who were not involved in the development of these materials they should offer the possibility of making choices from alternatives.
Curriculum development for primary schools does not have to stress seperate disciplines, but has to stress the unity of the environment the child lives in as the main starting point for studies.

Exploring the natural and the man-made environment is an activity in which the child is wholy involved; therefore outdoor-work is necessary to experience the context of living organisms, objects and phenomena in general (sound, colours, smell, taste) with all emotions involved.
To help schools in building a curriculum for environmental studies a publication "Using the environment" was written, which is based on the experiences obtained in a primary school.
This publication contains:

1. An instrument for teachers to survey the outdoor environment of their school, consisting of:
   - 26 questions as a tool for checking up the characteristics of the man-made and the natural environment, like birds, mosses, lichens, buildings and traffic.
   - A list of aims and objectives, for instance: observing with all senses, recording, classifying, making and using maps, experimenting, studying changes in the environment.
2. A description of ways to choose, with help of the children, objects for studies; five steps to make flow-charts as a tool for planning, and how to use them.
3. Activities with soil for grade 1 to 6 as an example of planning.

4. Description of a way to arrange information:
   - about the lessons on the environment
   - about the environment itself

   For people who want to have more background information, some additional chapters have been written about:
   - the educational philosophy underlying this approach
   - the development of the children's skills of observation, classification, describing and others.
   - pre- and inservice education of teachers.

Approach from nature and landscape protection

The Ministry of Culture, Recreation and Social Welfare, particularly the Department of Nature and Landscape Conservation now tries to integrate the experience obtained from this curriculum development-project with a project on landscapes.
The aim of it is to clarify the values of natural and cultural areas in the Netherlands to the pupils, in the first place by having them discover diversity, relations and changes in their direct surroundings.
It is supposed that this will lay a foundation for an awareness of dependence of and responsibility for the environment, an awareness that might be able to influence future behaviour in relation to his environment.
The target-groups are: primary schools, lower agricultural schools, a number of lower technical schools and teacher training-colleges, in total about 9.000 schools.
One aid for the project is a map (100 x 120 cm), full colour which, by and large, show the Netherlands landscapes and nature areas with some of the characteristic flora, fauna and cultural-historical elements.
Then valuable landscapes are worked out in detail.
In order to make clear that the Netherlands is not a paradise on earth, but that its nature and landscapes are threatened in many ways, an overlay sheet of transparant plastic is designed. It can be hung over the map and gives, at the same scale as the map itself, an impression of what most importantly influences the Dutch landscape.

To didactically conduct the project, a booklet with didactic suggestions, background information and practical information for the teacher has been composed.
Several adaptations are now envisaged for different types of schools; in particular for lower agricultural schools, a second group will revise part of this work.
As a matter of fact primary school teachers are usually not trained in handling projects like this.
Therefore it is envisaged to create in each town or sizeable group of municipalities supporting bodies formed from amongst the 100 local branches of the Institute for Nature Conservation Education, the 27 school biology services, school advisory services, nature societies, educational departments of zoo's, natural history museums, botanical gardens, public garden services, nature study clubs, etc., in total 600 groups.
In order to coordinate the support to the schools, they will form local (or regional) executive committee.
These "centres of support" will be instructed about the way they can assist schools.
Therefore a working group of representatives of the various services has prepared so-called instructional suggestions, by which the "centres" will be fit out for their task.
Another approach has been to involve the biology and geography teachers at teacher-training colleges for giving professional support of the schools.
Their response, so far, is encouraging.
Preceding to the definitive launching of the project there will be some tests in schools and subsequent study meetings with regional groups.
Besides, a research project will be set up in order to:

1) measure to what extent environmental awareness will be influenced by this project and
2) describe the way in which the project is used in the schools (this might give indications for future curriculum development).

The project has started in September 1977.

Further information: 1) Foundation for curriculum development
P.O.Box 2041
Enschede.
2) Ministry of Cultural Affairs, Recreation and Social Welfare
Department of Nature and Landscape Conservation
Steenvoordelaan 370
Rijswijk.

Case II.

Creating facilities for environmental education, by special services, in urban settings

At present there are in the Netherlands about 27 services which deal with environmental education in an urban setting.
They are all situated in towns.
The oldest one is the city's Service for School and Children's Gardens in The Hague.
The city's Service for School and Children's Gardens, begun in 1919, was originally involved mainly with school gardening projects, which were seen as a means to one end only: the happiness and well-being of the child.
However, after the second world war, when the population increased rapidly and industrial development progressed, and with it environmental pollution, the scope of this Service was enlarged.
Moreover, between 1948 and 1970 emerged the concept of nature conservation, and side by side along with it a growing interest in ecology.
All these changes had consequences for the work of the services, dealing with environmental education in an urban setting.
In the beginning, the accent lay on the individual contribution such as not damaging plants, not killing animals, careful disposal if waste.
Later it was explained to the pupils that catastrophic changes in the environment are caused by man, and therefor man alone is responsable for them.
Every day children ask questions which arise from their intellectual, social and physical environment.
To answer these questions, the field of the environmental education must be broad and it calls for a multi-disciplinary approach which involves all the schoolmatters.

All schools in the cities, where these services do exist are given a programme with a choice of various courses in the field of environmental studies.

The fundamental educational guiding principles are:

- nature must not be shown to the pupils, they must themselves discover it
- what the pupil actually experiences is more important than what he learns by heart
- remembering experience is lasting longer than remembering knowledge
- discovering interrelationships is more rewarding than a accumulation of single facts

This kind of education should begin as soon as possible.
Consequently, the services provide facilities for children from three years on.
Children's farms play an important role.
In these farms children can come directly into contact with small domestic animals.
From this contact an attitude can develop which, in a broader sense, may contribute to environmental education.
Lessons lasting about one hour are given to the kids between four and seven years, but the children may spend eventually a whole day on the farm.
Outside school hours, parents can also visit the farm with their children.
Older pupils take care of the animals after school.
In several cities there are two types of gardening for children, during and after school hours.
The difference is that after school hours, gardening under the guidence of wardens is a hobby or leisure activity, while gardening during school hours is a part of a curriculum.
During the actual gardening period, attention is paid to such matters as soil composition, indigenous fauna and food chains.
After gardening the experience is evaluated at school.

Since 1971, kindergartens can attempt school garden projects.
In special small garden plots, very young pupils, from five years on can sow seeds and care for plants as well as small domestic animals.

Demonstrationlessons are given in special buildings were pupils and instructors meet.
These lessons and also the excursions are meant to optimize the use of living specimens to convey to them:

- firsthand knowledge of the variety of plants and animals in their own environment, an insight into the interdependance of soil, atmosphere, plants (as producers) and men and animals (as consumers).
- ability to identify and explain a biological community in relation to its environment, a concept of the food chain and ecological balance.

During the lessons and excursions the active participation of the pupils should be encouraged.
The services have also laid out a number of nature trails.
The guiding boolets contain descriptions of the flora and fauna and again direct attention to environmental problems.
These nature trails can also be used at any time without the need of a guide.
Some of the trails are particularly apt for school excursions.
For children between 10 and 14 years, special "puzzle trails" have been created, so thay can discover nature while playing.
Visitors' centres provide information about the area.
Each centre has his own exhibition of characteristic flora and fauna.
There are also special exhibitions about planning and research on rational landuse, landscape management and water as a natural resource.
The centres are often located near the startingpoint of nature trails.
A biology teacher is available to answer questions.
The centres might be used more and more as centres where schools can spend the whole day.
There pupils can carry out practical work, whereas in the centre itself, a library, technical equipment and other facilities provide opportunity for further study.

The services are more and more aware that the lack of recognition of the importance of environmental facilities has led to serious repercussions for many inner city areas.
Environmental education presents an opportunity to improve that recognition.
It is essential that green elements, still available in the cities, should be used more and that new ones should be created.
This may shorten the distance between man in the city and his natural environment.
Possibilities to encounter nature are always an essential precondition if we want to get to know more about our world.
It can be a help to acquire a real understanding of our environment.
On the other hand,however, environmental education includes ecological and cultural orientations (including economic, social development).
Since environmental education aims at a problem solving approach, a community based orientation and a greater responsability for decisions about the quality of life and public participation, greater public participation in urban planning is considered essential.
Therefore the services attempt to broader their scopes towards urban studies (eventually in urban study centres like in the U.K.)

Further information: City's Service for School and Cildrens Gardens
Raaltestraat 4
The Hague.

Case III.

ACTIVITIES OF THE INSTITUTE FOR NATURE CONSERVATION EDUCATION (I.V.N.)

The Institute has a long standing reputation and a wide variety of activities throughout the country.
According to its charter the Institute was founded in 1960 in order:

a. to promote a wide interest in nature conservation by drawing attention to the diversity and the ecology of flora and fauna, at the same time furthering a good interrelationship of man and nature;
b. to promote a good code of behaviour of man in the countryside and to abate litter, pollution and senseless destruction;
c. to help or advise other societies, associations and governmental bodies working on behalf of the conservation of nature and the countryside.

The Institute is the successor to the "Association of Volunteer Wardens" (founded 1948) which in its turn was the successor to the "Society for the Prevention of Pollution of the Countryside and of Towns and Cities" (founded 1938).

The last named organisations had been very successful by assisting conservation societies as Assistant-wardens, by guarding sites where rare plants were flowering etc.
However in 1960 it was judged necessary to try a new approach in which more attention was paid to education, which is still the main effort of the Institute.
It is thought to be most rewarding to make people aware of the beauty and amenities of nature and of the fact that the delicate balance of nature can easily be disturbed by thoughtless, be it often not intendedly offensive activities or behaviour.

Quite often the governmental or local authorities display in their plans a lack of awareness of ecological rules that can be harmful to the countryside.

Especially at the level of local government enlightened citizens can do a lot to correct this situation, provided that these citizens have acquired sufficient knowledge of ecological principles on which they can base suggestions for alternatives.

The Institute endavours to provide interested citizens with this basic information and at the same time it strongly promotes the integration of environmental education into the whole system of general education at all the levels.

The Institute is a private society but works with considerable financial support from the Ministry for Culture, Recreation and Social Welfare, all provincial and many local authorities, as well as from the Society for the Promotion of Nature Reserves, the Tourist Association, the National Nature Fund (a fund-raising organisation) and, occasionally, industrial sponsors.

There is a national head-quarter (I.V.N., Plantage Middenlaan 41, Amsterdam), with a small professional staff and there are about 100 local or regional groups with a total of about 7000 volunteers all over the country.
A lot of important work is done by these volunteers, assisted by the professional staff.

The Institute does not enlist members who can given only financial support; each member is supposed to contribute in some practical way to environmental education.

Of the various activities we mention here:

1. <u>Volunteer wardens</u>
   There are still quite a number of volunteers who assist the wardening of nature reserves; they also aim at educating the visitors to these reserves of recreation grounds, by explaining why a certain style of behaviour is necessary in order to avoid irreparable damage.

2. Nature guides

Each year local or regional training courses are organised where qualified biologists lecture on ecology, the principles of nature conservation and ways to share the acquired knowledge with a wide general public.
The courses are concluded with a certificated examination.
At the moment there are about 2800 of these qualified nature guides who conduct excursions in nature reserves, organize nature trails, lecture at camping sites etc.

3. Nature walks

Every year, local and regional groups organize nature walks, where interested youth clubs and adults have a chance to join a conducted tour in a nature reserve of where-ever the guides think there are possibilities for instructive contact with nature and ecological problems.
The headquarters prepare the publications of attractively illustrated brochures written by experts on special subjects as water pollution, mammals, road-side verges, bird-songs, etc.
There is no charge for attending the nature walks, which are intended as a possibility of a (first) contact with nature and environmental problems.

The attendants receive a free copy of the brochure.
Every year some ten thousand youngsters and adults join these nature walks.

4. Contacts with youth clubs

The Institute tries to interest youth clubs in the problems of environmental conservation.
There are very good contacts with "Scouting Holland".

5. Conservation camps

The very successful conservation camps are dealt with in Case IV.

6. Audio-visual aids

Mainly for teachers and pupils the Institute produces audio-visual aids to environmental education.
These are brochures on special subjects, illustrations, wall charts, postcards with coloured pictures of animals and plants, colour slides combined with a spoken commentary on tape, films etc.

7. Wall-charts

Special mention should be made here of the attractive wall-charts, of which six are available at the moment on Woodland, Heathland, Aquatic animals and plants, Toadstools, Dunes and Water.
Going with these wall-charts are booklets with special information for the teachers.
Apart from being used at schools, they are sold at a low price and there is so much interest for them that reprints of most of them have been necessary.
A sheet with 16 small reproductions of pictures from the charts can be ordered for use by the pupils and the Institute sells some 200.000 of these per year.

8. Film-library

There is a small library of films with either Dutch or English soundtracks.
These are available for a low fee, to be used by schools, clubs, etc.

9. Instruction of teachers and youth-leaders

At the headquarters is a special lecture-room which can be used to inform teachers, youth-leaders and others on the possibilities of environmental education.
This room can be equipped with modern audio-visual aids.

10. Magazine "Mens en Natuur" (man and nature)
This so far quarterly magazine will appear from 1978 on 6 times a year with articles and information, book reviews etc.

Further information: Institute for Nature Conservation Education
Plantage Middenlaan 41
Amsterdam.

Case IV.

The conservation camps of the Institute for Nature Conservation Education.

See also in case III.

One of the activities of the I.V.N. is the organizing of Conservation Camps in nature reserves for young people in the age of 15-25 (max. 30) years.
This activity, more or less modelled after the work of the British Volunteer Corps, was started in 1962 with three camps with a total of 125 volunteers.

The aim of these camps is twofold:

1. to introduce the volunteers to the problems of nature conservation and the management of the environment and

2. to assist the owners of the reserves (national or regional societies for the conservation of nature, State Forestry Service etc.) in the practical management, such as timber clearance, scrub cutting, cleaning of ponds and ditches, selective clearance of young trees or plants in order to conserve others etc.

Education forms an integral part of camp life. Talks and lectures on ecology and on the management of nature reserves are given and lead to discussions. Normally the work is done in the morning and afternoon: the evening is reserved for lectures, film shows and discussions.

Each camp starts with a visit to the reserve where the group is going to work and a short lecture on the reason why it is to be done.
For tasks requiring a certain professional skill the volunteers are instructed and assisted by the permanent warden of the reserve.

In 1971 seventeen camps were organized and in 1972 even eighteen. Nevertheless there are still more applicants than can be admitted. However, the bottleneck in organizing these camps, for which there is a full-time secretary-organizer now, is that for each camp one needs some five, or six experienced volunteers, who run the camp (the preparatory work having been done by the secretary-organizer). These volunteers are mainly recruted from people who have attended previous camps and who have shown qualities for being future camp-staff-members.
Because of the limited number of camps which can be organized there is a rule that one is not admitted to a camp if one has been there in previous years.
We regret this very much, because there is no follow-up and therefor an experiment was started with the organizing of weekend-camps, where work can be done all the year round in reserves near towns where volunteers live.

In 1971 an analysis was made of some of the backgrounds of the 605 volunteers who came to the seventeen camps.
More than 75% were in the age of 15-18 years (45% were 16 or 17 years old, 16% were 15 years and 16% were 18 years old).
Of the 605 boys and girls 92% were attending secondary schools, teacher training colleges or universities, whereas only 8% were artisans.

As a rule participants of the camps should be fifteen years old and under twenty-six.
One camp a year is reserved for the ages between 20 and 30 years.

Participants have to pay their own travel and Hfl. 15,-- for insurance, but food and lodging are free.
This is paid for from a lump sum which the owner of the reserve pays to the Institute and a yearly special grant from the Ministry for Culture, Recreation and Social Welfare.
In each camp there are volunteers to cook and to prepare the meals.

Lodging is most times in the barn of a farm near the reserve, where people sleep on paillasses, bringing their own sleeping-bags.

The Institute owns three or four sets of kitchen utensils, big pans etc. and normally in July and part of August two or three camps are running at the same time.
The participants bring their own plates, a mug and cutlery.

After ten years of experience it can be concluded that the Conservation Camps seem to be a rewarding way of bringing young people in contact with nature, the problems of nature conservation and the management of the environment.
We regret that owing to the limited numbers of available camp-staff participation has, as a rule, to be limited to once in a lifetime.

However, organizing some twenty camps seems to be about the limit of what one full-time secretary-organizer can deal with.
Weekend camps on a smaller scale and organized locally might make it possible to give a follow-up to the education which was started in the camps.
Those who are in charge of nature reserves do appreciate very much the assistance which is given by the volunteers and much of the work which is done by them might even have not been done at all if it had to be done by paid labour forces.

Finally the camps seem to be a good outlet for young people who whish to make a personal contribution to the conservation of the environment while at the same time it arms them with some basic information which we think is necessary when one wants to judge whether local or regional authorities are justified in the way they deal with environmental problems.
The camps could be especially rewarding for students of teacher training colleges.

Further information: Institute for Nature Conservation Education
Plantage Middenlaan 41
Amsterdam.

Case V.

Environment education for consumers.

In environmental policy, the emphasis has, so far, especially been on giving a legal basis to the prevention and control of pollution in the production process.
In the coming period, the control of environmental damage due to consumption will be given more attention.
This also against the background of the realization that, in the end, all polluting production and distribution of goods and services are caused by the consumer demanding these goods and services.

Based on the principle "the sensible customer is king" it may be said that industry should produce these goods and services demanded by the consumer - without these goods and services having been forced upon her/him - on the condition that both parties are conscious of and take account of the damage to nature and the environment as a result of the production, distribution and consumption processes.
In the sphere of production and distribution, this "taking account of" can, in many cases, be imposed by legal measures; in view of the existing norm of consumer freedom, information and education concerning consumption are of prime importance.

The consumer who not only sees the immediate use provided to him by a certain article or service, but who also wants to include in his decision the effects of his consumption for others and the environment now and in the future, will be in need of information about the environmental aspects of the consumption of the article in question and its phases of production and distribution.
Advertising, in general, does not provide him with this information, unless the environment may be an incentive to buy, such as phosphate-free detergents.
Consumer information will have to be done via the consumer magazines, consumer affairs on radio, television and in the press, comparative tests on goods, informative labelling.

In this connection it would be ideal if we knew of every product - at any rate, of comparable packages of goods and services - the entire effect on the environment from exploration and production of the raw materials to the stage of waste and, possibly, re-cycling process, and if this could be clearly mentioned on the product concerned.
However, it is to be feared that the research necessary for this will be very time-consuming and expensive.

It is a good thing to see that in the Netherlands, too, the consumer organizations are becoming more and more conscious of the environment; evidence of this is, for instance, their position-taking in favour of phosphate-free detergents, against aerosol canisters containing freon, against apparatus using excessive amounts of energy and water, against noisy products, and in favour of better information, more production information.
In the Netherlands there are two large consumer organizations, the "Consumenten Bond" and the "Consumenten Kontakt" separated from the former in 1975.
The "Consumenten Bond", founded in 1953, was the first organization in the Netherlands to be concerned with the specific problems of the consumer.
It is an association of individual members, at the moment over 450.000.
Purpose is the provision of objective information on goods and services to its members via the magazine the "Consumentengids" and, since recently, the "Consumentenreisgids" (information on travel).
Besides, it provides written mediation in complaints of buyers to suppliers and, this being the case, assistance in legal procedures.
It operates independently of subsidies from the government and industry.
The "Consumenten Kontakt" is an umbrella organization to which belong: the "Nederlandse Gezinsraad" ("Netherlands Family Council"), "Nederlandse Vereniging van Huisvrouwen" ("Netherlands Association of Housewives"), the 3 tradeunions, and, since recently, the "VARA" (a socialist broadcasting corporation).

Direct contact with the consumer takes place via the magazine "Koopkracht" ("Buying-Power").
The "Consumenten Kontakt" lays much emphasis on the promotion of collective consumer interests.
In information one aims at creating a critical behaviour of the consumer, in which play a part not only the individual interest of the buyer but also general interests, such as a more economical use of energy and the prevention of waste of raw materials and pollution of the environment.
The number of subscribers is over 25.000.
It is partly subsidized by the government.

A favourable development is, furthermore, that private environment organizations, women's organizations and consumer organizations are working more and more together in information activities aimed at the consumer, such as with regard to the use of water in and about the house, the reduction of the amount of domestic refuse, etc.
Mention should also be made in this context of the campaigns by the government to come to a more sensible use of energy in the house (amongst other things by better insulation) and the support by the government to exemplary experiments of an environment-friendly style of life, such as the project "The Small Earth".
With regard to this project, it is worth mentioning that one wants to stimulate here a nutritional pattern which does not need scarce raw materials from the Third World.
"The Small Earth" is a project of the foundation "De Jonge Onderzoekers" ("The Young Researchers"), Experimental Garden North-Brabant, established in March 1972.
Purpose of the foundation is to let young people play an active part in scientific research.
This "active part" takes place especially in the fields of agriculture and horticulture, and their practical experience in this area enables them to give proper information.
There is an experimental farm with experimental fields, laboratory, etc., a shop and a distribution centre, and a re-cycling house.

In addition, research is conducted into the behaviour of the consumer, distribution of foodstuffs, price-fixing etc.
In all these activities, ideas about small-scaleness and decentralization play a part.
They want to make clear what the mechanisms and systems are which are going to have an ever-increasing influence on people's daily lives.
And they want to teach people to make a conscious decision for a more humane society, in which ecological principles are to serve as guidelines.
There are some 30 workers.
Annually, some hundreds of persons take some course or other and more than 10.000 visitors are shown round "The Small Earth".

In this context, reference can be made to the "green" shops, springing up all over the country and which are run by "amateurs". The food being sold can be indicated best by the term "ecological". It concerns here not only "non-sprayed" or "full of value" food, but a number of facets inextricably bound up with each other, such as: a biological and environment-friendly way of cultivation, the products should belong to the season and be consumed as much as possible in the neighbourhood where they are grown, the products should have had, as little as possible, industrial and/or chemical processing, attention is paid to re-cycling, which means for the shops re-use of packaging material.
Associated with these principlesis a participation in social and political events, for a change of the nutritional pattern is also a political choice.
Information takes place via information material which is available at shops for anyone to see, and via conversations with the customers.

The scientific world, too, undertakes activities to give consumers information about, inter alia, the environmental aspects of what they consume.
For instance, booklets have been published with a critical assessment of food and cosmetics we use, and there is the so-called "consumer drama", an initiative taken by a group of students of Wageningen Agricultural University.

They perform the play "Het toetje met de nare nasmaak" ("The dish with the nasty aftertaste"), which, on the basis of a concrete example, deals with matters such as: the whys and wherefores of the production process, the consequences of the productive system, lack of say of the consumer, ever-increasing prices, misleading advertisements, etc.
They regard these problems as being a result of the present-day economic system.
This play is only performed before groups forming an entity and who can do something with the information presented, such as women's organizations, retailers associations, political organizations, or groups of persons taking a course or adult education groups concerned with subjects of which consumer problems can form part.
Written information material is available and, if requested, actors guide the activities of the groups after the performance of the play.

Further information: Ministry of Health and the Environment
Dr. Reijersstraat 8-12
Leidschendam.

Case VI.

Secondary level.

PROJECT BARST ("BURST").

Students' project about over-consumption.

One of the more than 600 local private action groups for the conservation of nature, environment and landscape in the Netherlands is the "Kontakt Milieubeheer Zaanstreek" ("K.M.Z.") ("Contact Environment Management Zaan Basin").
This action group is active in the region right North of Amsterdam, the basin of the river Zaan.
"K.M.Z." makes use of the opportunities available to the population to influence schemes and developments in the fields of physical planning and environmental hygiene via legal procedures.
As do many other action groups at local and national level, "K.M.Z." knows that taking action against concrete damage to nature, environment and landscape alone is insufficient.
It is of essential importance that such damage is nipped in the bud by obviating the social causes of the undesired developments.
In order to obviate these social causes, it is necessary really to involve the population in the environmental problems by making clear what the causes and backgrounds are of the environment miseries, by realizing a personal environment-conscious behaviour, and by inducing the population to take an active part.
The relation education/action is indispensable for achieving the end in view: the conservation of nature, environment and landscape in the short term and in the long term.

Theme.

With this in mind and after having organized already in 1971 a school project for over 12.000 pupils about the technical aspects of environmental pollution, "K.M.Z." subsequently organized, in consultation with the schools, a project about environmental problems in a wider context: this project was called "Barst" ("Burst").
The concept of over-consumption functioned as key word: environmental pollution, exhaustion of resources and its resulting conflicts of interest between poor and rich countries.

And as central questions: what are the underlying causes of environmental problems and what can we do about them?
Two aspects of the theme were paid attention to.
First, we are consuming too much in respect of the possibilities provided by the earth.
This leads to the environment being polluted and the natural resources becoming depleted.
This is, ultimately, a threat to life on earth.
Secondly, the rich consume too much in relation to their poorer fellows, notably in the Third World.
To reduce and eradicate this difference is one of the most important tasks in the world of to-day.
The two aspects have been worked out in great detail in the "Over-consumption Memorandum" of 238 pages, written by a study-group of the "K.M.Z." on behalf of the "Barst" project.

Objectives.

The "Barst" project tried to achieve 3 objectives.
First of all, the "K.M.Z." wanted to engage secondary education students - as much as possible with the help of their own teachers - in the problem of over-consumption.
Secondly, it was hoped that "Barst" could make a contribution towards giving this problem a permanent place in the ordinary curriculum of schools.
Thirdly, one wanted, through this project, to induce others to do something similar.
This was called the "example function".

Methods.

"Barst" was an experiment because an attempt was made to design suitable methods for the above objectives and this at three levels:

- at teacher level;
- at student level and
- at the level of all those not immediately involved.

a) approach of the teacher.
An important link in the project were the teachers.
Much depended on their enthusiasm.

Good contact between the organizers and teachers was, therefore, necessary.
Once it had been decided to organize a new project, personal contact was made with the teachers of all 33 schools.
Their view as also asked on the subject of over-consumption.
There was general agreement on this choice.
In the course of the period of preparation, the contact with schools was sustained by means of the "Barst" bulletins, in which mention was made of the organizational progress of the project.
All - some 300 - teachers concerned received a copy of the "Over-consumption Memorandum"; the contents and the programme of the project were discussed with them.
Co-ordination groups, consisting of teachers, a few students and 2 "Barst" workers, saw to it that the activities within the framework of the "Barst" project were stimulated and co-ordinated at their own schools.

b) Approach of the student.
To inform the students, 2 booklets were compiled; one rather simple and the other a bit more detailed and more difficult.
The contents of the booklets were based on the "Over-consumption Memorandum".
In addition, a handbook was compiled.
Together with the activities to be organized it created the possibility for the student to be actively concerned with these matters.
Besides this written information, a list of lecturers and a list of appropriate films were presented to the schools.
Lecturers and films could, for instance, be used by the schools as an introduction to subjects concerning the theme of over-consumption.

c) Approach of those not immediately involved.
The group of those not immediately involved consisted of the other inhabitants of the Zaan Basin and all those living elsewhere who might do something with the idea of "Barst".

Among the inhabitants of the Zaan Basin, it was of especial importance to the parents of the students that they knew something about "Barst".
Of course, it was impossible to inform all residents of the region about the project.
Yet, via the regional press, a meeting with a panel of experts, and a big manifestation, the population of the Zaan Basin got involved in the project.

Organization.

The organization was in the hands of a small group of about 10 people.
This group had a high degree of independence with regard to the "K.M.Z.".
This was, inter alia, evident from the fact that the views laid down in the memorandum did not represent exactly the views of all board members of the "K.M.Z.".
The small group, starting its activities in February 1972, set up a number of working-groups, notably:

- methods group: consisting of teachers, students and "Barst" workers; this group has, among other things, drawn up the scheme for the approach of the teachers and students according to various forms of education and age categories;
- publicity groups: it looked after the contact with those not immediately involved and, later on, took care of the availability of lecturers and films;
- study-group: it compiled the "Over-consumption Memorandum";
- writing-group: it wrote the material for the students.

If there was a need for it, other interim groups were set up and discontinued again.
The small group co-ordinated, stimulated, supervised and made the decisions.
Only in a few, very special, cases, decisions were taken by all those involved in the project.

Financing.

The cost of the project amounted to over f.25.000.
This cost was covered by subsidies from the Ministry of Public Health and Environmental hygiene; the Ministry of Education; municipalities in the Zaan Basin; schools, industry; social institutions; and private persons.

Follow-up.

The main activities of "Barst" were concentrated in the period of September 17 - October 13, 1973.
In this period, one tried to get as much attention as possible for "Barst" both inside and outside schools.
On October 13, a manifestation in the church square of "Oostzijderkerk" at Zaandam ended this period of activities.
It was stated explicitly that, after this period, the schools would continue to pay attention to these problems.
This is necessary because the subject is too big to deal with it fully in 3 weeks.
In the follow-up period, moreover, attempts could be made to include this subject as a whole in the normal curriculum.

Results.

The objectives mentioned above have, in our opinion, been partially achieved.
The first objective - to make the students think about the problem of over-consumption - succeeded, in many cases, rather well.
The fact that these problems come within the sphere of various subjects often resulted in a somewhat fragmentary treatment, in which a large amount of attention was given to a number of subsidiary problems, whereas other aspects were completely, or almost completely, neglected.
This need not, in itself, be objectionable, but there is a danger that, as a result, the connection between the subsidiary problems is getting into the background.
Of course, there are big differences in the way in which - and the intensity with which the various schools deal with the treatment of these problems.

The results achieved with regard to the second objective are more difficult to assess.
Judging from the investigation among teachers, it is to be expected that many teachers will pay attention to over-consumption also in the curriculum of the new school-year.

The result in respect of the third objective - the example function - is also not easy to assess.
Already pretty quickly after the start of the project, over 200 applications for the "Over-consumption Memorandum" and about 150 for "Barst" booklets were received from all over the country (and also from Belgium).
These applications were mainly received after publications in the national press.
It has become clear that many schools, in dealing with over-consumption problems, do need stimula from outside.

Further information: "Stichting Natuur en Milieu"
(Foundation Nature and Environment")
Noordereinde 60
's-Graveland.

Case VII.

Activities of the "Stichting voor Milieu Educatie"
("Foundation for Environmental Education").

"Energie Educatief" ("Learning about Energy")
one of its projects.

The "Foundation for Environmental Education" came into being in 1975.
It is a non-governmental organization, originating partly from actions and action groups concerned with the protection of the environment, notably problems of energy.
Problems in the field of energy, and especially the problems around the use of nuclear energy, showed, indeed, within the world of science widely differing views.
The debate in Parliament still had to take place.
The information of the population (free of charge) would be too one-sided.
This was the reason for the government to support this initiative.

The "Foundation for Environmental Education" is, therefore, concerned with giving educational information about problems connected with the human living-environment on the basis of an interdisciplinary approach.
The usual information about matters concerning the environment is either from the point of view of a branch of a certain technical or scientific discipline (e.g. "the environmental aspects of nuclear energy") or in the form of nature education.
The two are considered inadequate by the "Foundation for Environmental Education".
The essence of its approach is that the relationship between man and nature, and by that the relationship between men themselves, should be changed.
This relationship is almost fully dictated by the socio-economic structure of society .

The Foundation regards insight into problems connected with the environment as an important means of making people aware and conscious of the essential questions in society, and regards environmental education as a means of social emancipation of people.

Because of the Foundation using this way of approach, it has the following consequences for its activities:

1. Environmental problems should always be dealt with in their social context.

2. Education does not mean "teaching" but education should be a dialogue, an interaction between people.
   In this respect, it should be borne in mind that there can never be a clear dividing-line between objective information and subjective position-taking.
   One can learn to assess information and to choose on the basis of this assessment.
   By this way of approach, the "Foundation for Environmental Education" wants to reach the schools, notably the top classes of primary schools and secondary schools; this in conjunction with teachers and teachers training courses.
   Besides, it aims its activities at adult education workers, working young people and housewives, and it also wants to reach church organizations, political parties and trade-unions.
   The exhibition "Energie Educatief", the first project of the Foundation, also started in 1975.
   The reason to design this exhibition was the public concern which arose as a result of the one-sideness of the information given by industry on problems in the field of energy.
   The exhibition "Energie Educatief" is not an end in itself but forms part of a series of activities now being developed in the Netherlands.
   The Foundation does not direct; it supports activities if asked to do so.
   It is taking part in the process of a growing awareness.

For this reason the "Foundation for Environmental Education" wants to increase its activities by recording its experiences with schools and groups for others to make use of them. (e.g. teaching material and descriptions of projects). This material is developed and elaborated together with the visitors.

For two years now, a bus has been travelling through the Netherlands.
The exhibition is applied for by groups of persons concerned with energy problems.
They use the exhibition as a source of information.
The exhibition consists of 40 panels, a model of an experimental house with solar heating, a miniature car powered by solar energy, and a few other practical applications in the field of alternative energy.
The exhibition has a table with material containing a wide variety of information in the field of environmental problems, notably in the field of energy problems.
Many secondary school students visit the exhibition.
There is a permanent attendant who gives information.
There are four accompanying booklets which can be sent to schools beforehand.
As a result of this, the exhibition is often used in the part of the curriculum dealing with this kind of subject.
Groups of housewives and working young people visit the exhibition.
Evenings are also organized with slide-or film shows.
In addition to the information given by the private electricity companies, this exhibition is a valuable contribution towards making people think about possible solutions of energy problems.

Further information: Foundation for Environmental Education.
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