

This appendix contains the English translation of the summary and the introductory paragraphs of the chapters of the report called 'HET MILIEU IN DE REGIO ROTTERDAM 2007'. We have also included a translation of the graph titles and the unique indicator numbers, referring tot the page numbers in the main report. The report is a result of a co-operation of regional environmental authorities. This co-operation is called 'Milieumonitoring Stadsregio Rotterdam (MSR)'.

Together with this appendix and the graphs in the report itself, we hope to give a good insight into the environmental quality in the Rotterdam area and of the efforts that are being made to improve this quality.

The environment in the Rotterdam region 2008



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Everyone knows the words, and has even sung them, 'silent night, holy night'. It sounds so obvious, but it seems to refer to days long gone. The silent night has not been holy for a long time. The theme study carried out this year into the effects of noise pollution shows that silence has become scarce in the Netherlands. In the same way as for everything that is scarce, noise pollution also costs money, a lot of money, and it is likely to cost a lot more in the future. The major agglomerations are discovering this to their cost. In Rotterdam, approximately 28 percent of the population are exposed to excessive noise levels generated by road traffic. Road traffic noise is certainly not the only relevant source of pollution. The accumulation of sound sources has a further detrimental effect on the picture of the annoyance caused by noise. Population surveys show that people also experience noise pollution as a serious problem. Data concerning complaints show that complaints related to noise have increased continually in recent years in the region.

In the last years, substantial research has been done into the health effects of regular exposure to excessive noise levels. The picture arising from this research is becoming ever clearer, noise pollution leads to health damage. Sleep disturbance stands out here. The days are getting longer, and I don't mean the approaching summer, but the way transport is occurring through the day and night. The twenty-four hour economy and the issue of accessibility also have a negative downside.

Noise is and will remain a complicated issue. Cities must become more compacted, and transport and mobility are only increasing. This prospect justifies a targeted approach, in which economic growth, urban compaction, mobility and quality of life should go hand in hand. Therefore an approach that is not just the responsibility of the government, but that also affects the commercial sector and the consumer. This is an issue that justifies considerable and, in particular, integral investment.

We cannot build noise barriers everywhere in the Netherlands. An important part of the solution will have to be found in technical solutions that address the source of the noise. Good results have been achieved in industry in recent years. The problem caused by

traffic is much more complicated. It is astonishing how much time it sometimes takes before innovations are introduced, even when the technology is available. The introduction of quiet tyres and engines has been long awaited. Brussels could accelerate this process; of course this also applies to the sector itself, but also to the consumer. If we don't demand that things change, then we are partially responsible for the annoyance we cause and experience. This is therefore a plea to rapidly introduce innovation. In addition, if we want to realise our ambitions for the future, when new urban development concepts are being considered, the problem of noise should be dealt with in a smarter way. I assume that the theme report will contribute to increasing attention for this issue. I hope you enjoy reading it. ■



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Schiedam, June 2008*

General

The cover of this report has a dot on the spine. This dot has appeared on each of the MSR reports since 1995. If all the MSR reports which have been published to date are stood side by side the dots will be seen to show a steady upward trend in environmental quality until 2000, with only a slight downturn in 1997. Since 2000 the dots have remained at a constant level but 2007 shows an increase which fortunately continues in 2008.

As in 2007, the increase remains slight, because despite some successes, the measures which have been implemented have only achieved limited results. Examples are the activities related to the Rijnmond Regional Air Quality Action Programme and to the energy theme. With the exception of energy and climate related themes the substantial and simple improvements were made in the past. The current problems generally require complex solutions to gain even a modest environmental improvement.

The world does not stand still. MSR will keep a close track of developments and results via the customary MSR approach. Monitoring correlates, where possible, indicators and policy

objectives to show whether the policy is on track. In deciding that, the following questions have been asked. Have the objectives already been met or will they be if developments continue along their present trend and are these developments taking place at the desired rate? This summary looks at the state of affairs for each theme.

As in previous years, we have conducted a trend analysis for a number of themes. We examine in detail one or more aspects of an indicator or subject relating to the theme in question. At the end of this chapter you will find a short summary of this. ■

On course	Not on course
<p>Social context</p> <p>The number of reports (complaints) regarding odour nuisance continues to decrease and is at an all time low.</p>	<p>The number of vehicle kilometres continues to rise, as a result of which emissions of carbon dioxide also continue to rise.</p>
<p>Spatial planning</p> <p>The interaction between environment and spatial planning is becoming increasingly intensive which means that bottlenecks are spotted more quickly and more opportunities are being utilised to improve the living environment.</p>	<p>Around urban centres and major arterial roads, building plans are held up due to existing concentrations of nitrogen dioxide, fine particulates, noise and external safety risks. A good understanding of the progress in achieving the objectives of the task to store water is missing.</p>
<p>Air</p> <p>For several years the concentrations of most air polluting substances are beneath the targets.</p>	<p>Emissions of acidifying substances by major companies are still far from the objectives for the year 2010.</p>
<p>Noise</p> <p>Municipalities and Province have completed or nearly completed action plans to reduce noise exposure.</p>	<p>The total number of reports (complaints) regarding noise increased due to the fact that the number of reports (complaints) about pub noise has increased.</p>
<p>Soil</p> <p>An increasing amount of soil is being reused, before or after cleanup and the bulk of the cleanup operations are carried out to such a standard that the sites can be used for virtually any purpose.</p>	<p>At the present rate, it will not be possible to finish soil cleanup operations in Rijnmond by 2030. Cleanup of new cases of soil contamination is lagging behind.</p>
<p>Water</p> <p>In the district of the Hollandse Delta water board, pesticides can no longer be considered a problem in relation to the quality of the surface water.</p>	<p>Partly due to the decrease in discharges by industry, the quality of the national waterways have improved but the target for 2010 has still not been met. This is caused in part by the influx of contaminated substances originating from outside the region.</p>

On course	Not on course
<p>Natural areas</p> <p>The construction of new green areas within the framework of the RGSP2 is progressing as planned.</p>	<p>A great effort is still necessary to solve the bottlenecks for fauna and to achieve the ecological framework.</p>
<p>Waste</p> <p>Initiatives to collect plastic waste have started, but are still very limited.</p>	<p>At a regional level the national targets for old paper and cardboard, vegetable, fruit and garden waste, glass, and old clothing and textiles have not been met; only a limited number of municipalities have managed to achieve even one of these targets.</p>
<p>Energy</p> <p>Ambitious national, regional and Rotterdam targets have been set and the first projects in the region are in progress.</p>	<p>Despite initiatives for renewable energy (wind, biomass) their contribution is still marginal. Independence of fossil energy sources is a distant target.</p>
<p>Environmental management</p> <p>Nearly all the municipalities now have a Municipal Environmental Policy Plan or are in the process of developing one. Like monitoring, an environmental policy plan is an essential element of the cycle in which environmental policy is developed, determined and implemented.</p>	<p>Although municipalities generally have their own environmental policy plan, an internal environmental management system is often lacking.</p>
<p>External safety</p> <p>The extra attention devoted to external safety in recent years has led to research and insight into the risks. For the period up until 2010 extra resources have been made available in order to give this a more permanent form. Municipalities are asking for land-use planning advice more often in the framework of external safety.</p>	<p>The safety reports submitted by companies do not yet comply with the requirements. During 37 checks carried out at BRZO (Hazard of Major Accidents Decree) companies, 253 violations were recorded.</p>
<p>Environmental licensing and enforcement</p> <p>The police in Rotterdam-Rijnmond report a decrease in environmental offences.</p>	<p>The number of sanctions issued to refineries, process industry and storage and transshipment companies have increased.</p>

Trend analyses

'Clean' vehicles

Analysis of the causes of air pollution show that motorized road traffic contributes the most to the concentrations of nitrogen dioxide (NO₂) and very fine particles (PM₁₀) at living level. The Rijnmond Regional Air Quality Action Programme (RAP) includes a set of measures to improve the air quality up until 2010. To ensure a faster introduction of clean and sustainable vehicles, the Rotterdam Metropolitan Region has initiated a programme to clean-up the fleet of vehicles used by the municipalities in the region. Rotterdam has taken a leading role in the initiative to clean-up the fleet of the regional municipalities. In the course of one year the number of clean and sustainable vehicles rose by 300, at the end of 2007 one of every three vehicles was clean.

Soil

There are several trends and developments which play a determining roll in the years to come: the relation between targets and available resources, re-use of soil, new soil themes and changing legislation and regulation. A common development – also initiated by the European Union – is that the soil policy field has widened to include archaeology and groundwater and that soil clean-up increasingly becomes part of social processes such as urban renewal and ground exploitation.

Pesticides

Since 2002 the Hollandse Delta water board monitors pesticides in surface water within their authority through a wide monitoring network, focused on the most important sectors in the management area. This way a picture can be formed of the state of affairs of the pesticides in surface water per agricultural sector. Previous projects in this field have proved that good information on the quality of surface water is an excellent instrument with which to increase awareness within the agricultural sector on the impact of pesticide use. Furthermore this information is indispensable to determine and solve possible bottlenecks. Pesticides are present, but the numbers of samples in which limits are exceeded has decreased from 20% in 1995 to almost nothing in 2006. The conclusion from earlier projects, that information on the quality of surface water is an effective way to create awareness, has proven correct.

Map of under water soil quality

The Port of Rotterdam Authority implemented a map of under water soil quality in 2007. This gives insight into the results of many years of sampling the under water soil in the port. For example it is possible to present trend analyses of chemical pollution in graph sheets. A map of under water soil quality – including the underlying data – offers many possibilities to determine on which locations specific substances are present and how the sample results develop from year to year. This provides information for future policy making or management actions.

Nature and climate

The climate change has a great impact on flora and fauna in the Netherlands. The European climate zones are shifting to the north, as a result of which the climate in the greater Rotterdam region tends to the climate in the middle of France. Thus middle European plant and animal species migrate north and northerly species disappear. Nature has winners and losers. Expectations are that biodiversity of nature will increase. The ameliorated management of natural and recreational areas, building natural areas and the specific focus on rare and vulnerable species also contributes to this.

Packaging tax

On January 1st 2008 a packaging tax was introduced in the Netherlands. This tax is included in the Environment Based Tax Act (WBM). This concerns the adage 'the polluter pays'. The tax distinguishes different kinds of packaging; consumer packaging and company packaging. The tax rates for consumer packaging are higher then those for company packaging. By 'greening' the tax system the Dutch government aims to reduce the amount of packaging material and to make a shift to less polluting packaging materials. The future will show whether this objective can be reached. ■

As early as 1994, the provincial and local authorities in Rijnmond had already realised that joint monitoring of the regional environmental situation was essential to an effective environmental policy. Since then, fourteen MSR reports on the Rijnmond region have been published.

In the early years, the environmental quality appeared to improve visibly. More recently, however, on balance little further progress has been made. The explanation for this is that in the nineties, the 'easy' environmental problems were able to be solved through stringent source policy; the initiative at that time lay with the major polluters. As a consequence of this the difficult problems remained, problems which were mostly caused by diffuse sources. For example noise pollution is generated, among other things, by road and air traffic, and industry, while shipping and road traffic are important sources of air pollution. Nevertheless, steps are still being taken in the right direction, but these often involve complex solutions for only modest environmental gains. An example of this is the implementation of the Rijnmond Regional Air Quality Action Programme and the Rotterdam Climate Initiative.

Because there are usually a number of authorities responsible for tackling these diffuse sources, effective cooperation between these authorities is a prerequisite. Thus the most important authorities in the Rijnmond environmental field are represented within the Environmental Monitoring Rotterdam Metropolitan Region (MSR). By collectively gathering data, they create an integral picture of the environmental situation in the region, and gain insight into the measures needed to tackle the diffuse sources. The Rijnmond Regional Air Quality Action Programme is an example of this. This programme devotes special attention to road and shipping traffic, and private households, as well as to industry.

Other environmental problems, such as external safety, energy saving and climate change, are now starting to get the attention they deserve. However, introducing and embedding new policy takes time. It will probably still be several years before the effect of these actions on the new areas becomes visible in indicators.

Objective

The objective of MSR is twofold. In the first place, MSR aims to track the consequences of environmental policy in the region and to indicate new developments relating to environmental quality, free from value judgements. In this way MSR contributes to the policy cycles of the authorities that work together in MSR. Administrators and their staff thus obtain information, which enables them to place, evaluate and, if necessary, adjust their policy in a broader context. On the basis of this information, they can also formulate new policy or speed up its implementation. In Appendix 3 of this report you will find an overview of the most important policy documents from which the targets that are monitored are derived. Where no verifiable policy objectives are available, indicators in any case have a warning function so that timely adjustments are still possible.

In the second place, MSR informs citizens and the business sector about the state of the environment in the Rijnmond region and how it is developing. In this way MSR fulfils the obligation that authorities have, within the framework of the Aarhus Convention, to supply environmental information to their citizens. All of the background information relating to the indicators presented can be found on our website. Furthermore, MSR responds to the societal need for transparent government.

The three most important results of MSR this year are the present main report, the accompanying theme report and the symposium on 19 June 2008 at which the reports will be presented and the theme of Noise will be examined in more detail.

The main report provides a complete overview of the environmental situation in the Rijnmond region and the developments within it. In addition to the indicators, the main report contains trend analyses in which problem areas and the causes of policy developments are looked at in more detail than is done for the normal indicators. Trend analyses have become a regular feature of the report. In a number of cases future developments are also sketched out and broad policy recommendations are made that will be further elaborated (jointly) by the various MSR partners.

The theme report takes a closer look at the monitoring of a topical subject. The theme report 2008 'Noise, health and money' offers insight into the current state of affairs with regard to noise levels and then examines the consequences of these levels on health and the economy. This is a good example of the interfaces between social factors, the environment and the economy or in other words people, planet and profit.

The symposium provides an important opportunity to communicate about the substantive outcomes. At the symposium, politicians and experts from the business community will explain in more detail the outcomes based on their own responsibility, vision and expertise. The policy makers can then use the outcomes, and the most important outcomes are given due attention in the media.

Organisation and mode of operation of MSR

MSR is a cooperation initiative between DCMR Rijnmond Environmental Agency, the Province of Zuid-Holland, Rotterdam Metropolitan Region (partly on behalf of the eighteen regional municipalities), the Rotterdam Municipality, the Directorate-General for Public Works and Water Management (Zuid-Holland directorate), the higher water boards of Delfland, Schieland and the Krimpenerwaard and the Hollandse Delta water board, the Rotterdam-Rijnmond Municipal Health Service (GGD), and the Rotterdam-Rijnmond police.

Reports are made annually based on the monitoring system. All data come from systematic registration. Each indicator has a unique number. This number refers to the background documentation concerning data source, contact person, basis in figures and relevant policy reports. In principle, an indicator is made up of a description in figures of the status and/or the development of environmental aspects and their accompanying policy objectives or standards. In presenting the indicators, we have tried to show a picture of the last ten years and in most cases this has been successful. However, sometimes information for a number of previous years is lacking, because that topic was not relevant at the time. For some topics a geographical method of presentation has been chosen because this enables a comparison to be made between the regional municipalities or because it allows us to give a clear overview of the situation regarding a particular topic in the region. The historical regional development, however, can often be found in another indicator or on our website. Moreover, the website contains all sorts of (old) indicators that are not included in the current report, but that can be relevant for the formation of policy.

The 2005 theme report 'Environment and Space', together with the spatial plan for the region, the RR2020, gave an extra impetus to the more extensive integration of spatial development and the environment. Last year, this has resulted in a new chapter, 'Space,' in which both policy areas come together. In this chapter, relevant indicators have been assigned to most of the traditional environmental aspects such as soil, noise and air. In the coming years, these indicators can be used to monitor the living environment in the region. For a number of aspects we have chosen a more future-oriented account of the environment in relation to spatial developments.

In addition to this report, MSR presents information on the internet. To this end, our website was considerably improved last year. On our MSR website, www.hetmilieuinderegiorotterdam.nl, you will find the background figures for all of the indicators. Not only the data, but also the text and even the individual graphs are available for further use. Furthermore, a lot of information that is used in this report is available digitally via the internet. In addition, information regularly appears in this report which is taken - either directly or with some modification - from publications on the internet, for example from the Ministry of Housing, Spatial Planning and the Environment (VROM), and the Ministry of Agriculture, Nature and Food Quality (LNV).

How to read this report

The first substantive chapter is entitled 'social context'. In the chapter, indicators are presented together that should be considered more or less as a given, because either they are very difficult to influence at the regional level or because they had to be placed in the chapter due to the links that need to be drawn between them. This chapter is followed by the thematic chapters, 'space,' 'air', 'noise', 'soil', 'water', 'green spaces', 'waste', 'energy', 'environmental care', 'external safety' and 'environmental permitting and enforcement'. At the request of a large number of users, all these chapters have the same lay-out, i.e. 'legislation and regulation, and policy', 'efforts' and 'future developments'. A trend analysis has been appended to some of the chapters. These can be found at the end of the chapter in question. The final chapter, Chapter 14, is devoted entirely to this year's theme: 'noise'.

Each indicator comprises a graphic representation and a brief explanation. This facilitates a search for the desired information and at the same time ensures that the coherence is maintained. We offer some of this information at the level of indexes (red boxes), which show the situation for a theme in its entirety. Then we describe the constituent indicators individually (green boxes).

In principle, the indicators in this report provide an account of the situation up to and including 2007. Sometimes, however, data are only available up to 2006 or even 2005. These data have only been included in this report when they yield new facts or are required to sketch out a clear picture of the state of affairs.

Appendix 1 contains an overview of complaints about odour and noise per Rotterdam district. Appendix 2 comprises a list of abbreviations used. Appendix 3 provides a reference list of documents that were consulted. Finally there is an index of keywords. ■

Public authorities, companies and households all have a responsibility as far as caring for the environment is concerned. The nature, extent and development of environmental pressure depend in part on economic activities and social developments in the region. In this chapter, we focus on the indicators which sketch out a picture of those activities and developments in particular. These indicators must be regarded more or less as a given, because they are very difficult to influence at the regional level.

Population

The approximately 1.2 million residents of the region exert a great deal of pressure on the environment: they drive around in their cars, produce (residual) waste and use electricity and gas (information on these topics can be found in Chapters 8 and 9).

What do the residents themselves think about the environment in the region? Reports, complaints and perception surveys are a good way of measuring this. Residents can address their complaints, reports and questions about environmental matters to a large number of municipal, regional and national bodies. In this report we will deal with the reports and complaints that have been received by the joint Municipal Health Service, the police and the DCMR incident room. We also pay attention to complaints that have been received by the managers of inland waterways; this information can be found in Chapter 7.

In addition, every two years the Province of Zuid-Holland conducts an environmental perception survey in which residents are asked about their experiences in the field of environmental pollution. The following report on this subject will be published in the course of 2008. Information from previous years can be found on the MSR website.

Traffic and transport

Road traffic is a diffuse source of pollution which makes it difficult to tackle; what's more, social resistance forms a complicating factor. Regional policy as set out in the Regional Traffic and Transport Plan 2003-2020 (RVVP) addresses itself to promoting a multimodal mobility policy. This means that the policy focuses on improving traffic circulation. The indicators for public transport and park-and-ride sites can be seen in this context. Chapter 4 contains indicators for the emissions from road traffic and in Chapter 5 and the theme report we address the subject of received noise levels.

The A15 motorway between the Maasvlakte and the Vaanplein will be widened to be able from 2010 to keep the future Second Maasvlakte, the Mainport and the hinterland accessible. Minister Eurlings from Transport, Public Works and Water Management, the Rotterdam Metropolitan Region and a large number of regional parties have signed a management agreement on this subject. The parties involved have the ambition to reduce the volume of traffic during the activities on the A15 motorway by 20%. They want to achieve this by introducing alternatives for commuter transport and other forms of goods transport. To manage all of these initiatives, an experiment is being carried out with the 'traffic organisation'. Currently, the Directorate General of Public Works and Water Management, the Port of Rotterdam

Authority and the Rotterdam Metropolitan Region are giving shape to this organisation, which is expected to start formally in mid 2008.

Environment and the economy

Environmental policy is aimed at decoupling growth from environmental pressure. This is the case when economic growth is accompanied by a reduction in environmental pressure (absolute decoupling) or when economic growth increases at a faster rate than environmental pressure (relative decoupling). We can show the degree of decoupling by dividing the index for environmental pressure by the index for economic development. The resultant figure is termed environmental intensity. The more sharply the line drops, the greater the degree of decoupling that has been achieved. A rising line indicates a situation of coupled growth. In this chapter, we present the indicator for power stations; this should show whether the desired decoupling has been realised.

Environment and health

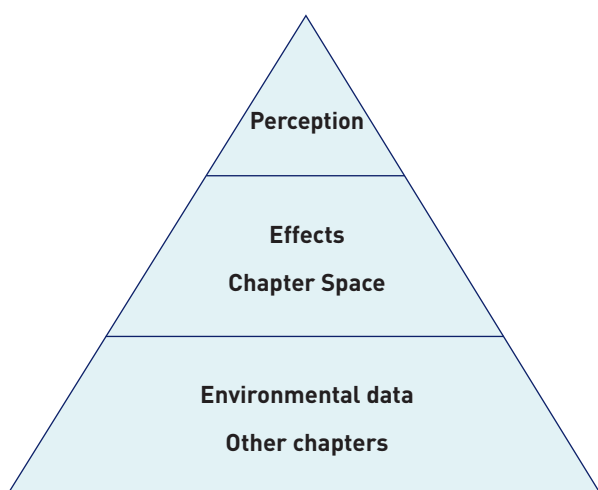
The Rotterdam Public Health Service together with DCMR is studying the options for providing the residents of Rotterdam with information about the health effects of environmental aspects. After all, by signing the Aarhus Convention, the Netherlands committed itself to provide access to environmental information. For the residents of Rotterdam this information becomes a lot clearer when the effect the environment has on health are also addressed. In Rijnmond it is estimated that 5% of the burden of disease and reduction in health among the population can be attributed to environmental factors. The most important causes of a reduction in health due to environmental factors are the pollution from particulate matter in the ambient air, severe annoyance from traffic noise and pollution of the interior climate. ■

The policy domains of spatial planning and the environment have always had clear interfaces. For instance, when drawing up local land use plans, account is taken of various environmental aspects and these aspects sometimes even determine the development options. In legislation and regulations, too, this correlation is apparent and the application procedures for environmental and building permits are linked together. This correlation is becoming stronger due to the fact that the current problems increasingly require an integrated approach.

Another factor that has an influence on spatial planning and construction is health; this also receives increasingly more attention. This occurs both on the initiative of the health sector and of the professionals in the construction industry itself; they are now more aware - after a period in which they mainly devoted their attention to environmental qualities and social qualities - that they also have to pay attention to a healthy interior climate and healthy surroundings. Meanwhile, the users (in other words 'the market') are also increasingly demanding a healthy living environment.

Among other things, health is influenced by hereditary and biological factors, and the level and the accessibility of health care. In addition, lifestyle and the surroundings (the physical, the spatial and the built-on) play a role. There is continuous interaction between our health and the surroundings. After all, the surroundings can stimulate health in numerous ways, from clean air, challenging places to play through to a relaxing walk in the woods. It is therefore necessary to pay attention to this in the 'planning' process for the physical surroundings.

This report addresses the interaction between the regional spatial and environmental hygiene developments in various places. We consider the spatial aspects from three perspectives that together form a pyramid.



The top of this pyramid is formed by the perception (environmental perception survey, MBO) and the base by the environmental data as included in the other chapters. In between are the effects/ integrated data shown in this chapter. The MBO of the Province of Zuid-Holland is very suitable here. However, the last survey dates from 2006, and the following will be published

in the course of 2008, therefore no data are yet available. Based on the 2006 survey and earlier surveys we can conclude that the valuation for the entire environmental quality in the reference areas is always somewhat higher than in the problem locations in Rijnmond. This is also obvious, as the problem locations have been selected due to the inconvenience caused by industry, while the reference locations experience no or hardly any inconvenience from industry. In 2006, the average ratings were 7.4 for the reference locations and 6.4 for the problem locations.

Under 'Space' on our website you will also find indicators from other chapters that have a clear link with spatial aspects. More geographical classified information can be found in RegioGIS for the participating partners: Rotterdam Metropolitan Region, various departments of the Rotterdam Municipality, the Rotterdam Port Authority N.V. and the DCMR Rijnmond Environmental Agency.

All the geographical environmental data in this chapter are, at least at the regional level, fairly accurate. Therefore the maps can be used to give an indicative assessment of building plans. To make this easier, we have included the maps on the MSR website, where they can be seen in a larger size. However, for the final assessment, further investigation is normally required that is based on among other things location characteristics and for instance exact traffic data.

Legislation and regulation, and policy

The way the Netherlands should look, now and in the future, is regulated in spatial plans. Central Government, as well as the Province of Zuid-Holland and the municipalities make these plans. How they are established and revised is regulated under the Spatial Planning Act (WRO). This Act determines the tasks of the government and the rights and duties of citizens, companies and institutions. The legislative proposal for the new WRO was followed in 2005 by a large number of new acts and proposals relating to land and living. For example, in the new Land Exploitation Act the financial aspects of the land-use plan are further improved. The Act will ultimately become part of the new WRO.

The most important spatial plan for Rijnmond is the Spatial Plan for the Rotterdam Region 2020, known simply as RR2020. This plan was approved on 12 October 2005. The RR2020 is actually two plans in one: a regional plan and a regional structure plan. The RR2020 goes further than simply sketching out the desired picture of the future: the Province and the Rotterdam Metropolitan Region also take account of the RR2020 when organising redevelopment. They do this using a regional development strategy in the form of a ten-point plan. This ten point plan forms the heart of the RR2020.

In the following chapters we deal at length with the developments and the relevant legislative and policy-related aspects in the various environmental areas. In this introduction we make do with a short summary of the points that are relevant for spatial development; a more extensive explanation of the various subjects can be found in the chapter in question.

The Air Quality Decree 2005 was replaced in 2007 by the new Air Quality Act. This will be introduced in two phases. The first phase will be the coming into force of the Air Quality Act itself, which will introduce the concept of 'To a Significant Extent' (IBM). Projects that do not significantly contribute to air pollution can continue without further testing. Projects that contribute 'To a Significant Extent', must be tested to establish whether they do or do not (continue to) meet the limit values. If this is not the case, the company concerned must take measures to correct the situation, or offset the problem at locations where at the same time the air quality is improving. The second phase is the establishing of the National Air Quality Cooperation Programme (NSL). This programme comprises all of the spatial projects as well as all policy intentions and measures designed to improve air quality. The NSL must make it plausible for the Netherlands to solve all of the air quality problems within the requested time.

On the request of the Dutch Parliament, Minister Cramer promised that a governmental decree will be drawn up that ensures that within 300 metres of a national trunk road no sensitive objects such as schools, childcare centres, old people's homes and nursing homes will be built, if both the limit values for particulate matter (PM₁₀) or nitrogen dioxide (NO₂) are (or threaten to be) exceeded and due to the realisation of the sensitive object the number of people living in the area would increase. For provincial roads the standard is 50 metres.

In early 2007, the Noise Abatement Act was amended. Under the new Act, municipalities are now empowered to allow higher noise levels. The forthcoming changes to the Noise Abatement Act are aimed at simplifying the structure of the standards, strengthening the source policy and promoting compliance with and enforcement of the rules. A requirement of the European Environmental Noise Directive is that the Rotterdam Municipality and neighbouring municipalities must produce noise maps. The theme report addresses this in more depth. In 2008, these municipalities are required to draw up a noise policy. Since noise policy frequently crosses municipal boundaries, it seems sensible to make regional agreements about the subject.

In 1992, the Netherlands signed the Council of Europe's 'Valletta Convention'. This convention regulates among other things the protection of the archaeological heritage in Europe. At the national level, this convention has resulted in the Care of Archaeological Heritage Act (WAMZ) which came into force on 1 September 2007. The main aim of the new Act is to protect the soil archive by regulating activities that disturb the soil. This is realised by giving archaeology a formal position in spatial processes. The

basic principle is as far as possible to preserve or to prevent disturbance of existing or anticipated archaeological remains in the soil. Where soil disturbance is unavoidable, the guiding principle is: the disturber pays. In connection with this principle, the Act also lays down the procedures to be followed for the financing of archaeological research and the ownership and management of archaeological finds. For the implementation of the archaeological policy, the Province of Zuid-Holland has developed the Zuid-Holland Cultural Heritage Main Structure. The maps can be inspected on <http://chs.zuid-holland.nl>.

The 'Water Assessment' is an important instrument that can be used to meet the obligation laid down in the Framework Directive on Water (KRW) that all waters should be in good condition by the latest end 2015. The Water Assessment was embedded in the Decree concerning Spatial Planning on 3 July 2003 and stipulates that all water management aspects must be concerned in spatial planning and decisions. Water management aspects include such things as safety, sewerage, water supply, public health, soil subsidence, excessive groundwater levels, surface water quality, groundwater quality, drought and wet habitat. This means that the author of a spatial plan has to involve the water authorities at an early stage in the planning.

In 2006 a provincial vision of external safety was established entitled 'Risks in balance', with regional plans being worked out for the Rijnmond area. The vision shows how the policy domains of external safety and economic and spatial development are intertwined. It forms the framework that will be used to tackle external safety in relation to regional spatial planning in the coming years. The maps for external safety are available to everyone via http://geo.zuid-holland.nl/risicokaart_publiek/.

Efforts

In the implementation programme of the RR2020, the ten points of the regional strategy have been operationalised and translated into projects and programmes that are crucial to the success of the RR2020. Responsibility for the implementation is shared between the Province, the Rotterdam Metropolitan Region and the municipalities. The Province of Zuid-Holland is responsible for the implementation of supraregional affairs, the Rotterdam Metropolitan Region for the regional projects and programmes, and the municipalities for those points that only occur within the municipality's territory. During the implementation, the Rotterdam Metropolitan Region will periodically take a decision based on the progress made so far and the implementation programme can be adjusted accordingly. This is also the time to start or terminate a project or programme. Although the indicators in this chapter can be used when making this progress decision, for the actual implementation of the RR2020, we refer in particular to the Rotterdam Metropolitan Region and the municipalities.

The proactive approach to the environmental problems forms a very important part of the RR2020. The approach has two main tracks, which are both monitored. The first track is the regional

environmental approach to noise, air, and external safety issues, a regional network for the environment and spatial planning, and the support of municipalities by, among other things, providing guidance. The second track is the environment in spatial plans; this track breaks down into two components: supporting municipal projects and formulating an environmental strategy for RR2020 programmes and projects, in which the Rotterdam Metropolitan Region has the leading role. For instance in 2007, an environmental strategy has been formulated for the Ridderster junction and in 2008 a strategy will be drawn up for a number of projects, including the river banks. In Brielle, a start has been made on reorganising the scattered greenhouses. In 2008, this will be followed up by further extending the area with Westvoorne and going further in Brielle.

The Regional Green-Blue Structure plan 2 (RGSP2) is integrated in the RR2020. The objectives are to realise 993 hectare of 'low-hanging fruit' before 2020 and 18 km of cycle paths in 2010. Of the 993 hectares, 568 have already been realised. The expectation is that 993 hectare of low-hanging fruit and 18 km of bicycle paths can have been achieved by 2010. This underlines the feasibility of the objectives.

Future developments

In Rijnmond, a regional plan has been drafted that will form part of the National Air Quality Cooperation Programme (NSL). The memorandum '*Dat lucht op! Naar een schone lucht in Rijnmond*' [That's a relief! Towards clean air in Rijnmond] that was drawn up in 2008, shows how the set of measures for this area that has already been drawn up (RAP/RAL 2005) and a supplementary set of measures (2008) will solve all of the problems related to particulate matter and NO_x well before 2020. The obstinate problem areas that remain are the 's-Gravendijkwal, the mouths of the Maastunnel and the interaction between the trunk road network and the underlying road network at seven points. These obstinate problems will be solved in a separate programme.

A theme that must be substantiated in the coming years is the climate agenda. This agenda can be divided in two parts: climate adaptation and climate mitigation. Climate adaptation is the adaptation to the changing climate; here you can consider changing the dimensions of the sewer system and additional water storage. Climate mitigation is the reducing of climate changes; this concerns among other things a reduction in CO₂ emissions, providing space to facilitate CO₂ storage, the use of cold/heat storage, wind turbines, etc. This is mainly addressed in the chapter 'energy'. ■

Air quality in Rijnmond remains without doubt an important issue. The heavy concentration of industry, the high population density and the accompanying high volume of traffic all make air quality a permanent subject of concern. Nitrogen oxides (NO_x) and particulate matter form the most important problem areas.

Legislation and regulation, and policy

Air pollution is pre-eminently something that must be tackled through European collaboration. After all, the emission from factories, traffic, agriculture and other sources can spread over large distances. The European Union undertakes various actions to address pollution internationally through source policy, for instance by setting emission requirements for cars. In addition, it has set maximum air pollution levels to limit the damage to health and the natural world.

In Europe at the end of 2007, agreement has been reached regarding an additional standard for very fine particulate matter (PM_{2.5}). PM_{2.5} covers only the finer part of the particulate matter and this is precisely the matter which is responsible for the adverse effects on health. The directive leaves particulate matter originating from natural sources, such as sea salt, out of consideration. The target value for 2020 is 20 µg/m³. Moreover, in 2020 the background concentration of PM_{2.5} must be reduced by 15% when compared to 2010. At locations where the concentrations that are measured are already below the target values, sustainable development forms the assessment framework for policy with respect to spatial development, which gives sufficient room for the Dutch offset policy. In 2013, the European Commission will evaluate the PM_{2.5} target values based on the most up to date scientific information. These requirements must also be incorporated into the Dutch Air Quality Act in due course.

In the period 2005-2007, the European directives, in which the maximum pollution levels have been specified, were revised. This was of major interest for the Netherlands, as in spite of taking many measures, it was unable to meet the set requirements. Therefore the Netherlands argued for more European source policy and more flexibility with respect to achieving the limit values. The revised Air Quality Directive goes a way to meeting Netherlands requests in this respect. For instance, the European Commission will in the near future draw up new proposals for more stringent emission requirements for trucks and factories and will take measures to limit air pollution caused by (ocean) shipping. In addition, a country can, if required, extend the period by which it must meet the air quality requirements (derogation).

On 15 November 2007, the new regulations for air quality came into effect. In the Environmental Management Act a new chapter is included concerning air quality. This chapter is also called the 'Air Quality Act' and replaces the 'Air Quality Decree of 2005'. The core of the Air Quality Act is formed by the National Air Quality Cooperation Programme (NSL). In areas where the standards for air quality are not being met, the public authorities are going to improve air quality through region-specific programmes. To prevent construction projects not going through or experiencing major delays, minister Eurlings has appointed the Elverding

Commission. In September 2007, this commission was tasked with investigating how to simplify procedures and to determine whether it is possible to decouple building projects from air quality.

In addition, the Ministry of Housing, Spatial Planning and the Environment is preparing a governmental decree regarding sensitive objects. This will stipulate that new sensitive objects such as schools, childcare centres, old people's homes and nursing homes cannot be built too close to roads where the standards for air quality are exceeded. It is expected that this measure will come into effect in the course of 2008.

This brings us to the air policy. This policy can be subdivided into three tracks: one track is aimed at behavioural measures and two tracks focus on emission policy: a source-based emission policy (each company as clean as possible) and a maximum volume of some air-pollutants (an emission ceiling for the whole of the Netherlands).

The third track is of particular interest. In the area of emissions, there are already national emission ceilings for nitrogen oxides (NO_x), sulphur dioxide (SO₂), ammonia (NH₃) and hydrocarbons; these maximum amounts per substance for all sources in a country have been agreed at the European level. Countries use both existing and new instruments in order to distribute these national ceilings across sectors and companies. An emission trading system for NO_x has existed since 2005. This system should make it possible in the most cost-effective way to take precisely the measures required to achieve the permitted volume of emissions. However, the system is still in the start up phase. It uses a Performance Standard Rate (PSR) that has been fixed until 2010. However, it appears that the performance standard that has been set is not stringent enough to reduce emissions to below the national emission ceiling by 2010. After 2010, the system can become an important motor to drive down the NO_x emissions efficiently, as long as the PSR is significantly reduced. The target for sulphur dioxide is to get levels below the agreed ceiling by 2010 using existing instruments (permits and sector agreements). It is expected that this will be achieved, more or less. Whether the target for ammonia will be achieved is uncertain; however, in Rijnmond the problem of ammonia does not play a significant role. In recent years, emissions of hydrocarbons have decreased so much that they will certainly drop to below the ceiling; here as well, no new policy has been introduced outside of the existing agreements and rules.

Efforts

In order to meet the air quality standards, action is being taken at all administrative levels. Europe has set standards for vehicle fleets and is now also devoting its attention to mobile machinery and ships. At the national level, the Netherlands made an effort to

accelerate implementation of the European vehicle standards in order to bring the standard for fine particulate concentrations within reach. Incidentally, this has been unsuccessful. The Dutch government has now asked the European Union to grant a five-year derogation in order to meet the air quality standards.

In Rijnmond, a lot of work has been done on drafting a regional plan that will form part of the National Air Quality Cooperation Programme (NSL). The memorandum *'Dat lucht op! Naar een schone lucht in Rijnmond'* [That's a relief! Towards clean air in Rijnmond] that was drawn up in 2008, describes the contribution made by the Rotterdam Metropolitan Region and other partners to the Regional Air Quality Cooperation (RSL) for Zuid-Holland. The report mentions the projects that are envisaged in the RR2020 and the remediation task that the Rotterdam Metropolitan Region is facing with respect to air quality. Moreover, the memorandum indicates how the problem areas related to particulate matter and NO_x can be corrected in time through the use of the set of measures previously established for this area (RAP/RAL 2005) and a supplementary set of measures (2008); these measures are based on the current insights and the current estimate of the effects and costs. Here Central Government has a substantive and financial responsibility for solving problem areas on the national trunk road network, even if the solution interferes with the underlying road network. The Rotterdam Metropolitan Region tracks the effect of the set of measures by monitoring, and where needed it uses supplementary or more efficient instruments. The obstinate problem areas that remain are the 's-Gravendijkwal, the mouths of the Maastunnel and the interaction between the trunk road network and the underlying road network at seven points. These obstinate problems will be solved in a separate programme. In addition to physical measures, communicative measures are also important; these are aimed at increasing knowledge and understanding and generating social support. In this way citizens, companies and society are called upon to actively contribute to solutions. In the public information project concerning air (PIL) the DCMR and the Rotterdam Public Health Service work together on this issue.

On the premises of the Directorate General of Public Works and Water Management on the Koningin Emmaboulevard in Hoek van Holland, an air quality measuring station was taken into operation at the end of 2007. This measuring station will in particular measure particulate matter to give a clearer picture of the air quality. This location is exposed to many sources, including refineries and shipping; the construction of the Second Maasvlakte also has a direct influence.

Future developments

The source-based emissions policy will continue to be gradually tightened, in line with the technological opportunities and the economic feasibility of using them. In the European Union, preparations are underway to introduce emission standards for fine particulates. It is not yet clear what this will entail.

At the end of 2007, the EU published a proposal for new emission requirements for commercial vehicles (trucks) (Euro VI). If the European Parliament approves this proposal, Euro VI can become effective in 2013. With respect to Euro V, which will become effective in October 2009, the emission of NO_x will reduce by 80% and the emission of soot by 66%. All proposed limit values agree with the values in the future regulations in the United States. The umbrella organisation of car and truck manufacturers ACEA therefore applauds the new proposal: it is a step forwards for the global truck industry and will result in important cost reductions.

Due to climate change, increasing attention is required to CO₂ emissions. From now on, we will be reporting on CO₂ in the chapter on 'Energy', because CO₂ levels in the air do not affect air quality as such and because there is a significant link between CO₂ emissions and energy use. ■

Noise is still the number 1 cause of annoyance according to reports from the residents of Rijnmond, so it remains an important issue. Attention needs to be permanently devoted to the problem of reducing received noise levels, because the pressure on the area will continue to increase. In part for this reason we have decided to describe this subject in more depth in the theme report and to here only briefly address the legislation, efforts and future expectations. A summary of this theme report can be found in Chapter 14 and the full report is available on the MSR website.

Legislation and regulation, and policy

In the Netherlands, the Dutch Noise Abatement Act (WGH) is the main legislation in the area of noise. The WGH contains a system of rules to combat noise pollution and to protect the citizens in their living environment. The rules are intended to as far as possible prevent or reduce the negative health effects that noise pollution can cause. The WGH and the implementation regulations based on it include standards for the highest allowable noise levels from, among others, road traffic, rail traffic and industry. In the WGH, a link has been made with the City and Environment (Experimental) Act and the City and Environmental (Interim) Act. This act makes it possible, under certain conditions, to deviate from the limit values laid down in the WGH.

The WGH was changed on 1 January 2007. The main change concerns the decentralisation of the authority to specify higher values for the highest allowable noise level, from the Provincial Executive to the Major and Aldermen. The Major and Aldermen are now authorised to establish higher values for the highest allowable noise level and have a certain freedom with respect to the policy employed. In addition, the grounds for exemption, which were previously set in the old decrees based on the former WGH, have disappeared. Now municipalities have to determine and reason higher value decisions themselves.

In an area that is situated within a zone of an industrial estate, with activities that are seaport bound and necessarily occur in the open air, the so-called 'sea port standard' applies to houses that are newly built; the maximum limit value for newly to be built dwellings is here 60 dB.

Companies must comply with the noise regulations laid down in permits or in governmental decrees. However, the various governmental decrees have in the main been replaced by the Activities Decree. Incidentally, the noise regulations laid down in the Activities Decree mainly agree with those in the former 8.40 governmental decrees; this is also obvious as these governmental decrees and the document guide for industrial noise and permitting form the basis for the noise regulations in the Activities Decree. For both existing and new companies the preferred limit value of the Noise Abatement Act is included as the noise standard: the long-term average assessment level. For the outdoor level this means a 24-hour value of 50 dB, for the indoor level of internal or adjoining dwellings a 24-hour value of 35 dB. For the maximum permitted noise levels, values have been set that agree with the limits laid down in the former governmental decrees and those used in common practice when granting permits. These noise levels normally ensure that noise is perceived to be acceptable in the immediate vicinity of the company.

At the end of 2006, the decree related to the more efficient use of noise zones on zoned industrial estates came into force. For companies situated on a zoned industrial site, the 50 dB standard no longer applies at a noise sensitive object, but at 50 metres from the boundary of the company. In the Rijnmond area there are 28 zoned industrial estates.

By 30 June 2007, ten of the sixteen Rijnmond municipalities must produce noise maps and submit them to the Central Government. Moreover, by June 2008 at the latest these municipalities must submit action plans in which they indicate how they are going to tackle problem areas. They are free to set the threshold value themselves above which an area is considered to be a problem area; this applies to both the entire municipal area and to specific areas. Municipalities must involve citizens when drawing up the action plans.

Efforts

Various actions are being taking in the region, in which inhabitants and companies have structured meetings to address the possibilities to prevent annoyance, including that from noise, and to keep each other well informed. For instance, the Rozenburg Consultative Group focuses on the noise pollution caused by the Caland Bridge. In part due to the efforts of this Consultative Group, noise-reduction measures have been taken. This is because the bridge will be used more intensively as it is part of the Harbour Railway, which has been drastically modernised within the context of the Betuwe Railway project. The steel bridge has always caused the residents of the nearby Rozenburg a lot of annoyance due to noise. To combat an increase in noise pollution resulting from an increase in rail traffic, among other things noise barriers have been erected; furthermore, the bridge itself was modified. At the end of 2007, sound measurements were carried out at the Caland Bridge to determine whether the measures taken had been sufficiently effective; the results are expected in 2008.

Attention still needs to be devoted to anti-transfer measures for noise from road traffic. A noise barrier has now been erected along the north side of the A20. A noise barrier will also be fitted along the Westwijk in Vlaardingen. Legal proceedings continue regarding the construction of a noise barrier along the Gordelweg (south side of the A20) in Rotterdam. Another solution is to use quiet road surfaces. 'Quiet asphalt' is not yet being laid on local roads in the region. In the action plans that municipalities must draw up in 2008 for traffic noise problem areas, the use of quiet asphalt might be adopted as a measure. Furthermore, in 2006, contractors started to implement noise mitigation measures for the first 100 dwellings in order to counteract road and/or rail traffic noise; this concerns dwellings where source-based and anti-transfer measures are not already in place for efficiency reasons.

In 2006, the Province, the Rotterdam Port Authority, EMO, ECT and DCMR conducted the study Focus on Noise. With this project, the participants aim to gain more insight into the transfer of noise between the Maasvlakte and Oostvoorne. At the moment there is insufficient knowledge about how this industrial noise is transferred and what, for instance, is the influence of the soil (i.e. the Oostvoorne Lake) and the weather. Intensive research into noise transfer over such distances is unique in the Netherlands. The results are expected mid 2008.

Low-frequency noise, frequencies lower than 100 Hz, is occurring more frequently. Sources of low-frequency noise include in general machines that operate at low speed, such as large pumps, or concrete vibrators. However, low-frequency noise is not only caused by companies but also by traffic, infrastructure, etc. The DCMR, in collaboration with the Rotterdam-Rijnmond Public Health Service, is investigating the complaints regarding low-frequency noise. This investigation will establish whether there is low-frequency noise, where it originates from and what can be done to tackle it. For people who can detect it, low-frequency noise can result in severe annoyance. In 2008, the problem of low-frequency noise played a role, for instance, in the district of Nesseland. After long-term research it seemed that two boilers in the E.ON power station probably caused the noise. After the boilers have been overhauled in April 2008, the noise should have gone.

Future developments

Until 1 January 2009, municipalities have the possibility to put forward existing houses for remediation due to road traffic noise; after this date the application period for remediation cases will be closed. Houses that have not been put forward at that date will fall outside of national regulations and must be remediated at the municipality's expense.

The council of ministers has agreed to the proposal from Minister Cramer regarding a change in the Environmental Management Act concerned with the introduction of noise production ceilings near national trunk roads and railways. At a large number of points along national trunk roads and railways, the maximum allowable noise values will be established. In addition, as a result of the proposed changes, the legislation related to the policy on noise pollution will be less complicated, there will be fewer rules and the standards will be simplified. For this purpose, parts of the Noise Abatement Act will be transferred to the Environmental Management Act.

Recent research, carried out on behalf of the commission of the European Commission (EC), shows that quiet tyres are as economic and safe as tyres that make twice as much noise. However, a disadvantage is that these tyres wear faster and therefore cause more particulate matter to be deposited along the motorways/roads. The EC wants to reduce traffic noise by tackling the problem at source. The EC is expected to produce a detailed proposal by mid 2008. After all, car tyres form the main source of traffic noise on busy roads; they form the dominant noise source from speeds in excess of 30 - 40 kilometres per hour. ■

In recent years, the approach to soil remediation has changed: whereas it was previously environmental aspects that predominantly determined which sites would first be considered for remediation, nowadays the emphasis has shifted to spatial developments in which soil remediation forms one element of the whole picture. Financial considerations of course also play a role in this new approach: the government also wants to get market parties to pay a share in soil remediation projects.

Legislation and regulations, and policy

Protection of soil and soil functions is the only 'environmental component' to which no European environmental protection regulations as yet apply. This is in itself remarkable, as soil quality is a major problem in many European countries: in addition to the 3.5 million locations in Europe that are designated as being potentially contaminated, 45% of the European soil has a low organic matter content. Moreover, good European soil policy would offer opportunities to make agreements regarding CO₂ storage and maintain fertile agricultural soil for future generations.

In September 2006, the European Commission published a draft version of the Framework Directive on Soil. This makes it mandatory for member states to pursue policy for a number of soil themes, including soil remediation. A new element is that from now on member states are obliged to draw up a 'soil status report' for every land transaction. The Netherlands does not yet comply with this requirement. The Directive offers a stimulus to pursue policy for other soil themes as well. In the urbanised Rijnmond area, which lies largely below sea level, important themes include groundwater management, subsidence and salinisation. According to the Environmental and Nature Planning Office, the proposal for the new framework directive offers sufficient flexibility to continue the current Dutch policy. Incidentally, the Netherlands is a forerunner in the area of soil policy. However, in the majority of member states soil policy is still in its infancy; without a European Framework Directive on Soil this will hardly change.

The European Parliament gave its approval on 12 December 2006 for the new Groundwater Directive. About 70% of the drinking water in the European Community comes from underground sources. To protect these underground sources, the purpose of this directive is to reduce the pollution of groundwater. Instruments for this are the harmonisation of the member states' regulations for discharges of certain hazardous substances to the groundwater and a systematic inspection of groundwater quality. Based on this directive, the Netherlands is obliged to identify bodies of groundwater. The Rijnmond area lies in the area that includes the extensive groundwater body of Rijn-west, which comprises Noord-Holland and Zuid-Holland (excluding the dunes), the peat and clay areas of the Province of Utrecht, and the Betuwe region. The Directive relates to both direct and indirect discharges of the intended hazardous substances. This is because pollution of groundwater sources is extremely difficult to tackle.

At the start of 2006, the amended Soil Protection Act (WBB) came into force. Previously the polluter or the culpable owner was primarily responsible for the remediation of severely contaminated sites, but now this is the responsibility of the site

owner or leaseholder, irrespective of whether 'he' is guilty or not. The site owner or leaseholder must draw up a remediation report and submit this for assessment to the competent authority. Within the framework of the WBB, on 14 February 2006 The Uniform Remediations Decree and Regulation (BUS) came into effect. From now on, for simple soil remediation projects restricted to 'his' own plot, the site owner or leaseholder can follow a shorter, simplified reporting procedure (6 weeks instead of 13) using standard reporting forms. This reduces the administrative burden for both remediators and the competent authority. As a consequence of this change, since 1 May 2006, the old urgency system has been revised. Based on the Ministerial Circular on Soil Remediation 2006, from now on the competent authority must determine whether a remediation project should be carried out quickly (within 4 years). This will only occur if unacceptable human, ecological or diffusion risks exist in relation to the current soil use, or the intended soil use in the short term. The old urgency system, with its accompanying four categories and postponement periods, has thus been revoked.

The Soil Quality Decree came partially into force on 1 January 2008. With this the Central Government (the Ministries of Housing, Spatial Planning and the Environment; Transport, Public Works and Water Management; and Agriculture, Nature and Food Quality) anticipates the wish of local authorities to bring the soil quality more in line with the local soil use. The decree drastically changes the soil policy. It contains rules for using building materials, soil and dredged material on or in the soil or in the surface water. It also indicates how environmentally hygienic assessment must be carried out and who is responsible for monitoring adherence to the decree. Furthermore, the decree ensures that there are fewer rules and a reduction in the administrative burden for public authorities and the commercial sector, in particular where the use of building materials is concerned. The Central Government has determined the new standards by looking at the risks associated with the soil use. The municipalities and water quality managers are given more responsibilities and powers of authority. The Decree also contains rules for building materials, quality assurance and soil and dredgings.

The rules from the Building Materials Decree (BSB) will form part of the new decree in a phased process. For instance, the quality requirements for consultancy companies, laboratories and contractors (soil intermediaries) have been part of the Soil Quality Decree from 1 January 2008. The same applies to the new rules for soil and dredgings in the surface water part of the Soil Quality Decree. From 1 July 2008, the new rules for building materials as well as the new rules for soil and dredgings on land are included in the new Decree. The rules for quality assurance do not change.

Efforts

Most soil remediation operations are carried out in places where urban renewal is planned. In addition, a number of sector-specific activities have been implemented; for example, measures have been taken at petrol stations under the relevant governmental decrees concerning filling stations.

In the framework of the Covenant on Gasworks, comprehensive agreements have been made on behalf of Rotterdam regarding the financing and planning of the soil remediation operation for gasworks. The agreed extended deadline for tackling the problem makes it possible to align this operation better to spatial developments and brings this part of the soil remediation operation back on schedule.

The BSB (Covenant on soil remediation for industrial sites) operation is completed. Following on from this, in 2006 the Soil Centre was established to help small and medium-sized enterprises remediate their seriously contaminated sites. For the dry cleaning sector, the NETEX covenant (Bosatex) has been developed: whether through the Industrial Regulations on Soil Remediation or through a co-financing construction, the Central Government will pay for part of the soil remediation operations in the small and medium-sized enterprise sector.

In 2007, a start was also made on broadening the soil policy within the region. As part of the Rotterdam Soil Quality Map project, DCMR will be the first to make maps for the following themes: subsidence; landscape, soil-related and archaeological values; and (possibly) groundwater.

Future developments

Entrepreneurs and owners of sites where the soil is contaminated can make use of the subsidy options laid down in the Industrial Regulations on Soil Remediation for the soil remediation operation. From 2008, this option will contribute to the remediation of the soil. The regulation is intended to make a financial contribution to the remediation of historic soil contamination on industrial sites. Companies that do not yet have the specific intention to remediate, but expect that they will carry out a soil remediation operation in the period 2008-2030 and submit a subsidy request, must report this before 1 January 2008. The owner will then remediate the soil and a proportion of the soil remediation costs will be later reimbursed. The regulation is a logical follow-up to the BSB operation, in which industrial sites have been investigated on a voluntary basis for the presence of soil contamination. The government, through the Industrial Regulations, wants to encourage site owners and leaseholders to initiate remediation projects by contributing a certain percentage of the costs. For many contaminated sites this will be possible on a voluntary basis by fitting in a remediation operation as far as possible in the normal business operations (up to 2030). If a remediation operation is assessed to be urgent, the government can enforce its start. For an involuntary remediation operation, the site owner can also claim a right to subsidy. Under certain conditions, the right to a subsidy can be transferred to the next owner of the industrial site. ■

Water plays not only an important role in our own life, but our living environment is also influenced by water in many ways. In part as a result of this, the integration of water with other policy domains is increasing. For instance, there are clear links with nature, soil, spatial planning, but also with energy and climate. For the latter one can consider cooling water discharges and the consequences of climate change on the supply and drainage of water.

Legislation and regulations, and policy

The Framework Directive on Water (KRW) is aimed at protecting the quality of surface water, groundwater and seawater. To this end, the Netherlands must be divided into river catchment areas. This has now been done. Before the end of 2008, the public authorities involved must work out measures into a river catchment area management plan for each area; the measures should ultimately result in the water being in good chemical condition (GCT) and good ecological condition (GET) by the end of 2015. The chemical quality is assessed based on priority pollutants and on EU standards for blacklisted substances that have been specified in a directive before. The emissions of these priority substances must be reduced in stages and the discharges, emissions and losses of these substances must be stopped or gradually terminated by at the latest 2020. The standards for this are determined at the European level and apply to all waters. For the 'other' substances there are standards set at the national level that also apply to all waters; these concern the substances relevant to catchment areas that are not considered for the GCT but are for the GET. Not all of the standards are yet determined at the European and national level. Until this is the case, within the framework of the MSR report, the currently prevailing standards from the NW4 (MTR and VR) are used for the assessment.

Furthermore, the KRW requires a GCT and GET for groundwater. In 2003, the European Commission made a proposal for a new Groundwater Directive. The aim of this Directive is to set out specific measures for preventing and managing groundwater contamination. The quality of the groundwater is assessed based on those substances that to a large degree determine the use of groundwater as a source for drinking water and on those substances that have a negative ecological effect. For a number of substances, threshold values have been derived. In 2008, further decisions will be made in this area. As can be currently seen, nitrate and herbicides/ pesticides are substances that are the determining factor for the Dutch groundwater. The problem concerning the quantity of groundwater systems is related to the problem of drying out: due to a lack of groundwater as a result of extraction and/or drainage, valuable nature areas are at risk.

In 2006, the conservation targets laid down for areas covered by the Birds and Habitats Directive (Natura 2000 areas) were set. Many of the measures that are required to meet the nature area targets are measures concerning water, because as much as two-thirds of the one million hectares of the areas covered by Natura 2000 areas are covered by surface water. The Framework Directive on Water is essential here. This requires effective harmonisation between the policy domains of nature and water.

At the start of 2006, the European Swimming Water Directive came into force, but this directive will probably not be adopted into Dutch legislation until 2009. The new directive will offer a higher level of protection. More than its predecessor, it is aimed at timely protection of the swimmer. Instead of only coming into action if a standard is exceeded somewhere, the manager must as far as possible estimate and limit the risks in advance. This starts with the drawing up of a swimming water profile for every designated swimming location in an area covered by surface water. A swimming water profile describes the water at the site, the local sources of contamination and the associated risks for the swimmer. Based on this profile, the manager must estimate the associated risks and the measures needed to address these risks. Moreover, the directive demands that the manager not only checks the situation but also makes more preventive efforts.

In addition to taking substantive measures to accommodate excess water, the National Administrative Agreement on Water (NBW) states among other things that by 2005 at the latest the Provinces must have established the frameworks for the Desired Groundwater and Surface Water Regime (GGOR). In the period from 2005 to 2010, it is up to the district water boards to draw up the GGOR in close cooperation with municipalities, the groundwater managers and the interested parties. The GGOR will then form part of the water management plans.

The 'Water Assessment' also forms an important instrument. It was embedded in the Spatial Planning Decree on 3 July 2003 and stipulates that the public authorities concerned must consider all of the water management aspects when making spatial plan and decisions. Water management aspects include such things as safety, sewers, water supply, public health, soil subsidence, excessive groundwater levels, surface water quality, groundwater quality, drought and wet habitat. This means that the authors of spatial plans have to involve the water authorities at an early stage in the planning.

Moreover, in 2006 the Province of Zuid-Holland established the Brine policy rule. Many enterprises in the agricultural sector use groundwater to irrigate their crops. During this process, salt waste water (brine) is released that is normally discharged into the soil. However, this requires an exemption from the Province. The agricultural sectors will be given until 5 July 2013 to switch to more sustainable methods. After this time, the Province will only grant an exemption in exceptional circumstances. In order to prevent the brine being discharged into the surface water, in October 2006 the higher water board of Delfland laid down policy rules for this area.

Efforts

The 2006 MSR theme report '*Het begint met schoon water* [It all starts with clean water]' raised, among other things, the problem of salinisation. Drier summers can cause the salt-water wedge in the river to penetrate further inland. In addition, brackish groundwater (percolating water) comes to the surface during a drought. This is why every water quality manager monitors the amount of salt in the water to allow action to be taken during a drought and when the salt content is too high. At Voorne-Putten and Goeree-Overflakkee, fresh water basins are being constructed, so that fresh water remains available for irrigating crops once the Haringvliet sluices have been opened.

The implementation of the Quality Impulse Oostvoorne Lake project officially started on 1 November 2007. In this project from May 2008, the brackish water from the port of Rotterdam will be pumped into the Oostvoorne Lake, thus improving water quality. The Oostvoorne Lake, which covers more than 300 hectares and contains almost 65 million cubic metres of water, is one of the most important recreational sites in the Rotterdam region.

The 2006 MSR theme report also provided insight into the water storage obligation in Rijnmond. The water boards are working hard to realise this. Within the framework of the Rotterdam Waterplan 2, they are working on increasing the storage capacity by the construction of eco roofs. The Rotterdam Municipal Archive (Hofdijk) has the first official eco roof in the city. The coming years must see an increase in the number of eco roofs. In total, sedum covers approximately 2,400 m² of the municipal archive's roof. Sedum is a moss-like plant that can absorb large amounts of water: this comes in handy when it is raining very hard, as the drainage system is less loaded and there is less chance of excessively high water levels on the street. The storage capacity of the roof is 30 m³. An eco roof has as the additional advantage that it has insulating properties throughout the year, which reduces the emission of the greenhouse gas CO₂.

For more information and examples of the efforts being made by the district water boards you are referred to the websites of these organisations.

Future developments

In September 2006 the Water Act was put before parliament. However, it is expected that this act will not come into force before 1 January 2009. This new act replaces eight existing acts concerning water management in the Netherlands and arranges the management of surface water and groundwater. Introduction of the act will mean that district water boards, municipalities and provinces will be better able to combat flooding, water shortage and water pollution. The Act provides for the designation of functions for the use of water. On the basis of these functions, requirements are laid down for the quality and the management of the water.

In 2007, Minister Cramer wrote a letter to the municipalities pointing out the obligation to register wet cooling towers and to supervise their compliance with respect to the Environmental Management Act. It is known that in exceptional situations, these cooling towers can be responsible for pneumonia epidemics caused by legionella bacteria. However, as the owners/managers of cooling towers do not have to notify their presence, municipalities do not know where all of the cooling towers are situated. Since 2001, the Rotterdam-Rijnmond Public Municipal Health Service of has been carrying out research in Rijnmond into the presence of cooling towers and into management quality of open recirculating cooling towers; in 2005 a symposium was organised on this subject. The Public Health Service has registered 121 cooling towers at 56 locations in the Rotterdam Municipality.

By 2020 the higher water board of Schieland and the Krimpenerwaard wants to have connected the companies that practice greenhouse horticulture to the sewer system in the high concentration areas within the board's catchment area. The municipalities play the leading role in this project and are implementing it in cooperation with the greenhouse horticulture sector and the higher water board. If connection to the sewer system costs more than a particular target amount, the higher water board will pay a contribution to the municipality. ■

Green spaces are important in many societal respects. From a study that the Health Council conducted in 2005, it appears that green spaces very probably have a positive effect on people. Furthermore, the advisory report 'A right to green' from the Council for the Rural Area states, among other things, that involved parties must exchange their own interests for the interests of society: a green living environment. The Ministers of Ministry of Housing, Spatial Planning and the Environment (VROM) and Ministry of Agriculture, Nature and Food Quality (LNV) have therefore initiated various activities. And in the Rotterdam Coalition agreement, too, the environment and nature are explicitly mentioned. In short, 'green' is higher on the administrative and political agenda.

What is new this year is the attention given to the influence of climate change on the development of flora and fauna, and the attention given to urban bird species. We address this in more depth in the trend analysis. In consultation with SOVON, a number of specific bird species have been replaced by groups of birds that are more representative for the various areas

Legislation and regulations, and policy

The European wildlife and green spaces legislation - Natura 2000 - has been embedded at a national level into the Flora and Fauna Act and the Nature Conservation Act. The Flora and Fauna Act has been in effect since 1 April 2002 and aims to protect wild plants and wildlife. The Flora and Fauna Act includes a duty of care: everyone must be sufficiently mindful of plants and wildlife. In principle, actions which may have an adverse effect on protected species are therefore prohibited; exemption from this prohibition is only allowed if a dispensation is granted by the Minister of Agriculture, Nature and Food Quality (LNV). For instance for the port region, there is a general exemption, which makes it possible to 'swap' species within the entire port area; this option is in particular of interest when developing fallow land. The amended Nature Conservation Act came into effect on 1 October 2005. Whereas the Flora and Fauna Act is aimed at protecting species, the Nature Conservation Act is specifically targeted at the protection of areas: protected nature reserves. The wetlands (Nieuwe Waterweg, Calandkanaal and Haringvliet), habitat areas (Oude Maas, the dunes at Voorne, Hoek van Holland and the Voordelta) and Bird Directive areas are covered by this legislative system.

In addition, the Framework Directive on Water is not only relevant to the quality and quantity of the water, but also has a direct influence on wet habitat. By 2015, all of the surface water in the Netherlands must be in good ecological condition. This will allow flora and fauna to develop in the water with a requirement being that various waters should achieve a certain level with respect to habitat diversity (possibility of the occurrence of species of flora and fauna) and species-specific character (degree to which species characteristic of that specific water type occur).

The Regional Green-Blue Structure Plan 2 (RGSP2) gives an overview of the tasks facing the region with regard to landscape, cultural heritage, water, nature, recreation and agriculture, and translates these into a coherent vision of the green-blue structure. The RGSP2 is a joint product from the Rotterdam Metropolitan Region and the Province of Zuid-Holland. The development of this RGSP2 updates the current provincial and metropolitan green spaces policy for the Rotterdam Metropolitan Region and forges

a link with the new water policy. Previous agreements such as the Green Agreement and compensation for the Second Maasvlakte have been integrated into the RGSP2.

The RGSP2 is in turn integrated into the umbrella programme, the Spatial Plan for the Rotterdam Region 2020 (RR2020). The RR2020 is both a Regional Structure Plan (RSP) and a regional plan which lays down the spatial development planning for the Rotterdam region for the period up to 2020 with a further outlook towards 2030. The Rotterdam Metropolitan Region and the Province of Zuid-Holland have now agreed in writing how they will fill in the directing role in the implementation of the RGSP2. There is now also an implementation programme for the RGSP2; this states among other things that 993 hectares of green projects will actually be realised before 2010 and in addition that 2,354 hectares of green projects can be implemented.

In addition to legislation, the European Union has also developed subsidy schemes, which may be used by not only national, regional and local authorities but also by international, private and non-governmental organisations. An example is the LIFE+ programme, which co-finances the development, implementation, monitoring, evaluation and communication of the European environmental and nature policy and legislation. The European Commission (EC) has earmarked a total budget of 2.1 billion euros for the period from 2007 to 2013.

Efforts

In September 2006, the Minister of Agriculture, Nature and Food Quality set up a Nature Information Agency in order to make it clear where initiators must take account of protected species and where there is scope to build and develop. The agency provides companies, municipalities and other parties with reliable information regarding the spread of protected species in the Netherlands. In addition, it provides information about locations where efforts are being made on the recovery of endangered populations (the natural habitat approach). In connection with this, in 2007 and 2008, the municipality of Hellevoetsluis has and will carry out a flora and fauna inventory and the municipality of Schiedam also has such plans. Moreover, the municipality of Schiedam, as the first municipality in the region, has produced a memorandum on Animal Welfare. This memorandum specifies the municipal policy with respect to domestic animals, wildlife and production animals.

In the Negotiation Agreement regarding a Visibly Greener Zuidvleugel, Central Government, the Province of Zuid-Holland

and the regional authorities, in consultation with those directly involved, have created conditions for developing around 4,200 hectares of new recreational green areas in the Zuidvleugel. In concrete terms, this means that almost 90% of the total funding is in place. Of the ten most important projects in the whole area, four are of immediate importance for Rijnmond: Project Mainport Rotterdam, Integrated Development Delft-Schiedam, Rotterdam Central and Noordrand Rotterdam.

Under the Deltanatuur umbrella, Central Government, the Provinces of Zuid-Holland and Noord-Brabant, and a number of local authorities and non-governmental organisations, will work together until 2010. By that time, three thousand hectares of new wet habitat must have been created in the Rhine and Maas estuaries. Deltanatuur is active in five sub-areas; each area has its own specific characteristics and possibilities. Three projects lie partially in Rijnmond: Noordrand Goeree-Overflakkee, Spui, Oude Maas and Noord.

In January 2008, the Haringvliet should become a brackish estuary once more (Decree on opening the Haringvliet dam). The realisation will be delayed, however, because farmers in the surrounding area must be compensated. The Haringvliet sluices, part of the Delta Works, will now be partially opened from 1 December 2010. This will be done to recreate a salt-water - freshwater transition area. Due to the small opening in the sluices, there should be less silt deposited on the bed of the Haringvliet and in the channels of the Biesbosch. By restoring the salt-water - freshwater transition areas, lost plants and wildlife will return to the area. Migratory fish such as the salmon and the trout will then be able to pass through the sluices.

1 November 2007 saw the official start of the quality impulse project for the Oostvoorne Lake, one of the most important recreational sites in the region. The water quality of the lake will be raised by supplying salt water from the Beerkanaal (a canal). As a result, the lake will recover its original saltwater character. Furthermore, the recreational banks and provisions will be tackled.

Future developments

Climate change is affecting the condition of Dutch flora and fauna. Warmer conditions mean that exotic species that have been imported into the Netherlands can survive in the wild if they escape. In addition, the habitats of more southern species are shifting northwards due to the temperature rise. Owing to this, more southern species are becoming established here while other indigenous species are moving northwards. For further explanation, we refer to the trend analysis at the end of this chapter.

The construction of the Second Maasvlakte has consequences for nature. In 2007, researchers studied the fish that spawned in the spring of 2007. At around 100 locations in an area up to approximately 50 kilometres off the coast between Walcheren and Den Helder species, numbers and lengths were surveyed. Such an extensive survey of all of the fish species in this part of the North Sea, has, as far as we know, never been done before. It was a baseline survey. By repeating the same survey during the sand extraction for the Second Maasvlakte and by comparing the results, any effects of the sand extraction activities can be mapped out. In particular, the survey focused on the juvenile fish, as it is expected that any effect of the construction of the Second Maasvlakte will first be noticeable in this category. Finally, the researchers will map out the life on (epifauna) and in (infauna) the sea bed. ■

The waste management policy is aimed in the first place at prevention: preventing waste being created. In addition, the authorities seek as far as possible to find opportunities for recycling and reuse. Many parties are involved in the implementation of the waste management policy. The Province grants permits to waste processing companies, the municipalities collect waste and waste processors wish to process waste effectively and efficiently.

Legislation and regulations, and policy

At the European level, the Sixth Environmental Action Plan is being implemented between 2001 and 2010. The European Union has prioritised the principle of sustainable development and a high level of environmental protection. In the field of waste management, the European Union in this programme shows itself to be fully aware of the fact that the amount of waste is increasing annually. To this end, it has considerably increased the number of instruments that are available to implement waste policy, ranging from legislation to financing instruments. For example, targets have now been formulated at the European level for:

- waste prevention and a shift towards more sustainable production patterns;
- reducing waste removal;
- promoting reuse.

In 2002, the parties in the Consultative Committee on Waste (AOO) specified the new municipal targets for sorting waste. These targets depend on the degree of urbanisation and their feasibility, and are laid down in the National Waste Management Plan (LAP). The 'translation' into amounts to be collected has changed but the basic principle of the national policy is still to achieve the original percentage targets; the most important of these targets is the percentage of sorted waste that is collected. SenterNovem is now implementing the tasks of the AOO. In May 2007, the LAP was amended for the third time to adapt it to recent developments. In addition, its term of operation has been extended by two years.

In September 2004, the Secretary of State for the Environment decided to allow municipalities to liberalise their permitting options for the collection of vegetable, fruit and garden waste. This decision gives municipalities more policy freedom to organise the collection of this type of waste at their own discretion. The two municipalities of Krimpen aan den IJssel and Rotterdam are making use of the liberalised permitting options.

On 1 August 2004, the European Union introduced the EU Directive 2004/12 for packaging and packaging waste in order to harmonise the regulations concerning packaging and packaging waste throughout Europe. The Directive contains rules to drive down the amount of packaging waste. It has been implemented in the Netherlands in the Management of Packaging, Paper and Cardboard Decree. This decree was withdrawn as of 1 January 2008, because the Ministry of Housing, Spatial Planning and the Environment (VROM), Association of Netherlands Municipalities (VNG) and the packaging using industry reached agreement on 15 August 2007 regarding the packaging policy, how the responsibility of the producer will be substantiated and the recycling percentage to be achieved; this agreement is valid for the period 2008-2012. In addition to the existing recycling of

plastic packaging from companies, the collection of plastic packaging from households will be introduced on a national scale. To this aim, the municipalities must set up sorted collection systems, allowing the achievable recycling percentage of plastics to rise from 20% now to 42% in 2012. The costs for this will in the main be paid from the packaging tax that will be paid by the commercial sector. From 1 January 2008, producers that produce more than 15,000 kilos of packaging must contribute to financing this initiative. With respect to the old packaging decree, this means a reduction in the number of taxable parties by 98%, while 95% of the packaging material will still be covered by the tax.

As part of the Street Litter Impulse Programme, in total 16.4 million euros are available as a subsidy for tackling street litter. The programme has three types of projects:

- basic projects to draw up and establish policy for tackling street litter,
- plus projects to implement the policy for tackling street litter,
- experimental projects to promote an innovative approach to street litter.

Many organisations and institutes can request subsidies for experimental projects, but only municipalities, districts councils or cooperative agreements between municipalities and district councils can claim funds for basic projects and plus projects.

Efforts

A waste management plan is a useful instrument for municipalities to determine how to further improve the sorted collection of household waste. In addition to their usual efforts to collect various waste streams from citizens, municipalities are trying to reach a higher standard in sorted waste collection by using other instruments.

Municipalities focus mainly on old paper and cardboard, as various sorting analyses have shown that these form a large part of the residual waste. In 2005, Hellevoetsluis ran a successful trial scheme for the door-to-door collection of paper. In January 2007, an extra wheelie bin for old paper and cardboard was delivered to those households that had registered interest. The collection data show that the amount of old paper and cardboard collected per inhabitant rose to 65 kilos in 2007, compared to 53 kilos in 2006. This means 25% more collected old paper and cardboard.

Finally, various private and charitable organisations also collect household waste. The best known examples include the collection of paper by sports clubs, among others, and the collection of old clothing and textiles by organisations such as Humana, KICI and the Salvation Army. The municipalities of Rotterdam, Barendrecht, Spijkenisse and Vlaardingen all have recycling centres. The Vlaardingen recycling centre also serves the residents of Hellevoetsluis.

Future developments

Batteries are collected by the Battery Organisation (Stibat). In 2008, there will be a national campaign to hand in used batteries. A study, carried out by Stibat in 2007 together with the Dutch Retail Trade Council (RND), shows that there are 18 used batteries in every household. Approximately 83% of the used batteries are separately collected, but the number of batteries sold is increasing annually. From September 2008, as a result of new European legislation, it is mandatory for all retailers that sell batteries to also collect the used ones.

Since 1999, an environmental levy has been charged on products. Initially, the levy was supposed to have been paid until 2011, at which time sufficient funds should have been collected to keep the system going. However, the success of the system has been so great that it now seems likely that the date when the levy will no longer have to be paid can be brought forward to 2009. For ICT equipment no consumer levy is charged, for white and brown goods a levy is still charged. Of the collected ICT equipment, after processing 97% is reused, while the target is 'just' 75%.

From 2007 the borders have been opened for European waste. This offers opportunities for the waste processing companies and thus for the environment. If companies are expanding, they are more prepared to invest in new technologies and methods than if their market is shrinking. This means for instance that more energy can be generated. Currently regional waste is used as fuel in power plants. This concerns not only energy generation by incinerating (domestic) waste, but also by incinerating B-class wood; this is wood that cannot be reused as it has been painted or glued.

The cradle to cradle concept, that is currently receiving a lot of attention and that is explained in further detail in the introduction to Chapter 13 regarding environmental care, also applies to among other things landfills. By excavating (extraction) of former landfills (waste mining) materials are released that can serve as raw material or a source of energy. The ministry of Housing, Spatial Planning and the Environment takes a positive position on this manner of the reuse of locations that were previously considered a threat. Not only the former landfills, but also those locations that are covered by the Aftercare regulation from the Environmental Management Act, offer opportunities from various perspectives. A landfill, as an exploitable waste mine, offers opportunities for energy generation and raw material extraction. Moreover, the exploitation provides space for other objects, including housing, companies or new landfill capacity. In general, waste mining is feasible if the waste contains a relatively large percentage of reusable materials such as sand, soil and metals, and if the site will eventually become available for restructuring, for instance in the form of an industrial estate. ■

No subject in the environmental field has received so much attention this year as energy. Energy and more generally 'the climate' are the focus of interest, worldwide and nationally as well as regionally and locally.

Legislation and regulations, and policy

Worldwide, in the field of energy the main issue is the continuing high price of oil and gas; the demand for energy continues to increase. Although this has not led to a global energy policy, it has resulted in a spin-off: global climate policy. On 2 February 2007, the fourth report of the Intergovernmental Panel on Climate Change (IPCC) was published. This signals the end to the uncertainty about whether man effects the climate. The uncertainty is now limited to the degree to which we effect the climate and the effects that we must take into account. Because of this, attention can now shift from putting items on the agenda to reacting to and solving the problems. The climate summit in Bali in December gave a mixed picture regarding what had to be solved. For the first time, the United States were alone in their resistance to climate agreements. This forced a shift in the approach taken by the US. This can be decisive for the further progress of the climate negotiations.

In 2008, the environmental ministers of the European Union gave the green light to the commission proposal concerning the reduction of CO₂ emissions in the coming years. The European Commission's ambitious plan must lead to a reduction in the CO₂ emissions in the European Union of at least 20% in 2020. For the Netherlands this comes down to a 16% reduction in CO₂ when compared to 2005 (-22% when compared to 1990) and an increase in the proportion of renewable energy to 14%. The Dutch government formulated energy targets for 2020: a 30% reduction in greenhouse gas emissions, a 2% energy saving per year and 20% sustainable energy.

As of 1 January 2008, sellers and parties that rent houses must be in possession of an energy label. This allows interested parties to include the energy quality of a dwelling in their decision regarding whether or not to hire or buy the dwelling and in their renovation plans. At the moment that the occupier of a dwelling changes, the seller or rental party must hand over the energy label to the new owner or new lessee - unless they agree that this is unnecessary. An energy label is valid for 10 years. The energy label for dwellings is similar to the energy label for refrigerators and other equipment. Based on model dwellings, the housing associations in Rotterdam (and with them 60% of the local dwellings) will have an overview of the labels applicable to their housing stock by the summer of 2008.

The Province is contributing to achieving the (inter)national energy and climate targets by: encouraging the use of industrial heat in the built-up area and in glasshouse horticulture; stimulating the storage or the useful use of CO₂; stimulating sustainable energy options: wind energy, cold/heat storage and biomass; stimulating efficient and clean energy options in traffic and transport; subsidising innovative sustainable energy options; and through the permitting of companies.

The Rotterdam Climate Initiative is an ambitious programme in which the Rotterdam Municipality, Rotterdam Port Authority, DCMR and Deltalinqs are jointly working on achieving a better Rotterdam climate in all respects. In 2007, the baseline survey was carried out for this programme. We now know that in 1990 the CO₂ emitted was 24 megatonnes, in 2005 approximately 46 megatonnes and the target for 2025 is therefore to emit no more than 12 megatonnes. Taking into account autonomous growth, the saving in CO₂ to be realised between 2005 and 2025 is therefore 34 megatonnes. The Rotterdam Metropolitan Region also carried out a baseline survey. For the entire region, the figures appear to be around 3 megatonnes higher than for Rotterdam on its own. The difference is caused by the emissions from glasshouse horticulture and the additional emissions of all other sources (companies, traffic and the built-up area).

Efforts

At the Central Government level, behind the scenes a lot of work has been done to detail the 'Clean and Efficient' programme. The covenant 'More with Less' that was signed on 23 January 2008 is the first sectoral agreement of the programme 'Clean and efficient; new energy for the climate'. The target is to reduce energy consumption by thirty percent in 2.4 million existing dwellings and other buildings by 2020. 'More with Less' focuses on allowing building owners and lessees to save energy as simply as possible and without incurring higher monthly costs.

On 12 December 2007, Minister Cramer installed the Lighting taskforce. Rotterdam is one of the five example cities and experimental areas addressed by the taskforce. The taskforce must ensure that at the latest in 2011, energy-efficient lamps are in general use in houses, offices and in the street. Among other things, the taskforce will make agreements with the manufacturers of lighting equipment and with retailers regarding banning filament bulbs and accelerating the introduction of energy-efficient light such as low-energy light bulbs, LED lamps and energy-efficient strip lighting. Various pilots have been started in Rotterdam. For instance, in the street where mayor Opstelten lives, energy-efficient LED lighting has been installed. In addition, experiments are being carried out into dimming and less light. The experiences of the citizens are included in these experiments. In 2008, a light plan will be drafted that will lay down the framework for where and when which lighting level is needed.

The Province of Zuid-Holland has included in the coalition agreement and in the Policy plan on Green Spaces, Water and the Environment that action must be taken in the area of energy saving and limiting light pollution due to public lighting in the municipalities. This is currently being addressed together with the regional environmental departments, the regions and SenterNovem.

Within the framework of the Rotterdam Climate Initiative many actions have started and been implemented. Between 20 December 2007 and 8 February 2008, more than 200,000 packs of low-energy light bulbs were distributed door to door in Rotterdam. In the design competition for the new house for the mayor, the sustainability of the design was the deciding factor. On the Coolsingel, a car race was organised with no CO₂ emissions, it was called 'Formula zero'.

RET, ENECO Energy, the Rotterdam Metropolitan Region and the Rotterdam Climate Initiative have agreed that they will do their utmost to turn Rotterdam into the cleanest public transport city in the world. A covenant was signed in this regard on 10 December 2007. The declaration states among other things that experiments will be carried out in Rotterdam with metros and trams that will reuse the energy wasted in braking or return it to the network. 53 new trams and 64 new metros/rapid trams have been ordered that have this functionality. All of Rotterdam's trams and metros will run on green electricity. The older buses will all be replaced by the cleanest buses that meet the highest environmental standards. In 2008, a plan will be presented to further encourage the use of public transport in the city. The objective is 2-3% growth per year in public transport use.

Energy saving and sustainable energy are the cornerstones of the unique collaboration between the Woonbron housing corporation and the Rotterdam Municipality. One of the concrete agreements is that wind turbines will be installed on the roofs of a number of new rented houses in Rotterdam. Initially these will be houses at Heijplaat, Pernis and Schiedam. Because of the wind turbines, energy-saving measures and other forms of sustainable energy, the lessees will realise considerable savings in their energy bills.

An important subject for the Rotterdam Climate Initiative is CO₂ capture, storage and transport. In order to realise the CO₂ reduction target, it is necessary to encourage energy saving, increase the use of sustainable energy, but also to capture CO₂ and store it, in part in view of the still increasing demand for electricity that will be supplied in the short term by using fossil fuels. The exploration published in 2007 regarding the possibilities of the large-scale capture, storage and transport of CO₂ will be updated in 2008 and worked out in a first business case. In Barendrecht, NAM wants to realise a small-scale underground storage facility for CO₂. The storage facility in Barendrecht will only be realised if the national subsidy for a CO₂ trial project is allocated to NAM. This will then be one of the demonstration projects as preparation for the large-scale storage of CO₂. For this project use will be made of the existing infrastructure and sources of pure CO₂. Later demonstration projects must also address the capture and purification of CO₂ and investments in the transport network will be required. On 3 April 2008, Minister Cramer officially opened TNO-CATO's test installation for the capture of CO₂ at E.ON on the Maasvlakte. At the same time, the founding of the CCS taskforce was made known, members of which are representatives of the business community and the environmental

movement. The objective of the taskforce is to accelerate the development of the preconditions for large-scale demonstration projects in the area of CCS (Carbon Capture and Storage).

The development of the residual heat organisation advanced with difficulty in 2007. This was because no feasible business case could be constructed to use Shell's heat, other sources were sought. It is envisaged that the residual heat from AVR Brielselaan and the Intergen power plant at Pernis will now serve as the source of residual heat. In addition, attention was given to the more efficient use of industrial heat and to a strategy for the gradual construction of the residual heat network in the Zuidvleugel of the Randstad. In 2007, there is an obligation for a number of areas in Rotterdam to connect to the (still to be completed) heat network. Supply of and demand for heat are therefore guaranteed. In Lansingerland, the first geothermal source for the heating of greenhouses became operational in 2007. Heat is extracted from deep in the ground to heat the greenhouses.

Not only in Rotterdam, but also in other municipalities initiatives are being made in the area of energy. In the autumn of 2007, the Rotterdam Metropolitan Region organised an administrative meeting in which the regional municipalities signed a statement of intent that they will both individually and jointly address the climate. The Municipalities of Hellevoetsluis, Maassluis, Ridderkerk, Schiedam and Vlaardingen started the Rijnmond Living ++ campaign in a regional context on 1 January 2007. Based on free energy advice, house owners can have their house insulated, have a high-efficiency boiler installed or purchase a solar energy system at an attractive price. In this way considerable savings are being made in the use of energy and in CO₂ emissions.

The Municipality of Barendrecht started a solar energy project in 2007. In this project, the Municipality is collaborating with a local supplier of solar energy systems for heating tap water. This project allows the citizens of Barendrecht to purchase a complete solar energy system with a municipal subsidy and a supplier discount.

Future developments

The European Union agreed in the Biofuels Directive that in 2010 approximately 6% of the fuel at the pump must consist of biofuel. In 2020 this must be at least 10%. A step further is the introduction of the flexifuel car. The engine of this car is able to use both normal fuel and E85: a mix of 85% bio-ethanol (alcohol) and 15% petrol. Rotterdam will have special E85 pumps. The first bio-ethanol pump in the Netherlands is located in Rotterdam Feijenoord. Furthermore, the Municipality wants to set a good example by employing flexifuel cars in its own fleet. The project entitled Bio-Ethanol for Sustainable Transport (BEST) wants to have at least 950 cars in Rotterdam powered by bio-ethanol and twelve pumps by 2009. Together with the Rotterdam Metropolitan Region, a subsidy scheme is being created to ensure that bio-

ethanol will be cheaper than petrol. Within the framework of the Rotterdam Climate Initiative, work is being done on certifying biomass.

The Stimulation programme Sustainable Energy (SDE), which came into effect in 2008, offers the possibility of subsidies for various forms of energy generation. In 2008, 500 Megawatts (MW) of new on-shore wind power generating capacity will be eligible for subsidy. This adds up to 200 to 300 new wind turbines. This is an important step towards the target of 2,000 MW new on-shore wind power generating capacity in the term of this cabinet, as laid down in the Clean and Efficient programme. The installation of 10 MW of Solar-PV is being stimulated in 2008. The intention of this is to initiate learning implementation. The 10 MW capacity corresponds to approximately 5,000 to 10,000 solar energy systems on houses annually, consisting of several tens of solar panels per roof. A target of an additional 450 MW of offshore power generation capacity has been set for the term of this cabinet. Agreements have been made that will lead to new permits being granted for offshore wind power in 2009. For this reason, applications for offshore wind power permits will not be granted this year, but will be in 2009.

Indicators

Uncertainty arose last year with respect to the amount of heat discharged to water (indicator 2008). In line with other years, for 2006, the Directorate General of Public Works and Water Management reported a total permitted heat discharge of 4,047 MW or 128 PJ/year for this area. For the 2007 MSR theme report on energy, the CE in Delft drew up an energy flow diagram for the Rijnmond area. This showed that 185 PJ of heat was discharged to water in 2002. After publication, further investigation was carried out into this difference. CE calculated the emission based on general characteristics. However, in Rijnmond two of the four refineries differ from the standard. They discharge their excess heat almost entirely to the air. If this is corrected, the heat discharge to the air rises and the heat discharge to water drops by approximately 50 PJ/year. The 135 PJ/year that remains as the estimated discharge to water is only a little above the 128 PJ/year that is permitted. ■

Environmental care involves activities that reduce the pressure put on the environment and that are not regulated through legislation and regulation, but via covenants and self-regulation. Partly due to this, most of the indicators in this chapter generally have a broader perspective than the other indicators. Because initiatives are often involved that do not apply to the entire region or the whole country, it is not easy to design clear-cut and prominent indicators for them. However, we have plenty to report about the developments in the field of environmental care, as shown by the indicator for nature conservation and environmental education activities in Rotterdam. The medium- and small-scale businesses Environmental Barometer receives attention via an indicator, as do the environmental plans of major companies and how municipalities have scored in the field of sustainable construction.

The sustainability policy of organisations is increasingly based on the cradle to cradle principle. 'Cradle to Cradle: Remaking the Way We Make Things' (2002) is a book from William McDonough and Michael Braungart, that presents a new vision of sustainability. The current methods for sustainable product development, such as Life Cycle Analysis (LCA), concentrate on limiting the hazardous effects of the product. The central thought behind the cradle to cradle philosophy is, however, that after their life in one product, all of the materials can be successfully used in another product. To demonstrate this, the Cradle to Cradle book is not printed on paper but on biodegradable plastic, that after a simple process can be used as glossy, white 'paper'. The ink can also be removed and used once more as ink.

The Venlo region wishes to be the first region in the world to use the Cradle to Cradle (C2C) principles. They will have a prominent role in Floriade 2012. Although the concept must be worked out in more detail, the region already has various initiatives based on C2C. The municipality of Schiedam will use this concept as the principle for the picture for energy and climate; the Metropolitan Region also uses this concept when making agreements with housing corporations for the period to 2020, it also plays a prominent role in the development of CityPorts Rotterdam.

Legislation and regulations, and policy

The Ministry of Housing, Spatial Planning and the Environment (VROM) has worked out the concept of sustainability in the fourth National Environmental Plan (NMP4) and has expressed in this plan the ambition for the Netherlands to be a sustainable society by 2030. For instance, the Sustainable Decisiveness programme is the Dutch substantiation of the agreements made in Johannesburg in 2002 at the World Summit on Sustainable Development (WSSD). Themes that are important for sustainable development at a global level were nominated: water, energy, health, agriculture and biodiversity. The core of the national component is that the Dutch government will endeavour to aim for sustainable development in all its activities (from policy development to, for example, its own office buildings).

To this end, VROM is initiating, among other things, a 'location's sustainability profile' (DPL). Sustainability here comprises the three P's: people, planet and profit, in other words quality of life, environment and the economy. The DPL instrument can help in the realisation of sustainable districts. Using this computer model, municipalities can calculate the sustainability profile of a district

on their own, compare it with a different, randomly chosen district, and thus reveal the strong and weak points of a district's profile. In this way, DPL with the aid of indicators creates a concrete image of what is deemed a sustainable district. Municipalities can base their policy on this when developing new districts or carrying out urban renewal.

Efforts

There are many ways in which households can help to reduce the pressure put on the environment. They can for instance purchase energy efficient equipment and solar panels, sort waste and use public transport. Information about these topics can be found in Chapters 2, 9 and 10. In addition, they can switch to green saving, make green investments, and use green energy. We do not provide any information in this document about the degree to which households participate in this because there is no data available. For information about the activities that households can develop themselves in order to do their bit towards reducing environmental problems, we refer you to www.milieuentraal.nl. Milieu Centraal is an independent agency, subsidised by the Ministries of VROM and Economic Affairs, which provides information about opportunities in this field.

There is also a lot companies can do. To start with, they can introduce an extensive corporate environmental care system (BIM). In this way, they make environmental care part of their normal company process. For large companies, having a BIM has now become a permanent element in determining the proper level of measures; the indicator for this is presented in the chapter on Environmental Permitting and Enforcement (indicator 7080), therefore we will not address it any further here. From 2007, the medium- and small-scale businesses Environmental Barometer can be used via www.milieubarometer.nl. This measurement instrument allows the environmental costs and pressure to be seen. From January 2008, the CO₂ emissions are also presented.

ENECO Energy and the Port of Rotterdam Authority have reached agreement regarding the supply of shore-based power to inland shipping in the Maashaven to limit the emission of air pollution. This concerns a total of twenty electricity supply cabinets with 120 connections for ships. It is the first time in the Netherlands that skippers can use the internet or their mobile telephone to arrange that they are supplied with electricity. This currently concerns a trial for two years to enable experience to be gained with the new payment system and the connections.

Companies can not only work on sustainability within their own organisation, but also at the industrial site level. In various municipalities in the Rijnmond region, the business community and the local authority are cooperating on making their industrial sites more sustainable. These efforts are aimed at improving both the environment and the investment climate. For example, through sustainable building and the regeneration of industrial sites, they are attempting to remedy the shortage of industrial sites in the Rijnmond region. The planning aspects for this have been incorporated into the RR2020.

Furthermore, the government is also playing its part. For example, in 2005 the Ministry of Economic Affairs made a financial contribution towards the redevelopment of industrial sites that are of national importance. The goal of the redevelopment is to improve the economic attractiveness of the sites and to prevent space for economic activity being wasted unnecessarily. In this way, together with the municipalities and provinces, the Ministry of Economic Affairs is implementing the industrial sites Action Plan that was laid down in 2004. The Ministry of Economic Affairs made a financial contribution to seven projects in 2005, including CityPorts Rotterdam. Seen geographically, CityPorts Rotterdam concerns Heijplaat, Eemhaven, Waalhaven, Merwedehaven and Vierhavens. In this area totalling approximately 1,400 hectares, there are more than 850 companies that provide employment to 20,000 people. Another 2,000 people actually live in Heijplaat. A large proportion of the port activities will remain, but at a number of places new functions are being added, such as a change of use for old premises, dwellings and infrastructure.

Minister Cramer of Spatial Planning and Environment has declared sustainable procurement to be one of its priorities. Under the leadership of VROM, sustainability criteria will be laid down for all of the relevant product groups. This concerns around 80 product groups, including office furniture, paper, catering, energy, but also product groups in the earthworks, road building and hydraulic engineering sector. For each product group the environmental and social aspects and the availability in the market will be investigated. When developing the criteria, VROM will actively involve public authorities, companies and NGOs. In this way, Cramer wants to develop criteria that are ambitious enough to allow a major step to be taken in the area of sustainability and innovation. In addition, they must be immediately usable in calls for tenders. All of the criteria must be published by 2008. In this context, in 2007, the Vlaardingen municipality ran a pilot that addressed sustainable procurement. As a result of this, at the start of 2008, the municipality drew up a Memorandum on Sustainable Procurement to take additional account of the social and environmental aspects when purchasing products and services.

The Province of Zuid-Holland also gives subsidies to municipalities to regenerate existing sites and increase their attractiveness. In the region, Barendrecht (Dierenstein), Hellevoetsluis (Kickersbloem 111), Krimpen aan den IJssel (Stormpolder), Maassluis (industrial sites Action Programme) and Rotterdam (Heijsehaven, Zestienhoven and Schieveen) have received subsidies to this end.

Future developments

The Province of Zuid-Holland sees major opportunities to make the glasshouse horticulture sector sustainable by laying down environmental rules, to encourage cooperation between companies and to stimulate and facilitate the exchange of innovative knowledge. Eventually, these activities should result in a sector that, among other things, makes no use of fossil fuels, is self-sufficient with respect to the use of irrigation water, uses no chemical pesticides/ herbicides/ fungicides and emits virtually no light pollution. To achieve these goals, clusters of glasshouses must be created with common provisions for energy provision and water storage. For further information about the clustering of glasshouses, we refer to Chapter 3, Space. ■

External safety is an issue that in recent years has developed substantially as an autonomous policy area. This is stimulated among other things via programme financing. For this reason, starting with this report, a separate chapter will be devoted to external safety, instead of incorporating it into the chapter on permitting and enforcement.

Legislation and regulations, and policy

The Major Accidents (Risks) Decree (BRZO 1999) came into force on 19 July 1999. This decree concerns companies where large amounts of hazardous substances are kept on the premises and is aimed at reducing and managing the risks involved in the production and storage of these substances. To this end, requirements are laid down for both the companies and the authorities involved. These authorities (the competent authority as intended in the Environmental Management Act, the Labour Inspectorate, the Fire Brigade and the Water Quality Board) jointly monitor the companies covered by the BRZO. The objectives and (cooperative) agreements that apply when monitoring the companies covered by the BRZO are laid down in the BRZO 1999 Region West 2007-2011 Inspection Programme.

The decree identifies two threshold values:

- companies that are legally required to have a policy to prevent major accidents (PBZO) are companies that exceed the 'low' threshold value. They must develop the policy and lay it down in a 'Prevention of Major Accidents document' (PBZO document). Moreover they must have an effective safety management system in which the relevant safety aspects are safeguarded via procedures;
- companies that are legally required to have a safety report are companies that exceed the 'high' threshold value. They must also draw up a safety report.

BeteRZO is the project programme aimed at improving the implementation of the BRZO 1999. This was set up because evaluations carried out in 2004 showed that the quality of monitoring nationwide needed to improve; the same applied to the cooperation between the four implementing organisations (the Labour Inspectorate; the provinces and municipalities as competent authorities as intended in the Environmental Management Act, and the Fire Brigade). Action by the authorities should be timely, consistent, uniform, correct and fair but this turned out to not always be the case. The programme was started in the summer of 2004 and ended in the summer of 2006.

In 2007, a start was made on implementing the improvements resulting from the BeteRZO programme in the BRZO implementation. A platform (LAT BRZO) was created that promoted the cooperation between the implementing authorities with the objective of achieving national coordination of and information provision for the implementation of the BRZO 1999. Furthermore, a start was also made in 2007 on exploring the possibilities of closer cooperation between the authorities in the Province of Zuid-Holland in among others the implementation of the BRZO 1999. This resulted in an agreement between the competent authorities as intended in the Environmental Management Act, starting in 2008, to concentrate the forces for

a joint implementation of BRZO inspection tasks for the entire province. In 2008, the exploration will be extended to other BRZO partners within the province.

Another relevant piece of legislation is the External safety of industrial premises Decree (BEVI) of 27 October 2004. This Decree imposes safety standards on local authorities that take decisions about companies that form a risk for people outside the company's premises. Examples include chemical plants, LPG filling stations and shunting-yards where goods trains carrying hazardous substance are shunted. These companies sometimes conduct hazardous activities close to houses, hospitals, schools (referred to as sensitive objects) or in the vicinity of shops, pubs, restaurants and sports centres (semi-sensitive objects). This creates risks for people who live or work in the neighbourhood of such a company. Since coming into force, the Decree has imposed a duty on municipalities and provinces to take account of external safety when issuing environmental permits and when drawing up local land-use plans. This means, for example that houses must be located a certain distance away from a company that handles hazardous substances.

The covenant on LPG, which was signed by the State Secretary for the Environment and the Association for Liquefied Gas on 22 June 2005 in order to improve the safety at and around LPG filling stations, is also important. In 2010 all filling stations must comply with new, more stringent safety standards. Ministry of Housing, Spatial Planning and the Environment (VROM) and the LPG sector have agreed the measures that the LPG sector must take to make the supplying of filling stations safer. When these improvements have been introduced, it is estimated that 110 of the more than 2,000 filling stations will be unable to meet the new standards. These filling stations will be relocated. If this is not possible, then the sale of LPG at this location will be discontinued.

Efforts

In February 2006 the Rotterdam-Rijnmond Safety Region (VRR) was established. The VRR is the organisation in which municipalities, Fire Brigade, Ambulance services and Medical Assistance in the event of Accidents and Disasters work in close cooperation with the police, the Port Authority, the DCMR Rotterdam-Rijnmond Environmental Agency and the Public Prosecutions Department. The VRR is thus building on the cooperation that already exists. The primary aim is to offer the public, even more than now, a safe environment and care through efficient and effective round-the-clock support facilities as well as by having high-quality resources to combat calamities and disasters.

Within the framework of programme financing, VROM has allocated a total of € 20 million to provinces and municipalities to stimulate the implementation of the external safety policy. This

programme started in 2004. Through the programme financing subsidy scheme for external safety policy of provincial and local authorities 2006-2010, VROM has followed up the first phase. An additional € 100 million will be made available for the external safety policy of provinces and municipalities for the period from 2006 to 2010. With the second scheme, VROM explicitly wants to set in train a development 'from new activity to routine'. In other words, this means fewer projects, more structural implementation activities and the embedding of structural cooperation at an effective and efficient scale.

In this context, a plan is drawn up for every region annually. The Rijnmond programme for 2008 has a budget of more than € 2.9 million. The programme comprises activities and projects in the field of permitting, enforcement, transport of hazardous substances, the relationship between safety and spatial planning, stimulating cooperation, training and vision forming. DCMR, the Rotterdam Rijnmond Safety Region, municipalities and the Rotterdam Metropolitan Region are working together closely on the further substantiation and implementation of the programme. There is a regional risk communication working group that has drawn up an action plan to offer regional help and a degree of uniformity.

The Province of Zuid-Holland has published the risk map for the Province on the internet. This map can be found on the website. The Provinces have developed these risk maps because during the fireworks disaster in Enschede in 2000, it appeared that a lot of residents did not even know that there was a fireworks factory in the area. As a result of the disaster, the government decided that every member of the public should be able to find out about the risks in their own neighbourhood. In addition to the Province, various municipalities including Rotterdam, Maassluis and Barendrecht have also developed risk maps.

In their safety report (VR), the companies subject to VR procedures need to demonstrate that they have made every effort to minimise the chance of incidents (and their effects). For this purpose, the company must submit an updated safety report for assessment to the authorities concerned at least once every five years.

Future developments

When transporting hazardous substances, transport, spatial developments and safety interests play a major role. There are increasingly more developments visible in the Netherlands that result in tension between these interests. The Basisnet arose that has the objective of creating a sustainable balance between the transport of hazardous substances, spatial developments and safety. The Basisnet is a project that is executed by the Ministry of Transport, Public Works and Water Management together with among others VROM, municipalities, provinces and the commercial sector. Eventually the Basisnet must be laid down in legislation. The Basisnet consists of three maps on which existing railways, shipping routes and national trunk roads are shown divided into three categories of route.

- Routes where no restrictions are placed on the transport of hazardous substances, but where spatial restrictions apply;
- Routes where restrictions apply to both the transport and the spatial developments;
- Routes where there are only restrictions on transport.

Much transport and distribution in the Netherlands occurs not by road or railway, but via cables, pipelines and electromagnetic fields. When developing spatial plans, account must be taken of the sphere of influence of these provisions. This is because they can pose a real impediment when drawing up the plan. For instance, buildings must not be built in the safety zones around pipelines and cables. If buildings are present in the zones that do not meet the criteria, additional measures can be necessary and/or desired with a view to safety and health.

In 1984 and 1991, circulars were published for respectively high-pressure gas pipelines and fuel pipelines that laid down safety distances to sensitive and semi-sensitive objects. New insights have led to an investigation into the safety distances employed. The preliminary results show that in a number of cases the safety distances must be greater than the accepted distances. As a result, in some cases this could lead to safety problem areas. The consequences are currently being researched further by the RIVM-CEV. The intention is to publish a new circular giving amended safety distances. ■

In this chapter we take a closer look first at environmental permitting and then at enforcement. This sequence is also followed in the indicators in this chapter. In the permitting process, further integration with other sectors is occurring, primarily with spatial planning, while at the same time the environmental regulations are being standardised and simplified.

Legislation and regulations, and policy

The Environmental Management Act is the most important environmental act. The act determines which (legislative) tools can be used to protect the environment. The most important instruments are environmental plans and programmes, environmental quality requirements, permits, general rules and enforcement. The act also contains the rules for financial instruments such as levies, contributions and compensation. In 2003, the Ministry of Housing, Spatial Planning and the Environment (VROM) started modernising the legislation. An attempt is being made to improve the legislation, reduce bureaucracy and reduce the administrative load on companies and citizens. An important part is the new Activities Decree, which came into force on 1 January 2008. Before the Activities Decree came into force, eleven 8.40 Governmental Decrees each covered its own sector. When developing the new Governmental Decree a new approach was chosen: instead of regulations per sector, regulations per activity. In the new Governmental Decree, three types of company are identified, being the light regime companies, the companies that must notify and the companies that must have permits. In the new Governmental Decrees the light regime companies are no longer obliged to notify their activities. The municipality can impose limited tailored regulations on these companies. It has also been made easier for the other companies: they can submit their notification digitally. The Activities Decree also applies to companies that discharge to national waters, which will also reduce the number of permits for the Directorate General for Public Works and Water Management Zuid-Holland.

The Activities Decree contains target regulations per activity instead of per sector. As a result, the Activities Decree replaces all of the sector-oriented 8.40 Governmental Decrees (with the exception of those for agriculture and glasshouse horticulture). The resources regulations, with the details of the measures, are laid down in ministerial regulations. As a result, the measures are easier to amend. The Activities Decree leads to fewer notifications and fewer permits. In the Rijnmond region, more than 2,700 companies no longer need to request permits but can make do with a notification. Nationally this applies to 20,000 companies. In the future at least 90% of all companies that are covered by the Environmental Management Act on the basis of the Activities Decree can make do with a notification. The principle used is that the new rules will not reduce the level of protection offered to the environment. Based on the Activities Decree, companies must notify their company activities. This notification is done by filling in a digital form on the VROM website. The data is then automatically forwarded to the DCMR. These notifications are always forwarded to the water quality managers and if required also to the Directorate General for Public Works and Water Management Zuid-Holland.

Efforts

At various levels, in part as a result of the 'Aproot Motion', under the term 'modernising supervision' efforts are being made to reduce the burden of supervision at companies. The principle of this programme is the execution of combined inspections. In 2008, a pilot project will be carried out within the context of national developments into glasshouse horticulture in Lansingerland. The General Inspection Service (AID) of the Ministry of Agriculture, Nature and Food Quality, the higher water board of Schieland and the Krimpenerwaard and the DCMR will inspect in one go all of the inspection points, such as the use and storage of crop protection agents, the quality of the surface water and the compliance with environmental guidelines. Eventually, this should reduce the number of inspections from two independent inspections a year to one combined inspection every three years. A large number of partners work together in the region on the further substantiation of the 'Aproot Motion' at the regional level. These partners include the DCMR, departments of the Rotterdam municipality, Directorate General for Public Works and Water Management, VROM, district water boards and the Province of Zuid-Holland. The objectives are the drafting of a combined programme, the harmonising of inspections, the appointment of a coordinating supervisor and the formation of common front-offices, with a start being made with a chemicals pilot project.

The DCMR is moving increasingly to achieving benefits to the environment instead of the realisation of numbers of permits and inspections. A Spearhead analysis was performed as the first phase in the project. This analysis mapped out the environmental problems in the Rijnmond region. Then an indication was given of the main sources that cause each environmental problem. The second phase consisted of the formulation of targets for the company-oriented tasks. To achieve environmental targets at companies, instruments other than issuing permits and enforcement can be used. These are referred to as being soft instruments, such as information. In some cases these are more effective and efficient than hard instruments. The agreements with the municipalities and the Province have been amended with respect to the use of these instruments.

On 14 December 2006, the new provincial cooperative agreement was signed. New elements in the agreement include the wish for an integral approach, aimed at environmental, and spatial development legislation, and the attention devoted to life-cycle regulation enforcement. The concrete cooperation and implementation will preferably be transferred to the regional and/or local level. The ambition is to intensify cooperation between administrative and criminal law enforcement. At the same time the discussion about the Province's vision on the Future implementation of environmental tasks (TUM) is in playing a role in Zuid-Holland. The Province will use four environmental services

that will cover the entire province. As a result, the Province will transfer the implementation tasks to these environmental services. What the exact meaning will be for Rijnmond and how the services will be substantiated is still unclear. This has led to discussions within both the provincial organisation and the regional environmental services and municipalities concerning the advisability of the proposed development direction, meaning that various aspects are uncertain.

Future developments

The prospective General Provisions for Environmental Law Act simplifies the application procedure for housing, spatial and environmental permits and reduces the time needed for the permitting procedure. The proposal includes a standardised regulation for the environs permit. This new permit reduces the administrative burden on companies, residents, municipalities and provinces. The new permit combines the various permit procedures that must be followed if a citizen or a company wishes to demolish, (re)build, or use a particular site. The environs permit is a permit for building, housing, heritage, nature and the environment. This permit replaces the separate permits for, for instance, demolition, tree felling, building, housing, the environment and nature protection. This means the applicant only has to deal with one office, one application, one competent authority, one procedure, one permit, and one procedure for objection and appeal.

The actual assessment frameworks of the various parts of the environs permit remain. It is expected that the environs permit will come into effect on 1 January 2008. The DCMR will change its organisation to align it with this permit.

Changes will also be made to the various water-related laws. Indirect discharge will be integrated in the environs permit. In addition to the environs permit initiated by VROM, the Ministry of Transport, Public Works and Water Management is working on a water permit. The Water Act is expected to come into force in mid 2009. The Water Act shall, among other things from the perspective of emission management, serve to substantiate the European Water Framework Directive (see Chapter 7) and provide the opportunity to implement the future European directives. It will also make clear what legislation is applicable to the management of the water system. Eight laws will be included in the Water Act, and overlaps will be removed. These laws are: the Water Management Act, the Water Embankment Act, the Groundwater Act, the Surface Water Contamination Act, the Seawater Contamination Act, the Land reclamation Act, the Directorate General for Public Works and Water Management Structures Act, the Directorate General for Public Works and Water Management Act 1900 and the Wrecks Act. This will contribute to reducing the administrative load on companies.

It is of great importance that the environs permit and the water permit should be in line with each other, both substantively and procedurally. Therefore, when working out the statutory regimes, both ministries will examine how, when issuing both permits, the idea of a single office can be incorporated, so that the permits develop in a coordinated way.

In 2008, the police force of Rotterdam-Rijnmond started to implement the Police Environment Plan 2001 'The developing environment'. This is a national plan that contains the outlines of the environmental policy of the Dutch police forces. The police in Rotterdam-Rijnmond will, together with other partners in the environmental chain, gain more insight and get a tighter grip on the serious forms of (organised) environmental criminality. A number of spearheads have been specified for the Rotterdam-Rijnmond police force for 2008. For instance, the capacity for the environmental task will be increased and task accent holders for the Environment will be introduced into the district teams and into the Criminal Information Unit. The Regional Environmental Team, the Inter-Regional Environmental Team and the Investigation Team - Environment of the Rotterdam-Rijnmond police force will concentrate on the very serious and serious environmental criminality. It has been agreed that in 2008, files concerning a total of 500 suspects will be supplied to the National Public Prosecutor's Office for Financial, Economic and Environmental Offences. The districts will concentrate on environmental offences and on relatively simple environmental crimes that have a direct influence on life in the districts. ■

Noise is an important subject in the Netherlands and certainly also in Rijnmond. On the one hand there is the large number of people who are annoyed by noise and on the other there are new statutory obligations, and because the legislation is continually changing, noise will be a subject that will be of increasing importance in the coming years. The Central Government, the provinces and some municipalities must address noise. The Province of Zuid-Holland and ten out of sixteen Rijnmond municipalities had to supply noise maps to the Central Government by 30 June 2007. Moreover, these municipalities and the Province must submit actions plans by 18 July 2008 at the latest. In these action plans, municipalities must indicate how they are going to tackle problem areas and how they will protect their quiet areas. The ten Rijnmond municipalities concerned are Albrandswaard, Barendrecht, Capelle aan den IJssel, Maassluis, Ridderkerk, Rotterdam, Rozenburg, Schiedam, Spijkenisse and Vlaardingen.

Rijnmond has information available regarding the noise levels generated by road traffic, rail traffic, aircraft and industry. Other matters, such as noise pollution resulting from events and noise produced by neighbours are not included in this study. Road traffic noise makes the greatest contribution to noise levels, followed by industrial noise, then rail noise and aircraft noise. When compared to national figures, the noise levels in Rijnmond are higher. In Rijnmond, the percentage of inhabitants exposed to more than 60 dB as a result of road traffic is considerably higher, being 19% when compared to 8% in the Netherlands as a whole. The noise pollution surveys carried out by the Province of Zuid-Holland show that 12% of the people questioned experience road traffic noise as being very annoying. This is followed by the annoyance caused by aircraft (4%) and industry (3%). This survey investigated the health effects of exposure to industrial, road, rail and aircraft noise in the Rijnmond area. Moreover, a comparison of these effects has been made for the cities of Rotterdam, Utrecht and Amsterdam.

Increased noise levels lead not only to annoyance, but can also lead to a wide range of health effects, such as sleep disturbance and cardiovascular disease. Almost 8% of the population of Rijnmond experience a degree of sleep disturbance. More than 3% even suffer from severe sleep disturbance. This disturbance results in a feeling of tiredness, sleepiness, a drop in performance, an increase in irritation and disrupts the recovery function of sleep. Due to the ongoing scientific discussion, it is not possible to present exact figures for cardiovascular disease. However, it can be stated that thousands of people suffer from raised blood pressure due to exposure to road traffic noise. High blood pressure can lead to more serious effects such as a stroke or a heart attack, and even death. For Rijnmond this would mean some tens of people annually. The consequences for health of exposure to noise are comparable between the cities. However, city dwellers experience more health effects related to noise than the average person in the Netherlands.

The effects of (severe) annoyance, (severe) sleep disturbance and cardiovascular disease have been calculated for this survey. Annoyance and sleep disturbance have been calculated using a generally accepted method. However, it is also generally accepted that this method underestimates the actual number of people who experience annoyance and /or sleep disturbance. This means that the calculated percentages/ numbers in this survey must be considered to be *minimum* figures. With respect to the exact correlation between exposure to noise and cardiovascular

disease, there is still considerable discussion. However, it is clear that noise has an influence on high blood pressure and on the chance of a heart attack. Knowledge in the area of noise and health is still developing and it is expected that in the future a generally accepted calculation method will become available to establish this relationship. For the time being, the data related to cardiovascular disease are presented with a degree of caution.

Based on the noise maps, it is possible to calculate the number of DALYs resulting from severe annoyance and severe sleep disturbance. A DALY is a unit representing the number of healthy years of life a population group loses due to disease. By using this unit, it is possible to make a comparison with other diseases and cities. Every year in Rijnmond, approximately 2,630 life years (260 per 100,000 inhabitants) are lost as a result of severe annoyance and sleep disturbance due to road traffic, rail traffic, aircraft and industrial noise. As a comparison: for all of the Netherlands this is approximately 170 DALYs per 100,000 inhabitants. Of these sources, in Rijnmond road traffic with 1,880 DALYs is by far the most important. However, the DALYs mentioned resulting from the annoyance caused by noise are the result of using a conservative calculation method, and in reality they could be higher. The reason for this is that the calculation method uses exposure-response relationships and not the data from surveys into annoyance. For the Netherlands, it is estimated that 4% of the people are severely annoyed by road traffic noise, while the surveys using questionnaires show that approximately 25% experience severe annoyance.

It should be clear that, in addition to human distress, this also represents an enormous loss due to visits to the doctor, hospital admissions and the like. An amount of € 78,500 can be assumed for every lost year of life. For the given figures of 2,630 DALYs, this means a loss to society of more than € 200 million.

The economic effects of noise levels on dwellings are determined using the calculation of the reduction in value of the dwelling due to the high noise levels. The idea behind this is that house prices can be used to derive a price tag for the reduction in the enjoyment of property. The Environmental and Nature Planning Office (MNP) has carried out a study into this aspect and used foreign studies and a recent Dutch survey. For a noise level of less than 45 dB, no depreciation is assumed, and as the noise levels increase, the (percentage) depreciation increases accordingly. Using the results of the MNP study, an estimate has been made of the influence of noise on the house prices in Rijnmond. To be able to do this,

several assumptions have been made and restrictions introduced. The resulting depreciation due to road traffic is estimated to be approximately 1.5 billion euros. This means on average € 2,900 per dwelling. The loss in value for dwellings that are exposed to high noise levels will of course be higher than for houses situated in a quiet residential neighbourhood. The method employed is still reasonably rough and therefore, together with the Tilburg University, work is being done on refining the calculation method. For this survey, use is made of the Hedonic Pricing Method. Here it is assumed that the market value of houses is determined by a wide variety of quality aspects, such as noise quality, the 'greenness' of the neighbourhood and criminality. Using very extensive statistical processes, it is possible to derive the value of separate influencing factors, including therefore noise, from the price of dwellings.

Thus, the annoyance caused by noise has an effect on health and on the value of the neighbourhood. Therefore enough reason to address noise pollution. When searching for opportunities to reduce noise, everyone should bear their own responsibility. Here you can see a certain layering: some measures must be taken at the European level, others at the local level. For an important part, the measures must be worked out and executed via the action plans. The action plans should be updated every five years to allow a response to be made to social developments. A wide variety of measures can be considered such as reducing traffic levels, lowering the maximum speed limit, limitations on accessibility for certain types of vehicle and the reservation of building-free zones alongside roads and industrial estates. In addition, the noise aspects of the municipality's own fleet of vehicles and that of its suppliers can be evaluated.

Via the implementation of the action plans, the coming years will see a lot of work being done to make Rijnmond quieter. It is possible that this report can still play a role in detailing or implementing the plans. If this is too late for this year's action plan, in 2013, the authorities must draw up a new action plan. In this report we recommend that the possibilities available at the supralocal level should also be used. It is for instance possible to jointly request action from Brussels for the more rapid (obligatory) replacement of the existing tyres by quieter tyres, or requirements related to the noise produced by cars and trucks. The Central Government can put effort into the accelerated payment and execution of ISV2 projects (these projects are related to the investment budget for urban renewal).

A second important aspect is harmonisation with other policy domains such as air. When determining the priorities of the activities, the preference should be for those measures that have a positive effect on multiple policy domains. With respect to air, various regional agreements have been made in the Rijnmond Regional Action Programme for Air Quality. A large number of action points also have an effect in the area of noise, which makes regional harmonisation with respect to noise also desirable and which offers additional opportunities. Possibly this can result

in an integrated Rijnmond Regional Action Programme Air and Noise. At a later stage, the climate can also become part of this programme, in particular for traffic.

The effects of the measures taken must be monitored. A number of possible indicators that can be used here have been mentioned in the theme report, such as the (geographic) calculation of the noise levels in Rijnmond, the health damage and the economic effects. In addition to these and other indicators, it is necessary to keep up to date with more general developments, such as the use of quieter tyres and the European obligations with respect to making passenger cars and commercial vehicles quieter.

Proper monitoring provides insight into the noise situation and can also provide insight into the effects of the measures (from the action plans) that are taken to combat noise pollution. It is therefore important to link the measures from the action plans to the MSR. In this way, the MSR can serve as a good basis for drawing up the 2013 action plan, as there will then be insight into the effectiveness of the measures that have already been taken.

The following additional indicators are proposed:

- Health effects of noise (in DALYs);
- Economic effects of noise levels;
- Noise barriers along national trunk roads and provincial roads;
- Quiet asphalt on national trunk roads (ZOAB - very porous asphalt);
- Quiet asphalt on provincial and municipal roads (DGD - thin noise-reducing top layers);
- Clean and quiet vehicles for various government organisations (see also the trend analysis in the chapter concerned with social context);
- Clean and quiet vehicles for companies and private individuals;
- Indicators that are in line with the implementation of the various (municipal) action plans;
- Indicators that are in line with the noise aspect of the environmental objectives for companies. ■

Overview indicators per page

The environment in the Rotterdam region 2008

Indicator	page	chapter	type	name
8016	16A	2	line	Inhabitants in Rijnmond
7004	16B	2	line	Handling of environmental complaints by Municipal Health Services
7076	16C	2	bar	Environmental complaints police
3085	16D	2	line	Complaints about odour, dust and noise
9005	17A	2	line	Index environmental pressure road traffic
3028	17B	2	line	Number of car kilometres driven
4020	17C	2	bar	Rail passengers (stations)
4022	17D	2	bar	Modal split (motivation)
4027	18A	2	bar	P+R-terrain (parking places)
4028	18B	2	map	P+R-terrain (occupation)
7101	18C	2	map	Watertaxi halts
7066	18D	2	map	High quality public transport
9004	19A	2	line	Index environmental pressure major industries
	20A	2	bar	Clean vehicles in Rotterdam
3058	24A	3	line	Marks for environmental quality
5026	24B	3	map	Air quality NO ₂ (building sites)
5022	24C	3	pie	Air quality NO ₂ (inhabitants %)
5069	24D	3	pie	Air quality NO ₂ (area %)
5029	25A	3	map	Noise (building sites)
5023	25B	3	pie	Noise (inhabitants %)
5068	25C	3	pie	Noise (area %)
5031	25D	3	bar	Water storage Delfland
5064	26A	3	bar	Water storage Schieland en de Krimpenerwaard
5015	26B	3	ma	Nature and recreation areas
5030	26C	3	map	External safety (building sites)
5025	26D	3	pie	External safety (inhabitants %)
5070	27A	3	pie	External safety (area %)
9003	31A	4	line	Index air quality
3075	31B	4	line	SO ₂ in air
3072	31C	4	line	NO ₂ in air
3079	31D	4	line	Fine suspended particles
3073	32A	4	line	Ozone
3049	32B	4	line	Benzo(a)Pyrene
3067	32C	4	line	Benzene
3082	32D	4	bar	Smog
3083	33A	4	bar	Signalling codes
3002	33B	4	line	Odour, complaints
3087	33C	4	map	Odour, complaints per municipality
3088	33D	4	map	Dust, complaints per municipality
3020	34A	4	line	Premature deaths (by ozone and fine suspended particles)
1058	34B	4	line	Hospital admissions caused by fine suspended particles
1059	34C	4	line	Hospital admissions caused by ozone
3025	34D	4	line	Emission particles

Indicator	page	chapter	type	name
3009	35A	4	line	Emission hydrocarbons
4002	35B	4	line	Emission carcinogenic compounds
4001	35C	4	line	Emission acidifying compounds
3086	35D	4	line	Emission factors road traffic
3046	36A	4	line	Emissions road traffic (CO ₂ , NO _x , hydrocarbons, particles)
4032	39A	5	map	Environmentally protected area's noise
3003	39B	5	line	Complaints about noise
4034	39C	5	map	Noise, complaints per municipality (Rotterdam Airport)
4035	39D	5	map	Noise, complaints per municipality (excluding Rotterdam Airport)
4019	40A	5	line	Permitted higher noise levels houses (sources)
4023	40B	5	line	Permitted higher noise levels houses (noise levels)
3056	43A	6	bar	Soil clean-up: results in hectare
5046	43B	6	bar	Clean-up of new contaminated soil
5058	43C	6	bar	Soil protection act
5049	43D	6	map	Soil clean-up former gas work sites
5060	44A	6	bar	Use of soil clean-up possibilities
5041	44B	6	bar	Destination of contaminated soil
1036	44C	6	bar	Soil clean-up subsidy scheme for companies
5063	44D	6	bar	Soil clean-up of industrial sites
9002	49A	7	line	Index quality national waters
9007	49B	7	line	Eutrophication of surface waters
9008	49C	7	line	Heavy metals in surface waters
1039	49D	7	line	Heavy metals in sludge
1040	50A	7	line	Organic micro pollutants in sludge, national waters
2022	50B	7	bar	Quality surface waters, canals
2023	50C	7	bar	Quality surface waters, ditches
2024	50D	7	bar	Quality surface waters, lakes and pools
4004	51A	7	bar	Quality surface waters, brackish waters
5065	51B	7	bar	Quality surface waters, fresh waters
3048	51C	7	pie	Quality surface swimming water
1025	51D	7	bar	Intake stops Meuse water (drinking water production)
4007	52A	7	map	Salinisation
1030	52B	7	line	Discharges heavy metals by major industries
1032	52C	7	line	Discharges benzene and chlorides
1007	52D	7	line	Discharges oil
1004	53A	7	line	Discharges phosphate and nitrogen
8014	53B	7	map	Buildings without sewerage per municipality
3102	53C	7	bar	Efficiency of waste water purifying plants
3057	53D	7	pie	Complaints inland waters Delfland
4013	54A	7	bar	Complaints inland waters Hollandse Delta
4046	54B	7	pie	Complaints inland waters Schieland en de Krimpenerwaard
1047	54C	7	map	Wildlife-friendly riverbanks
5014	54D	7	line	Quantity of sludge

Indicator	page	chapter	type	name
2020	55A	7	bar	Use of ground water
1046	55B	7	bar	Industrial use of ground water
	56A	7	bar	Herbicides in surface waters
	57A	7	map	Research location under water soil
5055	61A	8	line	Number of butterflies
1049	61B	8	bar	Number of seals
4026	61C	8	line	Number of sand lizards
8029	61D	8	bar	Number of bats
1050	62A	8	bar	Number of common terns
1052	62B	8	bar	Number of redshanks
1051	62C	8	bar	Number of water birds
8031	62D	8	line	Number of breeding birds in open water
8032	63A	8	line	Number of breeding birds in reed
8033	63B	8	line	Number of breeding birds in young forest
8034	63C	8	line	Number of breeding birds in deciduous forest
8035	63D	8	line	Number of breeding birds in farmland
4000	64A	8	line	Complaints pigeons and vermin
8023	64B	8	map	Ecological structure
5037	64C	8	bar	Nature reserves
3031	64D	8	bar	Urban green in Rotterdam
8019	69A	9	map	Municipal Waste Plan per municipality
8020	69B	9	map	Municipal waste analyses per municipality
5010	69C	9	bar	Domestic waste
5004	69D	9	bar	Separated collected domestic waste
6011	70A	9	map	Separate waste collection per municipality (separated)
6006	70B	9	map	Separate waste collection per municipality (paper)
6007	70C	9	map	Separate waste collection per municipality (organic)
6008	70D	9	map	Separate waste collection per municipality (glass)
6009	71A	9	map	Separate waste collection per municipality (textile)
6010	71B	9	map	Separate waste collection per municipality (small chemicals)
6014	71C	9	line	Composition domestic waste (total)
6013	71D	9	bar	Composition domestic waste (packaging)
3060	72A	9	line	Development income and waste deposition
3074	72B	9	pie	Bio-fuel from waste
	73A	9	bar	Packaging tax tariffs
	74A	9	pie	Packaging materials 2005
	74B	9	bar	Emission CO ₂
	75A	9	bar	Plastic waste in Europe (productive utilisation)
	75B	9	map	Plastic waste in Europe (recycling efficiency per country)

Indicator	page	chapter	type	name
8012	78A	10	map	Use of green power per municipality
3080	78B	10	map	Transition management project (progress)
8021	78C	10	map	Wind energy (locations)
8028	78D	10	line	Wind energy (production)
2008	79A	10	map	Cooling water discharges
4006	79B	10	bar	Emission CO ₂ Rotterdam
5067	79C	10	bar	Emission CO ₂ Rijnmond
3006	79D	10	line	Emission CO ₂ major industries
5066	80A	10	bar	Emission CO ₂ road traffic
8015	83A	11	map	Municipal Environmental Policy Plan per municipality
7081	83B	11	map	Sustainable purchasing policy
3064	83C	11	map	Municipalities subsidized for climate improving measures
3065	83D	11	map	Sustainable building
7079	84A	11	map	Implementation internal environmental care per municipality
8013	84B	11	bar	Education of nature and environment in Rotterdam
1033	87A	12	map	Risk contour companies
2026	87B	12	map	Risk contour pipe lines
2707	87C	12	map	Risk contour shipping
2012	87D	12	map	Carriage of Dangerous Goods Act
3066	88A	12	bar	Spatial planning advices related to external safety
2019	88B	12	pie	Hazardous companies
3063	88C	12	pie	Enforcement Hazard of Major Accidents Decree
3062	88D	12	pie	Review of safety reports
7107	91A	13	bar	Focal points major companies
7108	91B	13	bar	Focal points medium and small companies
7103	91C	13	line	Licenses provincial industries
7102	91D	13	line	Licenses municipal industries
7080	92A	13	bar	Effective level of measures (major industries)
7024	92B	13	line	Enforcement municipal industries
7111	92C	13	line	Sampling Directorate General for Public Works and Water Management
7110	92D	13	line	Preventive controls
7112	93A	13	line	Summons
6015	93B	13	line	Sanctions
7113	93C	13	line	Research complaints and incidents
7106	93D	13	bar	REOV
3099	94A	13	bar	Enforcement soil clean-ups
3054	94B	13	bar	Enforcement soil protection act (percentage)
7094	94C	13	bar	Enforcement by police (small misdemeanours)
1022	94D	13	bar	Enforcement by police (crimes)
	97	BY1	map	Municipality borders and number of inhabitants
	103	BY2	map	Water quantity boards

