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Foreword by Hanja Maij-Weggen, Dutch MEnisfterwntlrqggurtL ' '3'

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Public Works and Water Management

Government policy

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Watertourism and the environment

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The Netherlands and the water are inextricably connected with each other. Alter zlll, large areas nfour country lie below sea level and should, by all rights, be marshlantli In earlier times, water management was predominantly a question of volume control - basically keeping our feet dry The emphasis was on the construction ()ftlykes along the coast and the Colophon

Editorial Committee:

Ronald Flipphi, Dorian van tler Kooij, llerman Verheij (Ministry of Housing, Physical Planning and the Environment), Esseline Sthieven (Ministry t)fEt't)Imnlie Affairs), Corry Veltlers (Ministry of Agriculture, Nature Management and Fisheries), Marianne Duyvestijn (Ministry ()l? Ttansporn Public W/orks 2lnd Whiter Management), jan tle Roij (Ministry of Foreign Affairs), Bus Veteeeken (Directorate General for International Cooperation, Ministry of Foreign Affairs).

Editor:

Maurits Gtoen

Contribution: Mark Fuller

Secretariat:

"Environmental News from the Netherlands",
Central Department for Information and International Relations
(Room F9)

Ministry of Housing, Physical Planning and the Environment

P101 Box 20951

2500 E2 The Hague

The Netherlands

Telephone x31 70

Facsimile e51 70 5

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Ministry ()li l lousiny. Phyxlutl Planningy (IILlLl the linvirmllment PO, Box 3(1931

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The Netherlands

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' I banks, on maintaining the water level in the rivers for

Foreword

the benefit of inland shipping and on providing water for agricultural use in both wet and dry periods. Now, the quality of the water has become increasingly important, particularly as our groundwater and surface water are becoming more and more polluted.

But management of volume and quality alone are not enough. The water, the sea and river beds, the shorelines and river banks, and the plants and the animals that live in or around the water are all part of an interdependent system.

The Netherlands government must be sure to take this into account when drawing up its new water management policy.

In 1989, the government published the Third Policy

Document on Water Management with integrated manage-

ment as its central theme. The basic principles on which the document is based are that pollution should be reduced and prevented, and that the polluter should pay. This applies to both industry and the individual citizen. Furthermore, the document emphasised that water that was still unpolluted had to stay that way - and not only the water, but also the sea and river beds, the water meadows, the shorelines and the river banks, so that the animals that lived in and around the water could return. This is known as the ecological recovery of water systems.

In the Netherlands, responsibility for water management is divided between the central, provincial and local governments and the water authorities. All of these authorities are going to have to get together to develop a balanced, integrated form of water management.

Such an integrated policy must be supported by a good environmental policy. Conversely, water policy can also give a significant boost to environmental policy, and indeed the extensive knowledge and experience of the water management authorities ensures that it does so. Close cooperation between environmental and water managers is therefore one of the cornerstones of my policy.

This places water policy in the position it should rightfully hold in this country - management of one of the basic requirements for the preservation of our natural environment and the safeguarding of human activity. In this way, water policy becomes part of a process of sustainable development, one of the objectives of the present government in the Netherlands.

Hanja Maii-Weggen

Dutch Minister of Transport, Public Works
and Water Management

GOVERNMENT POLICY

UNCED:fah

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environmental

Was UNCED a success? The answer will become clearer this autumn. when the General Assembly of the United Nations inaugurates the High Level Commission on Sustainable Development. Will the international community attach sufficient importance (and money!) to the implementation of Agenda 21?

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The Dutch environment minister, Hans Alders, and the development minister, Jan Pronk, are fairly optimistic, having seen the results achieved at UNCED.

"The outcome of Rio was basically what we expected." Professor Hans ()psehoor, head of the Dutch NCO delegation in Rio is less optimistic at this stage: "If you look at what is really needed, then the result was far from satisfactory. Rio was in fact no more than a start."

Ministers Alders and Pronk would certainly agree with this last point. They believe that the best thing to have come out of UNCED is that from now on environment and development are inextricably linked, and that a fair distribution of environmental space is now firmly on the agenda

"A new era dawned in North-South relations with the adoption by the United Nations Conference on Environment and Development of the Declaration of Rio de Janeiro and Agenda 21 on 1-1july, The recognition of the direct link the development process and the need to protect the environment. and of the need to integrate the two in order to bring about sustainable development lends a new dimension to cooperation between the developed and industrialised countries." These are the opening words of the letter which environment minister Hans Alders wrote after his return from Rio de Janeiro containing, y his report to parliament and at 'counting tor the stance taken by the Netherlands at the conference. He added that he would have liked to have seen more far-reaching decisions made. The signing by more than 130 states of the treaties on climate and biodiversity certainly represented a step forward, but the Dutch delegation felt that a number of points in the text of the treaties could have been tightened up. And although there was much talk at Rio about Official Development Aid (ODA) and the 0.7% of GNP (Gross National Product) objective this resulted in little more than a reconfirmation of the same target Jan Pronk, who chaired the finance working group, continued till the end to press for an undertaking that the target would be reached by the year 2000, but to no avail. For many years, the Netherlands has devoted more than

(17% of its GNP to development aid.
The only thing to emerge at Rio on this point was the promise that the undertaking would be linked to the implementation of Agenda 21 "as soon as possible". The High Level Commission on Sustainable Development is to monitor progress in this area.

Carrying capacity

All the more reason, therefore, for setting up such a commission, which should preferably hold regular meetings at ministerial level to keep up the momentum and quickly sort out any problem areas. Another positive development was the general acceptance

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of the adapted (global Environment Facility (GEF) - the joint environmental fund of the World Bank, UNEP and UNDP - as a temporary funding mechanism for combating environmental problems of global significance, which will support the work of the Commission. It was also recognised that the carrying capacity of the Earth is

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limited and is already being exceeded in many places. At UNCED there was recognition of the fact that the current patterns of production and consumption in the world make equitable distribution difficult. The Earth only has a certain amount of environmental space: which should be distributed fairly. This means that international environmental policy is set to become increasingly a question of distribution.

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Intact

Agreements were made at UNCED which forged a link between environment and development, and by the look of things these two interlinked issues will be a permanent feature on the political agenda. NGO Front man (Hans) Borschoor does not regard this as an unqualified success. He was simply relieved that the draft Rio Declaration on environment and development - too weak in his opinions anyway - which was drawn up in New York in April, made it to the finishing line intact. The Declaration could quite easily have been torpedoed if he believes. The constructive attitude of the developing countries was an important factor behind this minor success. The importance they attached to UNCED was illustrated both by the high calibre of their negotiators and by their willingness to make compromises. It was partly thanks to this that UNCED did not degenerate into the light between North and South that many had feared beforehand. At the preparatory meetings (PrepComs), delegates from the developed and developing worlds often talked at cross purposes. In the eyes of the industrialised countries, the countries of the South were neglecting the environment, while they in their turn accused the North of only caring about its own development.

Transfer of technology also proved less of a stumbling block than had been expected. Under the chairmanship of Hans Borschoor, a compromise was reached. The developing countries felt that all technology should be transferred to them without any conditions. A number of industrialised countries at least wanted to have their intellectual property rights protected. We managed to strike a happy medium," he explains.

Implementation

The Netherlands is already getting down to the business of putting the Rio results into practice, at both national and international level. One important task is to define the idea of environmental space and work out how it should be distributed. Steering production and consumption patterns towards

sustainability is another matter that has to be taken in hand. The link between unsustainable production and consumption and the degradation of the global environment was made clear at UNCED.

The NGOs will have a vital role to play in the process of moving towards sustainable development. Their independent status makes it easier for them to put forward initiatives which can bring about change in areas where stagnation has set in. It is therefore important that they become more closely involved in UN decision-making. It was for this reason that the official Dutch delegation to Rio included a number of NGO members.

"At every meeting attended by a Dutch negotiator, there was an NGO representative in the room," says Opschoor. "He could pass his ideas on immediately to the Dutch representative, just like the officials." Other countries are now giving some thought to the contribution which NGOs can make to official discussions, and that is a good sign. "The NGOs certainly struck a chord at the UN." The cooperative framework set up by the Dutch NGOs specially for UNCED will, in some form, continue to exist.

No buying off environment

The setting up of a High Level

Commission on Sustainable

Development is a welcome move. It will mean that there will be a group at ministerial level with political powers to ensure that Agenda 21 is actually implemented and that permanent funding is available. But implementing Agenda 21 is not just a question of money. The North must not be able to buy off the environment by simply making funds available to the South.

We in the North must also accept a cut in our standard of living, which means that we hold one of the keys to the success of UNCED. "We have to pursue credible environmental policies ourselves to show that we mean business," says Alclers. The implementation of the radical National Environmental Policy Plan (see previous issues of ENN) is crucial, as is bilateral cooperation with developing countries. Jan Pronk, the development minister, has therefore set up an Environmental and Economic Independence Programme, which offers

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LIFESTYLE

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water tourism and he Dutch saying, "God made the world but the Dutch made Holland", refers to the fact that much of the Lowlands the environment originally had to be rescued from the 18th century's advances. Today, Dutch ingenuity in this field is being put to a different test as the country tries to balance environmental protection of its waterways with increasing demand for water sport facilities. The immense popularity of water sports in Holland has put a severe strain on the environment. Holland has one of the world's highest densities of pleasure craft per capita. Its vast network of lakes, rivers, canals and coastal waters have also become the envy of sailors the world over and are the main attraction of the country's blossoming tourist industry.

The first signs that all was not well with the water sport industry emerged at the end of the 1970s. When a survey showed that the bacteriological pollution of the water in harbours and marinas from on-board toilets had reached unacceptable levels. Concern grew as follow-up surveys highlighted the disastrous environmental effects of engine emissions, toxic water-resistant paints and the physical damage caused by sailing craft to river banks, reed beds and other areas of natural beauty.

To its credit the Dutch water sport industry association HISWA met the problems head on. "We realised that we had to convince both the industry and the consumer that if they didn't do anything about the situation, water sport would no longer be feasible or affordable in Holland," said Albert Willemsen, head of HISWA's environmental programme.

HISWA carried out its own inventory of the waste flows from pleasure craft and, eighteen months ago, began working on environmental care systems for boat manufacturers.

Ahead of its time

Nine environmental care systems covering 17 different branches of the industry will be launched in September. Claimed to be among the most advanced in the world, they are expected to form the basis of 21 new EC directives and 21 new Dutch laws on water sport and the environment. The systems involve a broad range of measures aimed at modifying industrial production processes to prevent water and soil pollution and to promote energy saving and the recycling of waste. 500 of 111 SWAs, 1,000; 100 companies have already signed up for the new systems. After a candidate company's production methods have been assessed, they receive instruction, in the form of handbooks and courses on how to implement environmental improvements. Measures range from the introduction of waste water collection points: from where the water can then

be emptied into the sewer system to the introduction of non-toxic paints and solvents.

Companies can avoid financial risks by being well-informed. These measures will not necessarily make production processes more expensive" claims Willemsen. Meanwhile,

HISWA, the tourist industry and the government have launched 21 series of information campaigns to improve the environmental awareness of participants in water sports, boat rental companies, sailing schools and marinas. The message is that clean water is an essential part of water sport," says Willemsen.

And the consumer seems to be getting the message. According to a HISWA survey 80% of water sport participants are prepared to pay for environmental improvements.

Eco-yacht

The latest phase of the campaign is 21 special yacht, which will visit 42 Dutch marinas this summer to

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demonstrate environmental improvements. The yueht's features include :1 buffer tank to stop diesel overflow and filter systems for bilge water and engine oil. The boat runs on special oil with :1 low sulphur content, its propellor shaft is lubricated with water rather than oil 21nd its hull is painted with :1 tetlon-hused produet which contains 11 small quantity of pesticides to eomhazit algae. The paint and the fuel Aer UXPCCEC(1 to be on the market shortly.

The ANWBt the country's largest tourist organisation with three million members, has played 21 leading role in informing consumers zihout the environmental hazards of waiter sport for many years. Its spokenmm Kees Jam Viln (iinkel, estimates that 99% of water sport participants are now environmentally aware.

"You must remember that water sports account for only 1% of itotul water pollution - the rest is industrial effluent. But then again there are always excesses. The 1z1stest threat to the water environment is the jet-ski. Holland has now declared the machine 21 type of motorboat so that its use is restricted." explains Van Ginkel. In 1991, the government changed the legislation for speedbouts, severely reducing their access to waterways. But it is not only the powered vessels that cause concern. As 21 new sport in the 1970s, windsurfing posed 21 serious environmental thteitt us beginners pritetieed on small lakes and tributaries, disturbing the nesting grounds of waterfowl. The sport has now matured and its exponents keep mainly to large expanses oliwutert such as the former inland sea, the Usselmeer, explains Villl (iinkel, A key titetor in the Dutt'h attempts to hzilztnee environmental LlHLl teereutiontll interests is the (R'Lll'LUH of separate environmental and water sport zones. "Less tliimztging forms of waiter sports. such :15 canoeing, will also be promoted and provisions will be made lbr the collection 21nd processing of waste (oil emissions and sewage)", explains Cees Kwakernuzik of the TNO Research Centre for Urban 21nd Regional Planning.

New nature reserves
Hans Mtiilermun of the South
Holland environmental group
Zuidhollnmlse Milieufetlerzltie is closely following attempts to turn one of I'lollzintl's largest water areas, the Bieshosh, into a nature reserve. 0The Biesboseh is one of the busiest recreation areas in Holland, accommodating more than 10,000 vessels 3 day at peak holiday times. These sailors often moor up for the night, have parties and create a lot of disturbance. Nevertheless, the govern-

ment wants to turn it into a nature reserve. There is an enormous battle at the moment between environmental groups and the recreation sector" he says.

Water sport is very popular in Holland. It's not possible to cut back the number of vessels. This is in fact more likely to rise. So we have to find a compromise. Jet-skis, motorboats and the release of untreated sewage into the water have to be banned. The government needs to show a high priority, creating new recreational facilities for water sport near the cities by taking agricultural land out of production, while designating water areas further afield as nature reserves." concludes Mulder.

For further information:

Albert Willemsen, HISWA, P.O. Box 108, 1155 ZJ Edam, the Netherlands, tel. 020 29931 72620; Kees van der Vinkel, ANWB, P.O. Box 95200, 2309 BA The Hague the Netherlands, tel. 070 51536667; (lees Kwakcrnzlakt TNO Research Centre for Urban and Regional Planning, P.O. Box 1041, 2600JA Delft, the Netherlands, tel. 015 15 696880; Hans Mulder, Zuidhollandse Milieufederatie, GW/ Burgcrplcin 3. 5021 AS Rotterdam. the Netherlands, tel. 010 4765555.

Cleaning flue gases

At the Technical University of Twente, a reactor has been developed that can easily clean polluted flue gases from oil and coal-fired electricity generating plants and boilers. Both sulphur dioxide and nitrogen oxides can be removed in one step. The first involves blowing a number of small (diameter: 1-2 millimeter) porous balls of silicon dioxide with copper particles into the flue gas.

At a temperature of 300-400°C the sulphur dioxide is transformed into copper sulphate. The nitrogen oxides are removed by adding ammonia to the flue gas, resulting in nitrogen gas and steam. At the same time, the copper sulphate can be converted back to copper oxide; the remaining compounds convert to sulphur or sulphuric acid which, in pure form, are both valuable substances.

Are the salmon
returning to the
Rhine?

SPECIAL FOCUS

by Gert G.

The salmon and the otter must return to Dutch waters. This is basically the primary aim of the Dutch government's policy on water management. Cynics say that the only salmon they see in the Rhine are on the labels of empty tin cans. Our surface water only meets the minimum quality requirements in a very limited number of places. The reason? Because, although there has been a reduction in direct discharges into open water, the pollutants deposited from agricultural land, road traffic and the air has not decreased to any significant extent. Part of this collects in the sediment on the beds of the rivers and lakes or continues through to the water table, which is falling. Incredible as it may seem for a country that is largely below sea level, the Netherlands is drying out. Not because of a shortage of rain, but because the Dutch are pumping up too much fresh water and are even pumping it into the sea. Water management in the Netherlands needs to be changed radically. There is no shortage of proposals as to how this should be done, but implementation of the changes is no easy task.

At first glance, the Netherlands appears to have little to offer the salmon or the otter. Yet the quality of our surface waters has undeniably improved in some areas since the 1970s. Less pollution is brought downstream by the Rhine and the Meuse. Levels of mercury, lead, copper, and zinc have decreased by between 30 and 90%. Quantities of organic micropollutants, such as hexachlorobenzene and polycyclic aromatic hydrocarbons have been more than halved. Discharges of oxygen-consuming substances have been reduced to such an extent that there are no longer serious problems with oxygen levels in Dutch waters. Can the Rhine, which was described in the 19th century as the largest open sewer in Europe, now justifiably be called Clean? Unfortunately not. If we look at levels of pesticides, nitrogen and phosphate, we get a completely different picture. The Rhine Action Programme (RAP), agreed between the five countries through which the Rhine flows (Switzerland, Germany, France, Luxembourg and the Netherlands), aims to reduce the input of these substances. The programme's specific aim is to reduce emissions of 11 major substances by between 30 and 70%; to help restore the Rhine to its natural state so that salmon and other fish can return to its habitat.

Diffuse sources

Which country is responsible for the pollution of the river that runs through its territory. In the Netherlands, approximately 40% of the most important pollutants have been designated as diffuse sources. These are household waste, traffic, and agriculture. However, these have been reasonably controlled in the past. The Dutch Water Pollution Division of the Ministry of Environmental Management has drawn up a timetable showing the reduction of diffuse pollution by industry, domestic households and agriculture. Initial reports show that reductions for most substances are proceeding as planned. But the targets for a number of substances, including mercury, copper, lead, and polycyclic aromatic hydrocarbons, are not being met. It has been decided to regulate these substances more strictly. In 1993, the programme is to be extended. If it proves to be insufficient, supplementary measures will have to be taken to ensure that targets are achieved by the year 2000. The Ministry of Environment and Nature has decided to set up a programme of environmental management which is closely following the progress of the RAP. It is rather less optimistic. "There is no doubt that the targets for diffuse sources are being met", he says. "But the targets for point sources are not being met. And reductions in domestic emissions have also been dis-

appointing recently. Two of the more important wttter
authorities have threatened not to pitrtieilxite."
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the progress (it. measures to l'le L'ie industrial discharges.
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says Mtnlermn. "Primer plans were drawn lllx but these .tre
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Environmental News from the Netherlands 1992 no, 3

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Chemical plants

In recent years, companies processing drinking water from the rivers have become little more than chemical plants. Although those who draw their water from Aquifers are better off, groundwater pollution is increasing, particularly nitrate pollution resulting from the extensive use of fertilisers. The RIVM estimates that 12% of the nitrogen deposited on the soil in the Netherlands is not absorbed by plants. Most of this residue ends up in the upper layers of the soil. In 1972 it evaporated in the form of ammonia which is then carried by air to cause problems of acidification and eutrophication elsewhere.

They ('XCL'SS of phosphorus spread over 11 million hectares of the FCHLUHS in the soil. HAHN till (it is still too little in the soil is still very little. This means that the - limit! still no 1011341" the water the phosphorus that is still living in it taming it to limit it through to the treatment plant. Most drinking water is still from the (the LKW's. Little is with arc ivxx polluted. X/tLEL'Y L.iii (klix't' tip in 10,000 years' time) with the - lower limit. It's still in the htn't- only the text - it is still six years' time (the past twenty years and the threat not yet reached the dt'cpct groundwater. But it (the less time - approximately 33 years - to reach the - deeper layers. This means that the first problems of the thmstlvs t'clt in the 1980s - 21st they will only get worse because there is plenty more pollution on its way):

Livestock

The government is finding it extremely difficult to limit the production of manure. There is an enormous amount of livestock in the Netherlands, including approximately 1.1 million pigs - practically as many as the Irish people. Measures aimed at solving the problem include changing the composition of livestock feed, processing manure industrially and transporting SUPPILISL'S U) arms where there is a shortage. The minister estimates 11215 million litres of that it these materials - the PFOVL'LI initiative by 1093. the time (i-lix't-stock with the hint to the rt-tititui. A study conducted by the RIVM in 1991 shows that the total load of nitrogen with the nitrate to the environment will not be reduced. In the meantime, in 2010 the HIERILCVCib 111.1111105Y haliothc Agricultural land in the Netherlands would still be too high. 'The study shows that even with the implementation (i. the mtusuttw INL'HUHL'LI the mt'g phuxphttc lowls xxmiltl (01101th(OIHLFLuH'L'HIMli the yt-iii' 3000 Tilt itititistriiil pro; ttxsiiig oi. HLIHLH'C set-ms thioiiil m UHUPiL'EL' tiiihitta Thu pitotssitig PitliHS art- not being built there - to limit (i)itUHLiS. tint! initial results show that the (ists of pmtssitig HLIHUR' LLFL' highci' th.iii tht- rt'x'ciititx FLIITIIL'HHURu there is it gix-tit LiCtli (i) lliiLLTEilinU' us to tilt (RINK (it the mitket hit th'ui lhtHLLR' ptictx.

Pollution or parching

It is thinking; the current situation is both very high (the Vittim 01' pollution is a sum of things that are not the Nt-thtitliiitis hiix ilikllulst'ki iii tht lust io)uirx Itum 1.% hilliuii m U) H00 billion in the Netherlands 00'? in (1115 got'x thttttly to the (itischolds, Domain List' (i)ititillix'illku xmtti' htix intr'ust-tl by 300 iii the lust 10 ituti's. iliiilx Ui totirxt- has miwqttdt-iitcx. (i)Lit water rxtxt'ti'tzx hiiw im't'll L'ilft'l) IIIUL Wllil tht- restih th.it in the NL'EIM'I'ijHii) - which hits it'wr ht-cii short (i). xmtur - the xi'iitttr tuhlt 1N iiillliig. hi the higher areas. this ixiiigt'x from the tux titt'iiicttu U) mutt; fihlll .i mutttz PUT lllhllh')'c.ll'x. tilt Nt'tht'thiititit 11th .ILUIJH) hwn prowl Ot tigitt's iikt' tht-xtz Aitt-t .liii xiiitct iiiiiitiiigcmiit iii Eilh totiiitry hiix lllltilflnllh ht-t-ti hiiwti (m pumping away (h mtn Ii ixxtiti' .tx p(mxhltz hi 11mm 01' mitt-r stii'plix. KhL' wiitt'i' htix .thxiii's huh litimlwti iititititit'ot'stiigm ti'mii tilt ptitlt'i'x uiitl thv ttm its to tht- 5m. During; tht' stlmmut. WL' .irt tal News from the Netherlands 1992 no 3

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able to compensate for the shortage of precipitation, in contrast to countries in drier regions, by redirecting rivet Walter to the poltlers. Since this water is polluted, however. the pollution is simply spread over 21 larger area. Agriculture, industry and the drinking water companies are jointly responsible for this In spite of the tluim by VIEWIN director MLlFtl111 thiit drinkingY water companies (l0 not pollute the water but actually (lean it betause "they remove all the filth that others have dumped in it", they are held directly responsible for the patching ()1. some areas of. the Netherlands

Price of water

To combat this process ofdtying out, the government has set up projects at 19 locations. These largely technical measures cannot disguise the Fact that consumption of drinking water is far too high. It is possible that the price of drinking water will be increased to try and bring,y the level of consumption down. 11A very good idea," says Eco Matser from the environmental organisation Stichting Natuur en Milieu. 11lt is far better to include the COSTs of water purification in the price ofdrinking water than to recover them afterwards." There is 21 great deal ofeliscussion about this VEW/IN director Mattijn says that the costs olipurifieation are then borne by the consumer, whereas he would prefer them to be paid by the polluter. I'lowever, as the VEWIN recognises. the Dutch consumer contributes to the problem by using such large quantities of drinking water. The VEWIN has drawn up a programme aimed at reducingr consumption of drinking water by 10% by the year 2000. Information campaigns and the promotion of products such as water-saving showerheutls and toilets seem to be producing results, "In 11 number of areas, drinking water consumption has been lower than was expected." says Matseri "In one area in particular, consumption actually fell for the first time in 71 years. Mutser does however point out that seasonal lilctors such 11521 hot summer, may have inlluent'enl the figures. The Dutch shower culture' still ACCOLIHES for high consumption levels, with almost hallotull tap water being used on per-sonal hygiene,

Integrated water management

Restoring the water table. cleaning up our surface waters anal lake and river bCLlS, restricting the use offertilisets and wasting less water - these are all obviously connected. They are 2111 part of. the water eyele. Measures aimed at individual stages in this cycle are doomed to failure. This has recently been adopted as the standpoint of the Dutch government's integrated water management policy. It recognises that the water, lake and river beds, banks and shores, and the flora anal thuna that live in these surroundings all form part ofa cohesive ecosystem. This system that has to be restored, because the salmon have not only been driven out of the Netherlands by water pollution. Due to the many dams, sluices 21nd loeks, it is simply impossible for them to return to the Rhine unless fish ladders are introduced - Which has occurred in a number of places. Without this, any improve-ments that may have been achieved in the quality of the water will have no effect at all.

For further information:

H. van Hoorn, International Water Policy Division of the Ministry of Transport. Public Works and Water Management, Koningskade 4, 2596 AA The Hague, the Netherlands, tel. 4-31 70 3744861; H. Muilerman, Zuidhollandse Milieufederatie, GW Burgerplein 5, 3021 AS Rotterdam, the Netherlands, tel. 1'31 10 4765355; T Mattijn, VEWIN, P.O. Box 70, 2280 AB Rijswijk. the Netherlands, tel. 4-51 70 5955555; 5. Matser, Stichting Natuut en Milieu, Donkerstraat 17. 3511 KB Utrecht, the Netherlands. tel. e51 50 551528; National Institute of Public Health and Environmental Protection (RIVML PI). Box 1, 3720 BA Bilthoven. the Netherlands, tel 131 50 7491 1 I; Veteniging Milieudefensic, Damrak 26. 10131.1 Amsterdam, the Netherlands, tel. e51 20 6221566.

ENVIRONMENT AND DEVELOPMENT

Their NoHd wastes

The current world population uses less than a tenth of the earth's reserves of fresh water. The 80 litres of water that too much water

During the UN World Water

Conference, held at Mar del Plata in Argentina in 1977. global reserves of fresh water were described in the following way; "If a half-gallon bottle held all the planet's water, the amount of usable freshwater would fill only half a teaspoon; of that amount, a single drop would represent the amount of water in rivers and streams. The remaining nine-tenths of a teaspoon would be groundwater."

In reality, the water is not evenly distributed, as the image of the teaspoon suggests. Canada alone possesses almost three-quarters of the world's reserves of fresh water. Although Canada only uses a fraction of this its consumption level is still far in excess of the UN minimum. The same applies to the Netherlands which uses 2700 litres per capita per day. This contrasts sharply with some parts of rural Kenya, where the population has to make do with 3 litres per person per day. Water consumption is increasing everywhere. The world population currently uses five times more fresh water than in the 1930s.

Only a small part of this is for domestic use. Agriculture and industry also use fresh water intensively.

Mauritania uses 98% of its surface fresh-water resources for agricultural purposes, which does not leave much over for the people themselves. Domestic consumption is usually defined as the fresh water used for drinking, cooking, personal hygiene and sanitation. But in areas

where there is no sanitation and where the UN considers necessary for each person's daily requirements is, however, not available everywhere. This is particularly true in developing countries, where there is an acute shortage of facilities for the extraction, purification and distribution of water, as well as for the removal and treatment of sewage. 10% of the Dutch development budget is devoted to drinking water and 'sanitation'. Due to the growth of population, agriculture and industry and increasing pollution, it is becoming more and more difficult for the supply of clean water to keep up with demand. And it is predominantly the poorer sections of the population that suffer.

Waste water from the sewers and from industry is discharged without being treated, available reserves of surface water will become unusable and the risk of water shortages and epidemics will increase. Reserves of groundwater are also under threat. In intensively irrigated areas, the water table may fall by several metres as has been the case in parts of northern China and the United States. In coastal areas, intensive consumption of groundwater for agricultural purposes threatens to render the remaining reserves unusable as a result of salinisation. This has

already happened in cities like Dakar,
Lima. Manila and Jakarta
Cholera

It is estimated that 93%)? of sewer
water in developing countries is dis-
charged untreated into surface waters.
In addition, industry and agriculture
discharge their waste largely untreated
into open waters. Consequently it is
becoming increasingly difficult to find
pure fresh water. 109? of the world's
population is currently faced with a
shortage of clean drinking water to a
greater or lesser degree. The problem is
particularly acute in the large cities in
the Third World. The lack of safe
drinking water and absence of a decent
sewerage system resulted in an
enormous cholera epidemic in Lima ear-
lier this year which affected a quarter of
a million people. About the same time,
Brazilian lecturer in environmental
technology Haroldo Mattos de Lemos
said in a Dutch newspaper that govern-
ments in developing countries do not
realise the importance of good drinking
water and sanitation. The problem is
aggravated by increasing urban
migration. "There is no public water
supply system," says Mattos de Lemos
"So the people have to drink dirty water
from a stream. And the government
seems incapable of taking the necessary
measures, There are no sewers, no
public water supply and no waste
collection services

Large cities

Under the current Minister for
Development Cooperation, Jan Pronk,
Dutch development policy on drinking
water and sanitation is concentrating
more on water supply problems in the
large cities. Previously, the emphasis
was more on rural areas. Joep Blom,
drinking water and sanitation expert at
the Directorate-General for
International Cooperation agrees with
Mattos de Lemos. "Drinking water is a
basic need. It should be freely available
to everybody living under the poverty
line But a lot of governments are
simply not capable of providing even
this minimum?

During the UN International
Conference on Water and Environment
(ICWIE) held in Dublin in the spring of
this year the idea was put forward that
water is a resource as much as anything
else and should therefore have a price. It.
people had to pay for it, they would
waste less. This proposal was greeted
with a lot of criticism from the Third
World countries, who said that many
people are not in a position to pay for
their water, Blom places these protests
in Context: "Because the government
fails to supply water free of charge, you

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find that people in urban areas are forced to buy it from the water vendors who bring it into the city from outside. 50 in practice, they already have to pay for it."

Sinking wells

The Netherlands is trying to learn from the mistakes of the past. Such as sinking wells without consulting the local population. A typical error was planting a well in a village in a tight spot in front of the house of a former village elder, who would not tolerate members of the lower castes on his property. We try and involve the users as far as possible in deciding where to locate wells," says Blom. Especially the women - they are, after all, the ones who have to fetch the water."

These sentiments are reflected in the final declaration of the IWE in Dublin, which stated that as many people as possible should be involved in water management, with women playing a central role. But to tackle the problems of industrial pollution and wasteful irrigation and to enable water supply networks to be set up, the rich countries will have to come forward with considerable aid packages. 13 years previously, the Mar del Plata conference had declared the aim that everybody should have access to clean drinking water. This resulted in the "Water decade" during which the rich North provided support for companies in the poor South.

Water companies

An example of this form of support was the twinning arrangements set up between eight Dutch water supply companies and counterparts in Indonesia. Although official contact has now been broken, these projects continue to operate on a smaller scale. The North Holland Provincial Water Supply Company (PWN) has been involved in a twinning project with Bogor in Java since 1987. "The situation there simply cannot be compared to the Netherlands," says A. Sehaalsma, Information Officer. HLL's task is mainly to transfer know-how. The companies there make their own plans for the construction and maintenance of facilities. We send teams there for a maximum of six weeks at a time to advise on such matters as flushing the pipeline and the use of chlorine-based flushing agents. People also come here from Indonesia," Dutch water companies are also involved in projects in the Third World in other ways. For example, the Amsterdam water supply Company is currently working in Alexandria in Egypt, "We were asked, via the ministry and engineering agencies because of our specialist knowledge, particularly of maintenance. We are helping to set up

a maintenance system in Alexandria."

Waste

The Dublin conference showed, however, that aid restricted to the provision of public water supplies and sewerage and irrigation systems is too superficial. The key objective is to drastically reduce the extent to which water is wasted on a worldwide scale. This is also important for security reasons. In many parts of the world, there are international disputes over the right to use river water. The Middle East is a good example of this. The Atatürk dam complex on the Euphrates in Turkey affects the water supply in Syria and Iraq. Water policy must be given a place in wider environmental policy. Water must be used more sparingly and it must be treated and reused more efficiently. In the Netherlands, at any rate, the 73 new drinking water projects that are started up each year are evaluated for their impact on the environment,

For further information:

J. Blom, Directorate-General for International Cooperation, P.O. Box 20061, The Hague, the Netherlands, tel. +31 70 5483751; A. Schaafsma, North Holland Provincial Water Supply Company (PW/N), P.O. Box 5, 2060 BA Bloemendaal, the Netherlands. tel. +31 25 223541; A. Hendriks, Amsterdam Municipal Water Supply Company, Contlensatorweg 54, 1014 AX Amsterdam, the Netherlands, tel. +31 20 5802911.

TECHNOLOGY AND ENVIRONMENT

Less sludge after
water purification

In line with the 'the polluter pays' principle, households and companies in the Netherlands have to pay a tax on discharges of untreated water. The more polluted the water, the higher the tax. Since this law was introduced in 1970, the number of water purification plants has grown enormously. But this has created a new problem. The purification plants produce large quantities of polluted sludge.

Amendments to the Waste Substances Act mean that this can no longer be spread on the land. Furthermore, the rates for dumping polluted sludge are increasing. This encourages water purification companies to further refine their processes.

The purification of waste water is a textbook example of end-of-pipe technology. The process is based on the principle of treating water with oxygen and bacteria. The waste water is passed through sludge enriched with bacteria in an oxygen-rich (aerobic) environment. The pollutants in the water remain behind in the sludge. The bacteria can then be removed for reuse. The sludge is separated from the water by allowing it to sink to the bottom in large tanks. The sediment that remains after the water has been removed is a liquid mass with a dry solids content of 5%. The sludge is composed largely of organic materials, but also contains heavy metals which the bacteria find: unable to break down. Until January of this year, there was no legal requirement for companies to treat this sludge. With the implementation of the Quality and Use of Organic Fertiliser Residue Decree, treatment became compulsory. It is now only possible to dispose of polluted sludge under controlled conditions. And since this costs money, the less sludge is produced the better. Furthermore, the sedimentation tanks take up a great deal of space and can cause odour nuisance in the area around the purification plant.

Less space

The development of zinzterobie purification methods has made particularly rapid progress. These create less sludge and produce biogas. One of the companies where this method has been applied successfully is the Grolsche brewery in Grootenboer. The brewery uses an Upflow Anaerobic Sludge Blanket (UASB), whereby the waste water passes through native anaerobic sludge under controlled conditions. The biogas produced is captured while the sludge, due to its granular structure, can be reused. The brewery rarely uses the system to its full potential, which is capable of purification percentages of up to 80 or 90 per cent. The great advantages of the system are the small energy requirement, the limited space required and the fact that it can handle high concentrations. The method, which was developed in the Netherlands, has been bought by 1

number of other countries, including the Philippines and Canada.

Reduction in size

Generally speaking, anaerobic purification requires more time than other methods, which reduces the treatment. Furthermore, the majority of existing treatment plants use aerobic methods. In these cases, an anaerobic stage is frequently enabling the quantity of sludge to be reduced by approximately 30%. Another approach is to improve the aerobic method. With government support, Delft University of Technology has developed a greatly improved aerobic method of treating waste water. The Biofilm airlift suspension tenetor allows the large purification plants to be considerably reduced in size with only a small modification. Instead of being contained in sludge thickers, the microorganisms are introduced in biofilms attached to small suspended particles, which improves the transfer of oxygen. The process involves less sludge and requires less space. In addition, it produces less offensive odours and the sludge can be more efficiently reused. The system has been successfully used for the treatment of industrial waste water at Gist-Broenjes in Delft.

Reuse

Efforts are now concentrated on reducing the quantity of sludge and thereby reducing the costs of disposal. Various disposal methods are available, including burning, drying, wet oxidation and composting. The ultimate aim, however, is to remove the harmful substances from the sludge so that it can be reused rather than simply disposed of.

For further information:

(Ir) J. Brouwerij, Fazantstraat 2,
7555 ZC Enschede, tel. 031 55 355570;
Delft University of Technology,
Julianalaan 154, 2628 BL Delft, tel. 051 15
78 111.

Soot filter on buses

In the city of Rotterdam and the surrounding area, buses belonging to public transport companies are to be equipped with a soot filter. These filters absorb 90% of the harmful soot particles in exhaust fumes. They also reduce emissions of volatile organic compounds by 20% to 50%.

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INTERNATIONAL HIGHLIGHTS

Action to combat

illegal dumping

The Netherlands lies on one of the busiest seas in the world - the North Sea. It is also one of the most polluted, so much so that one of the largest natural purification plants in the world is unable to process the sheer volume of pollutants. The limits of the North Sea's capacities to purify itself are being exceeded increasingly often. In 1990, this occurred in the northern section, where the development of poisonous algae on a massive scale disrupted marine life over an area of tens of square kilometres.

One of the most prolific sources of marine pollution is the oil industry. The World Resource Institute in New York has calculated that, for every 1000 tonnes of oil extracted, at least one ends up in the sea. According to the UNEP, between 2 and 20 million tonnes of oil disappear into the sea every year. It is estimated that a further 1.3 million tonnes of oil are discharged into the world's seas annually by international shipping. Of all the oil that ends up in the North Sea, almost three quarters originates on land, with 13% coming from shipping. Spills resulting from accidents account for only 11% of the total; the majority of oil spills simply go unnoticed.

MARPOL

Agreements aimed at curbing marine pollution have existed since 1975 when the MARPOL convention was signed. The aim of the Convention, in its own words, is to achieve the complete elimination of intentional pollution at sea.

As recently as 1982, the United Nations declared that "the world's oceans are in relatively good health". Ten years later, at the conference in Rio, the participating countries agreed that extra protection was drastically needed. The international cooperation required to provide this protection has, however, been slow in coming. The flow of waste into the seas and oceans can only be stopped by international agreement. The MARPOL convention, which has been amended this year, aims to cut back drastically on

pollution caused by shipping. The Netherlands is a signatory to the convention and is the first country in Europe to prepare extensive measures aimed at making shipping more environmentally friendly. Pollution of the marine environment by oil and other harmful substances and the minimisation of accidental discharges of such substances.

International regulation of shipping is almost entirely in the hands of the International Maritime Organisation (IMO) of the United Nations. 60 countries, who together account for over 83% of the tonnage of the world's merchant fleets, are members of the organisation. The IMO, originally set up to improve the safety of ships and crews internationally, has amended the convention 21 times - most

recently in March 1992. The convention has five annexes which contain the regulations governing the dumping of oil, chemicals and sanitary and household waste in the sea by ships. Certain substances may never be dumped and others only under certain conditions. The signatories to the MARPOL convention are only bound to comply with the regulations relating to oil and chemicals in bulk contained in Annexes 1 and 2. The remaining regulations are optional.

"This was necessary to avoid problems with ratification in some countries," explains L. Burgel of the Directorate-General for Shipping and Maritime Affairs (DGSM) of the Dutch Ministry of Transport, Public Works and Water Management. "That is also why the convention concentrated in the first instance on the most serious form of pollution - oil and chemicals from tankers. These ships wash out their tanks while at sea. Annex 1 of the MARPOL convention specifies that water used to wash tanks may only be dumped overboard if it has an oil content smaller than 13 ppm (parts per million). If the concentration is higher, the ship is in violation of the convention."

Illegal

Not all discharges are therefore illegal. A certain amount of pollution of the sea with environmentally dangerous substances is permitted under certain circumstances.

The March amendments also introduced stricter regulations for oil transport. As of July 1993, the standards for oil dumping worldwide will be further tightened up so that the regulations which at present apply only in special areas will be extended to apply worldwide. In spite of the MARPOL convention, it is estimated (see: the amount of oil dumped in the North Sea by shipping in 1990 was between 10 and 60 times the legal

limit. "Reduction of' illegal dumping is therefore one of the main objectives," says F. Vettheije project leader of the National Environmental Policy Plan for the Shipping Industry. In setting up this plan, the Netherlands is honouring agreements made at the North Sea ministers' conference. Unfortunately, the plan is proving extremely difficult to implement. The ports on the North Sea are not overly enthusiastic about the introduction of costly environmental measures. The Netherlands is the first country to draw up a plan of this kind. From sea to land

The new regulations shift the waste problem from the sea to the land, where disposal facilities are required for waste from ships. In the Netherlands, 53 harbour disposal facilities have been set up under the Prevention of Pollution from Ships Act. The surplus capacity for oil disposal, particularly at the facilities in Rotterdam Harbour, indicates that they are not being used to their full potential. The fact that illegal dumping continues to occur on a large scale clearly shows what is happening to the oil. "Ships have to pay to dispose of their oil in the harbour facilities," says Verheij. "The longer a ship is in port, the more it costs the shipping company - 60,000 to 80,000 guilders per day for the average tanker. The port authorities should take this into account."

A further problem is that ships are not obliged to dispose of their oil in the harbour facilities. "That is one of the great shortcomings of the MARPOL convention," says Verheij. "The reason is that the facilities for disposal were simply not available in many countries. In many Third World countries, this is still the case." Ships are entitled to use these facilities. "But if you don't want to, you just return to sea with the waste on board. The problem is you are not permitted to dump your waste at sea."

Encouragement

The Dutch approach is to encourage ships to make use of the disposal facilities by means of publicity campaigns improving the facilities to reduce the time required to use them, increasing patrols in the ports and from the air and imposing heavier sanctions. The Netherlands also supports the extension of the Exclusive Economic Zones. At present, legal punitive measures may only be imposed up to 12 miles from the coast. In 1993, this may be extended to 200 miles. The ministry is to take on 16 new members of staff to carry out the extra work. "Reasonable enforcement should then be possible," says Verheij.

Modification of oil tankers

As a result of the most recent amendments to the MARPOL convention, agreed in March of this

year, almost three quarters of the
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world's oil tankers will have to be
replaced by new, double-walled vessels
between 1993 and the year 2000 As of
july 1993, 2111 tankers built before 1970
will have to be double walled. Double-
walled tankers have only been on the
market since the mid-1980s, when the
IMO introduced regulations obliging
shipbuilders to fit all new tankers with
double walls. The buffer between the
walls reduces the risk of oil leakages.
However, due to the crisis in the
shipbuilding industry; few new tankers
have been built since the regulations
came into force. Consequently only 20
to 50% of the present global fleet
consists of double-walled tankers. Since
refitting existing tankers is very costly,
many of the older, obsolete tankers will
be queuing up for the scrap heap when
the new regulations come into force in
1995. The Netherlands played a
leading role in ensuring that the new
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stricter IMO safety regulations would
 apply to existing tankers, in the
 light of initial objections from
 countries with large tanker fleets.
 including Liberia. (ircece,
 (1 was imt1 Panama.

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(1) Pollution caused by accidents at
 sea is expected to be reduced considerably
 as a result of these new regulations
 although of course, the absolute
 reduction in total spillage will depend
 on the number of accidents.

For further information:

Mr. Verheij, Director-General of
 Shipping and Maritime Affairs, Ministry
 of Transport, Public Works and Water
 Management, P.O. Box 5817, 2280 HV
 Rijswijk, the Netherlands, tel. 070
 5955553; A.P. Burgel, Director-General
 of Shipping and Maritime Affairs
 Ministry of Transport, Public Works and
 Water Management, P.O. Box 5817, 2280
 HV Rijswijk, the Netherlands, tel. 070
 Efficient truck routing via
 satellite

Transport companies can make more
 efficient use of their trucks with the help of
 satellite communications. Fuel consump-
 tion can be reduced, as the driver can be
 sent directly to new 'jobs'. He does not
 have to look for a telephone and can make
 fewer stops, saving at least 3-5% on
 normal fuel consumption. This is the out-
 come of a practical research project
 conducted by the Rotterdam Tank
 Transport company.

Another advantage of satellite
 communications between the fleet owner
 and driver is the possibility of efficient,
 very short time planning of loading and
 routing operations.

(1) Pillar 4
 financial support to companies in
 developing countries to enable them to
 make environmentally sound
 investments.

During UNCED the Netherlands
 has reached cooperation agreements
 with Denmark, Bhutan, Costa Rica, in
 which all sides undertook to reduce the
 amount of environmental space they
 use, and distribute what environmental
 space they have fairly.

"The massive support for the
 Declaration of Rio allows us to
 conclude that the members of the inter-
 national community have accepted the
 new principles which form the basis of
 sustainable development individually,
 in their relations with each other and
 internationally," writes Alders in his
 letter to parliament. These are fine
 words which only serve to emphasise
 the enormity of the problems and the
 meagre solutions which have been
 proposed. But great oaks from little
 acorns grow.

For further information:

Marian van Giezen, Ministry of

Housing, Physical Planning and
Environment, P O Box 20951, 2500 E2
The Hague, the Netherlands.
tel. e51 70 555 3968:8215 Vereecken,
Directorate General for International
Cooperation. P O Box 20061. The Hague,
the Netherlands, tel. i51 70 348 6069;
Hans Opschonn Chairman of the Advisory
Council for Research on Nature and the
Environment. P O Box 5506. 2280 HH
Rijswijk, the Netherlands,
tel. i51 70 536 4510.

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Less ammonia from cattle-
manure

DSM Agro by in Sittard and NV GTI
Holding in Nieuwegein have jointly
developed a nes manure treatment pro-
cess which cuts ammonia-emission from
spread animal manure by more than 80%.
This process makes it possible to reduce
total ammonia emissions on a cattle farm
by at least 40% The principle of the so-
called Nutramoneprocess is a nitric-acid
based liquid, which is added to the animal
manure before it is spread. This converts
the ammonia in the manure into
ammonium, which is not volatile. The
companies plan to launch process
commercially in 1992.

For further information: L. Gussenhoven,
DSM Agro bv, PO. Box 5300,
6130 PH Sittard, the Netherlands.
Tell e31 45767741, fax 4-31 46528615.
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