GENERAL INFORMATION ON NATIONAL PHYSICAL

PLANNING IN THE NETHERLANDS

Gotz Nassuth - The Netherlands
Senior International Fellow
Spring Semester, 1973

The Center for Metropolitan Planning and Research

The Johns Hopkins University
Baltimore, Maryland
# Table of Contents

## Part I - Developments in the Physical Planning Administration

1. Scale as Compared to the United States ............................................. 1
2. Legal Status of Physical Plans ......................................................... 3
3. Prewar Trends in Physical Planning Policy ....................................... 4
4. Developments Since 1945 ................................................................. 7
5. Physical Planning Administration ..................................................... 9
   Appendix I .................................................................................. 13

## Part II - Current Developments Regarding Physical Planning in the Netherlands

1. Introduction .................................................................................. 14
2. The National Policy Regarding the Country as a Whole ..................... 16
3. The National Policy Regarding Different Regions ............................ 17
4. Survey of Some Problems of Physical Planning ................................. 19
   A. Urban Space Demands ............................................................... 19
   B. Rural Space Demands ............................................................. 21
   C. Infrastructural Space Demands ................................................. 28
5. Short Outline of the Planning Method for Stipulating Urban Growth Policy ......................................................... 29
   Appendices I - VII ....................................................................... 33
PART I - DEVELOPMENTS IN THE PHYSICAL PLANNING ADMINISTRATION

1. Scale as Compared to the United States

"National" does not refer to something "big" in terms of size. The Dutch national territory equals approximately the size of Maryland, although population in the Netherlands outnumbers Maryland almost three times (2.85). Densities are more than twice as high (2.17).

<table>
<thead>
<tr>
<th>1971</th>
<th>population (1000)</th>
<th>surface* (sq. mi.)</th>
<th>surface* (km²)</th>
<th>density (inh. /sq. mi.)</th>
<th>density (inh./km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>13,300</td>
<td>13,000</td>
<td>33,300</td>
<td>1020</td>
<td>400</td>
</tr>
<tr>
<td>Maryland (incl. D.C.)</td>
<td>4,680</td>
<td>9,956</td>
<td>25,400</td>
<td>470</td>
<td>185</td>
</tr>
</tbody>
</table>

*water excluded

Government is decentralized into two levels. There are 11 provinces and about 850 municipalities. As the size of the United States is approximately 250 times the size of the Netherlands, it would have 250 x 11 provinces = 2730 provinces by Dutch standards. The United States has 3038 counties, so one could compare the size of a province with the size of a county. There are 78,800 governments in the United States, of which 18,000 are cities and towns, the remainder mainly being district governments. By Dutch standards, the United States would have 250 x 850 or more than 200,000 local governments (212,500).

Provinces and municipalities in the Netherlands are political entities, both having their own legislative body, composed by direct elections, and their own executive council.

The Dutch nation started its history as a federation of provinces; its original name being the "United Netherlands". It was not before the beginning of the 19th century that the state received a centralized
government. Provinces and municipalities have kept their autonomy however. Except for the authorities that either have been explicitly delegated to them or explicitly withdrawn from them by the state, they are free to determine their own politics.

The following financial figures may serve as an indication for the economic position of the different governments. United States figures are given for comparison (at a discount rate of three guilders to a dollar).

<table>
<thead>
<tr>
<th></th>
<th>Gross Nat. Product</th>
<th>Gvt. share of GNP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$ billion</td>
<td>$ per cap.</td>
</tr>
<tr>
<td>United States</td>
<td>1200</td>
<td>5700</td>
</tr>
<tr>
<td>Netherlands</td>
<td>43.4</td>
<td>3260</td>
</tr>
</tbody>
</table>

The distribution of government's share of the Gross National Product over different levels is as follows.

<table>
<thead>
<tr>
<th></th>
<th>United States</th>
<th>Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$ billion</td>
<td>%</td>
</tr>
<tr>
<td>Nat. level (Fed.)</td>
<td>260</td>
<td>63.3</td>
</tr>
<tr>
<td>Prov. level (State)</td>
<td>80</td>
<td>19.6</td>
</tr>
<tr>
<td>Mun. level (Local)</td>
<td>70</td>
<td>17.1</td>
</tr>
<tr>
<td>E.E.C.</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>410</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Three conclusions can be drawn from these figures. First, that the government's share of GNP in the Netherlands is relatively smaller than the corresponding share in the United States. Second, that the influence
of the Dutch provincial government in terms of available money is smaller than the influence of the State's government in the United States. Finally, that the local governments in the Netherlands and United States alike have practically the same influence.

2. Legal Status of Physical Plans

No other authority except a local government is liable to effectuate an allocation plan. This type of plan describes the land uses in parts of a city, the dimensions of the premises, the limits of allowed residential or commercial density, etc.

Local development plans are known since the Housing Act came into effect in 1901. They were not legally binding plans until 1921 when the allocation plan was introduced. Legally binding means that no building permits will be issued if building intentions diverge from regulations in the allocation plan.

Allocation plans have to be approved by provincial government, after having been determined by municipal council. Appeal is open to the Crown, who will usually regard such cases as a matter of formal justice rather than as a matter of planning policy.

Physical planning on the municipal level may also result in a document that is called a "structural plan". This type of plan differs on four points from an allocation plan:

- a structural plan is conceived on a larger scale and is consequently less detailed
- it is not legally binding
- the municipality is not obliged to prepare one
it needs no approval from provincial or state authorities

Regional planning was officially introduced in legislation in 1931 as a matter of joint responsibility of interested municipalities. This did not work, except for some isolated cases. Since 1941, it has been the responsibility of the provincial government to make regional plans. The character of regional planning has gradually been changing from land-use plans to development plans in which increased attention is paid to other than purely physical issues, such as economic, socio-cultural and environmental. Presently, some 30 regional plans are in effect and some 25 more are in the course of being prepared. They cover approximately 40% of the country's acreage.

3. Prewar Trends in Physical Planning Policy

The Housing Act of 1901 originated from the government's concern about poor health and living conditions in the cities. Regulations referred mainly to structural, hygienic and functional aspects of housing and street conditions.

In the following two decades more attention was paid to environmental characteristics. This was greatly enhanced by the rising popularity of the garden-city idea. Many examples of this idea were effectuated by industrialists who applied the concept to residential districts for the workers in their factories.

Mainly as a result of these housing and environmental improvements, the demand for urban space increased sharply. Following examples may illustrate this.

The floor space for a 4-room public housing unit increased about 60%
between 1910 and 1960, the average space being approximately 500 sq. ft. (45 m²) in 1910 and 800 sq. ft. (72 m²) in 1960. This corresponds with an annual increase of 1.25% in floor space. The increase of residential acreage per inhabitant was even more spectacular, being approximately 190 sq. ft. (17 m²) in 1910 and 780 sq. ft. (70 m²) in 1960. This represents an increase of 300% in 50 years or of 2.8% per annum. In contemplating these figures it should be kept in mind that the Netherlands total population almost doubled during the period under consideration; that is from 5.9 million in 1910 to 11.6 million inhabitants in 1960. Moreover, this growth was not spread out evenly all over the country but manifested itself mainly in or near urban areas in the western districts, and to a somewhat lesser extent also in the south of the country.

The government's main concern under these circumstances has been to prevent land speculation and disorderly developments regarding urban land use.

The Housing Act regulations from 1901 were only restricted to codes for appropriate housing conditions and street patterns. Obviously, such codes will fail to prevent land speculation and disorderly land use developments. The Housing Act regulations were consequently extended in 1921 to land use codes for the territory of entire municipalities.

As urbanization proceeded quickly, it was also deemed necessary to introduce regional plans in 1931 in order to regulate inter-municipal developments.

In this way, governmental supervision in matters regarding physical planning expanded gradually over growing geographical units. This trend eventually generated the idea of establishing one general plan covering
the whole of the nation's territory.

The original concept for this approach towards a nation-wide physical planning featured the characteristics of a conventional land use plan. These characteristics were generated by a view on society that took social and cultural changes for granted as long as they did not interfere with individual liberties. As a consequence, planning was only regarded as a tool for preventing undesirable developments rather than as a tool for improving living conditions.

Planning remained under these circumstances a device to alter conditions under control and to keep established values protected from influences that might disturb them.

Built-up areas should for instance be kept distinctly separated from open spaces; no urban sprawl along radial roads should be permitted; natural reserves should by all means be saved.

This attitude was far too static and restrictive to be feasible in a society that was apt to be permissive as well as affluent. It nevertheless was the first attempt for a nation-wide approach to cover a specific field of planning. This attempt had a number of important successors in other fields. In 1941, the National Agency for Physical Planning prepared a nation-wide program for physical development. In 1945, a similar approach for economical development crystalized in the establishment of a Central Planning Agency as a branch of the Ministry of Economic Affairs. Some years later these ideas in the sphere of socio-cultural planning took shape at the Ministry of Social Affairs.
4. Developments Since 1945

In the course of the fifties, a sharp polemic raged in the international literature on fundamental aspects of planning actions, the essential question being, whether planning and democracy would, in principle, be compatible. It was not until about 1960 that this polemic died down, by which time it was realized that planning as such is a neutral instrument that can be used for good and for evil.

This development was paralleled in the Netherlands by a fairly quick and sudden change in people's attitude towards planning. Economic progress had imposed a great impact on everyday life, forcing people to revise their traditional outlook for the future completely. A very important factor contributing to this change was also the exceptionally fast growth of the population. This made all previous projections of the future population entirely out-of-date.

The following table illustrates the embarrassment regarding future population growth in subsequent years.

Population of Netherlands in 2000 as Estimated in the Recent Past

<table>
<thead>
<tr>
<th>Year of Estimate</th>
<th>Source</th>
<th># inh. in year of estimate (mil.)</th>
<th>Estimated # inh. in year 2000 (mil.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1925</td>
<td>Wiebols</td>
<td>7.4</td>
<td>12.0</td>
</tr>
<tr>
<td>1930</td>
<td>'t Hooft</td>
<td>7.9</td>
<td>9.5</td>
</tr>
<tr>
<td>1935</td>
<td>Bakker Schut</td>
<td>8.4</td>
<td>11.0</td>
</tr>
<tr>
<td>1955</td>
<td>CBS</td>
<td>10.9</td>
<td>15.0</td>
</tr>
<tr>
<td>1965</td>
<td>CBS*</td>
<td>12.4</td>
<td>20.2</td>
</tr>
<tr>
<td>1970</td>
<td>CBS</td>
<td>13.1</td>
<td>18.0</td>
</tr>
</tbody>
</table>

*Actual projection of CBS in 1955 went no further than 1980, estimating some 13 mil. for that year.
In the joint publication of the National Physical Planning Agency and the National Planning Agency entitled "Westen en overig Nederland" (The West and the rest of the Netherlands) of 1956, the central theme became of a much more active and programmatic nature than any preceding report. The publication dealt with a better distribution of the population and of natural and human resources throughout the country. This inclination to a more active approach can also be discerned in the opinions of the Netherlands government. This can be seen, for example, from the First Report on physical planning of 1960 and from the Physical Planning Act, which reached the Statute Book in 1962. The leaning towards a positive, consistent but flexible government policy program is most clearly evident from the Second Report on physical planning as the promotion of a physical environment which can best serve the people's way of life.

Apart from this active attitude another striking feature is the emphasis placed on the dynamics of development and planning. The accent has clearly been shifted from the application of established codes to the understanding of process-behavior.

The report represents for the coming decades, among other things, a schematic network for the main roads, a scheme for outdoor recreation, a structure pattern for urbanization and a policy outline for administrative organization of the country.

All these main lines, however, are allegedly of an indicative nature, that is, subject to continuous correction if new developments or findings should make this necessary. Another important new feature of the report is the serious attempt to coordinate physical planning with other fields
of planning, such as economic and socio-cultural. The latter feature will be elaborated to a far wider extent in the Addendum to the second report, which is in the course of being prepared right now (1973).

5. Physical Planning Administration

The attachment to this paper shows some administrative bodies dealing with physical planning and their organizational relationships. Two fields of cooperation in planning problems should be kept in mind when considering the diagram, namely the formal relationship between the three levels of government (vertical coordination) and the functional relationship between governmental bodies, each dealing with a specific sector of governmental care for the nation's needs (horizontal coordination).

**vertical coordination**

The following characteristics about the relation between the three levels of government have already been mentioned before:

- municipalities are the only governments capable of assigning physical plans that are legally binding;
- provinces and municipalities have a strong political position;
- national physical planning leaves ample opportunity for alternative elaboration by provincial and municipal authorities.

National planning policy not only respects the strong position of local governments but also enhances it. The main reason for this is that local authorities stand close to the everyday life of the citizens and therefore know best the particular needs of their direct environment.

Intensive communication between different levels of government is highly estimated as a means of obtaining satisfactory results in physical planning.
Many meetings between the Minister of Physical Planning and the provincial authorities have for instance preceded the national government's approval of the second report on physical planning.

The same procedure is being followed in preparing regional plans by provincial committees for physical planning, that have an advisory function to the provincial governments. The national government has also a number of means to enforce its interventions on local governments, however. One of them is the right of the Crown, that is the King and his Minister (on advice of the State's Council), to judge an appeal over an allocation plan that has been assigned. Another instrument for interference of the nations' government with regional or local affairs regarding physical planning is the Minister's authority to demand binding assignments referring to the contents of a regional plan. This authority enables him also to change the contents of an allocation plan, if necessary. Indicative planning may in this way be made compulsory on specific details. This instrument has only four times been put into effect since it became into existence some seven years ago.

The central government may, however, also use other implements to effectuate its physical planning policy. This is mainly done by its policy regarding public works and by its programs for subsidizing municipalities and private housing.

**Horizontal coordination**

Physical planning is essentially a matter of integrating the interests of agriculture, industry, housing, recreation, traffic, etc. An efficient coordination between the various ministries that are involved with these
interests is, therefore, highly important to achieve a satisfactory process of physical planning. National policy on physical planning is essentially not the policy of one or more ministers but it affects the policy of the government as a whole.

Each minister is liable for the preparation and execution of programs in his own field. Regional industrialization is carried by the responsibility of the minister of Economic Affairs, for example, the policy regarding outdoor recreation by the Minister of Socio-Cultural Affairs, highway-building programs by the Minister of Transport, and so on. It is up to the Minister for Physical Planning to prepare the coordinating government decisions in all these fields.

Decisions may be taken by the Council for Physical Planning. This Council is headed by the Prime Minister, the Minister for Physical Planning having a coordinating position within it. In this position he may be assisted in some cases by the Minister for Public and Environmental Health.

All programs of any importance for the national physical planning policy have to be laid before the National Physical Planning Committee for advice. This is a standing committee, consisting of some 20 officials representing various Ministries and government agencies. Most of them are highest in charge of preparing the policy for their minister. The general director of the National Agency for Physical Planning is member as well as secretary of this committee.

Another council for matters regarding national physical planning policy is the Advisory Council for Physical Planning. Members in this Council represent institutions and organizations that play an important role in Dutch society, including people of several scientific disciplines, the
Chamber of Commerce, the Trade Unions and the like.

Reports of this Council to the Minister for Physical Planning receive considerable attention in the newspapers. This is quite understandable since quickly deteriorating environmental conditions are apt to generate a growing engagement of public opinion in these matters.
1. **Introduction**

Up to the early fifties, physical planning in the Netherlands was mainly effectuated by local and regional policies. However, the differences between population growth and income level between several regions steadily increased since World War II and physical planning gradually became a matter of nationwide concern. In the Second Government Memorandum on Industrialization, issued by the Ministry for Economic Affairs in 1950, "regional dispersal of industry" occurred for the first time as an issue of government policy, but there was still no question of physical planning considerations.

Since this report, the element of dispersal of industry constantly reoccurred in a follow-up series of six memoranda on industrialization. It is interesting to note that the aims gradually widened. The Fifth Memorandum of 1955, for example, dealt at length with the elimination of the hidden unemployment in agriculture in northern regions in addition to the consequences of the substantial population growth in the southern region where the importance of coal mining declined because of the increased use of oil as a source of energy. The memorandum also mentioned the eastern regions of the country where the importance of textile industries declined partly as a result of a strengthening in the international competition for new markets. It is obvious that these developments might harbor the nucleus of structural unemployment.

A striking change then occurred in 1956 when, in the Sixth Memorandum on Industrialization, nation-wide physical planning clearly stood out for the first time. After a fairly extensive account of the physical problems of the west, the memorandum mentioned as an aim, inter alia, the prevention of an expulsion of population from northern, eastern and southern regions, thus relieving the pressure on "Randstad Holland", the agglomerations in the highly-urbanized western parts of Holland.
Finally, we saw a clear shift in the Eighth - and up to now the last - Memorandum on Industrialization issued 1963 and in the Second Report on Physical Planning issued 1966. These two memoranda clearly demonstrated the view that when seen at a West-European level, a large part of the Netherlands belongs to an economically and favorably located concentration area. These areas should be effectively planned, even at the cost of a smaller emphasis on the dispersal policy, since a dispersal policy alone will not be able to solve the physical planning problems of the western and also, to a lesser extent, of the southern regions.

This does not alter the fact that a powerful continuation of the dispersal policy was still deemed desirable in order to relieve the pressure in the west and the south and to benefit the desired development of the stimulation areas themselves. With respect to the latter point, the Second Report on Physical Planning was fairly specific: it put the emphasis on the promotion of a differentiated industrial structure, interacting with the creation of a really urban environment.

In reviewing the development of ideas in the past twenty years or so, a striking point is the general acceptance of the dispersal policy. This acceptance can be characterized as the "long wave" discussion. It is unmistakably influenced by a "short wave", however, which follows the ups and downs of the economic conditions: if conditions are favorable, the dispersal policy is more easily accepted than when they are hesitant. The reason for this is quite obvious: a growing cane is easier to divide than a shrinking one. Today, with serious economic problems regarding the balance between wages and prices prevailing, the issue of a dispersal policy leading to an expansion of urban areas in relatively underdeveloped districts seems to give way again for a policy favoring the intensification of effective local planning, leading to an improvement of the highly-urbanized western districts of the country.
2. The National Policy Regarding the Country as a Whole

For reasons mentioned earlier, national policy aims at dispersal of the population by regional decentralization. This policy has three main points:

1. The prevention of excessive regional unemployment in agriculture and small industry.
2. The prevention of strong emigration from rural districts, which would drain the economic and social life in the peripheral areas.
3. The prevention of excessive regional differences in income.

The main instruments to effectuate this policy are:

1. The distribution of housing.
2. The improvement of infrastructure for transport.
3. Investment grants for industrial facilities, thus enhancing employment opportunities.

As a result of this policy, it is estimated that more than 50,000 new jobs have been created in the stimulation areas in the last 10 years or so, an increase of some 2.5%. It has nevertheless become obvious that the various measures have been too general of a nature to facilitate the growth of an urbanized community with a rich variety of employment opportunities. This is partly due to the industrial structure of the northern region which is still, to a large extent, dominated by small units and uncomplicated, relatively labor-intensive production processes, requiring little capital. That the North needs is the establishment of concerns with high-grade, capital intensive processes, which in turn can attract other industry.
3. The National Policy Regarding Different Regions

The northern half of the country, north of the Alkmaar-Arnhem zone, contains approximately 25% of the population of the Netherlands (3.5 million inhabitants). The southern half of the country, which includes the Randstad area, is the most densely populated area. Present density in the Netherlands is some 1,000 inhabitants per square mile (400 inhabitants per km²); but in the Randstad area, it is some 4,200 inhabitants per square mile (1,650 inhabitants per km²).

The Randstad area contains approximately 1/3 of the population of the Netherlands, which is some 4.5 million inhabitants. It could be considered a metropolis if the urbanization pattern was characterized by a highly dominant capital city, as is the case of Paris or London. However, the Randstad pattern is characterized by the distribution of urban functions over a limited number of strong towns, of which Amsterdam, the Hague, and Rotterdam are the largest. These three towns are spaced at distances of some 30 miles.

In his book *The World Cities*, Peter Hall compares the "Randstad" with six other metropolises - London, Paris, the Rhine-Ruhr agglomeration, Moscow, New York and Tokio. He says: "It is practically certain that for the majority of the fast-growing metropolises, the Netherlands solution is the right one." The Randstad does not represent a "solution", however, since it was not planned but rather simply developed that way. Contemporary trends in urban sprawl indicate, in fact, that the decentralized metropolis of the Randstad is loosing its advantages, partly through rivalry between municipalities trying to receive as many inhabitants as possible and partly because of the absence of a distinct focal point from which an urban environment develops and which is really European in its level of "urbanity".

* See Appendix I for the location of geographical elements.
Instead, some kind of articulated monotony is taking shape in the Randstad. This development replaces a situation in which a wide variety of different urban environments existed. The following index figures for the number of inhabitants in Amsterdam, Rotterdam and the Hague (totalling approximately 1/3 of the population of the Netherlands) may illustrate this statement.

<table>
<thead>
<tr>
<th>Year</th>
<th>Amsterdam</th>
<th>Rotterdam</th>
<th>The Hague</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>municip. region</td>
<td>municip. region</td>
<td>municip. region</td>
</tr>
<tr>
<td>1950</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>1960</td>
<td>104</td>
<td>108</td>
<td>113</td>
</tr>
<tr>
<td>1970</td>
<td>100</td>
<td>112</td>
<td>118</td>
</tr>
</tbody>
</table>

Obviously, a strong process of suburbanization is taking place around these cities. This process features the same characteristics as suburbanization occurring elsewhere in the world. In its Second Report on Physical Planning, the Government decided that this process was not an attractive alternative as a future urbanization pattern. It agreed, therefore, on a national policy that aimed at an urbanization pattern called concentrated decentralization. With this decision, the Government chose a future pattern of settlements that would consist of larger cities.

The following points represent some main motivations for this policy:

1. The preservation and possibly the enhancement of the city's identity through, inter alia, the establishment of separation zones (buffer zones) and of open space areas in which building activities are restricted.

2. The prevention of long distance commuting.

3. The prevention of excessive congestion phenomena in urbanized areas.
To illustrate its policy, the Government presented a nation-wide map delineating the structural coherence layout of future urban areas* and added it to the Second Report. In regional plans prepared by the provincial governments, the guidelines are being followed regarding the urbanization as has been described in the Second Report on Physical Planning.

For a number of reasons the impact of this policy has so far not been very impressive in those areas it was intended for, i.e., the areas surrounding the larger cities. Some of the reasons for this are:

1. The traditional land policy of separate municipalities hampers the development of a few larger urban units.
2. The absence of adequate methods for financing town expansions.
3. The lack of experience in teamwork between town planner, researcher, financer and contractor.

4. **Survey of Some Problems of Physical Planning**

From a viewpoint of physical planning, the main problem is to achieve an efficient and attractive spatial organization of activities with the lack of space as a given. The problem can be illustrated in three parts: urban, rural, and infrastructural space demands.

A. **Urban Space Demands**

The C.B.S. (Central Bureau of Statistics) projected in 1965, in 1967 and in 1971 for the year 2000 a population in the Netherlands of 20.1 million, 19.0 million and 17.1 million respectively. According to these figures, the annual increase in population for the above projected years would have been 1.41%, 1.26% and 1.0% respectively. Although it is expected that zero growth in population will not be reached before 2050, it may be seen from the uncertainty of population projections in the last decade that this zero growth in population might very well occur several decades earlier.

* See appendix II
Even with a zero growth rate in population, it will not mean that the space demand will be diminishing. The demand per capita for urban space only increased in the Netherlands, for example, from 190 square feet in 1810 to 780 square feet in 1960. This is more than a four fold growth in 50 years or 2.8% per annum, which obviously will generate some trouble in the future even if zero growth in population occurs some decades earlier as officially estimated.

Three causes may be mentioned for this increase:

1. The decline in average dwelling occupancy.
2. The increase in floor space per dwelling unit.
3. The increase in demands for public space.

The average dwelling occupancy in the Netherlands dropped from 4.52 in 1947 to 3.38 in 1971, which is a decline of 25% in 26 years. In Amsterdam, the average dwelling occupancy was already 2.9 in 1970.

The average floor space per dwelling unit more than doubled in the last 50 years in the Netherlands, from some 500 square feet to 1100 square feet.

The increase of public space needs in the Netherlands is difficult to measure in a single figure. Therefore, some illustrative figures may suffice as an indication:

1. 20% of all households owned a car in 1960; this percentage was 60% in 1970;
2. The number of sports grounds increased from 7.25 per 10,000 inhabitants in 1963 to 10.03 per 10,000 inhabitants in 1970 (from 8,730 to 13,135).
3. The number of public swimming pools increased 47% between 1963 and 1970 from 0.39 per 10,000 inhabitants to 0.53 per 10,000 inhabitants (from 470 to 690).
4. The number of sports halls increased 900% between 1963 and 1970 from 0.01 per 10,000 inhabitants to 0.11 per 10,000 inhabitants (from 13 to 147).

5. Except for Amsterdam, there are no data available about the increase in park areas and public gardens within urban city limits of settlements in the Netherlands. Data are also not available for several other kinds of urban land uses, such as commercial and industrial uses.

B. Rural Space Demands

In the Second Report on Physical Planning, a distinction was made between three types of rural areas:

<table>
<thead>
<tr>
<th>Type of Rural Area</th>
<th>sq. mi.</th>
<th>sq. km</th>
</tr>
</thead>
<tbody>
<tr>
<td>large scale agricultural areas</td>
<td>1,940</td>
<td>7,500</td>
</tr>
<tr>
<td>mixed agrarian-recreational areas</td>
<td>3,900</td>
<td>15,000</td>
</tr>
<tr>
<td>areas in the urban sphere</td>
<td>3,240</td>
<td>12,500</td>
</tr>
<tr>
<td></td>
<td>9,080</td>
<td>35,000</td>
</tr>
</tbody>
</table>

In the large-scale agricultural areas, planning is determined primarily by the requirements of a sound agricultural structure and by the desire for a satisfactory living environment for the agrarian population. These areas are chiefly located in the north, in the Ysselmeerpolders, and in the south-west of the country.

In the combined agrarian-recreational areas, the aim is to achieve an effective balance between agrarian and recreational requirements. Modernization of the agricultural structure will have to occur with due observance of the conservation and improvement of the aesthetic features in the existing landscape. Therefore, it will be desirable that more land be made available in the reparcelling areas for public use. In addition, building sites should be designated for bio-industrial establishments, such as pig-fattening units,
poultry farms, etc. Finally, the creation of a limited number of landscape reserves should be ascertained in these areas with the aim of maintaining the existing scale for socio-historical and recreational reasons. The areas under consideration mainly comprise the scenic landscapes of the East and the South.

The emphasis of physical policy in rural areas within the urban sphere will be placed on the maintenance of open spaces. A modern and economically strong agricultural industry is an indispensable instrument in this respect. Recreational developments demand a great deal of attention as well as the location and design of city-oriented activities along the urban periphery, such as car dumping sites, exhibition lots, etc. The areas being considered include the so-called central open area, which is located between the northern and southern regions of the Randstad conglomeration and which also include an extension lying between the southern wing of the Randstad conglomeration and the string of towns in the Province of North Brabant. These areas also include the separation zones ("buffer zones") between city regions as well as the rural areas within the city regions.

The three types of rural areas obviously harbor a multitude of activities whose developments are critically scrutinized from a viewpoint of physical planning.

The Agricultural Aspects -

Within the sphere of agriculture, the continuous adaptation of the production process to changing technological and economical possibilities is a first requirement. This implies in practice a continued decline in the number of workers in agriculture, enlargement of the agricultural establishment, and further transitions to more intensive forms of production.

Efforts to achieve a satisfactory employment status in the agricultural field signifies that the aims are to obtain large, easily accessible parcels with proper water management, to remove no longer economical hedges and
brushwood, to modernize farm buildings, etc. In addition to modernizing agriculture, other interests such as landscape care, provision for recreational facilities and conservation of nature are receiving increasing attention in the recent years. The possibilities of coping with the problems arising through these occasionally contradicting interests are greatest under a re-parcelling plan since such a plan creates the conditions of land mobility. In a plan of this kind, the title and rights of use for the land are separated from the parcels of the old state.

When reorganizing the title and land-use situation, new landscape elements, recreational facilities, nature conservation, state roads, etc., can be incorporated without serious difficulties for those concerned. In this way, more amenities for public use have been incorporated in the re-parcelling plans in the course of the years. The present legislation is deemed to leave too small of a margin for the range of possibilities desired. Therefore, the introduction of a new Country Planning Act is now under consideration.

Annually between 173 and 210 sq. mi. (450 and 500 km²) of land are added to the re-parcelling programs. Today, non-agrarian elements are increasingly involved in this reconstruction of the countryside. In a number of re-parcelling projects, a great deal of land has been earmarked in recent years for the realization of an extensive landscape plan and for the safeguarding of scientific interests. Approximately 10% of the total area to be re-parcelled between 1971 and 1978 are so designated.

The effect of policy concerning the structure of agriculture conducted at the European level also deserves special attention. Attention was drawn to this matter by the "Memorandum on Agricultural Reform in the European Economic Community," prepared by the Committee of the European Communities and presented to the Council of Ministers at the end of 1968. This memorandum stated that
between 1970 and 1980 the area of cultivated land in the European Economic Community (E.E.C.) should be reduced by at least 19,200 sq. mi. (5 million Ha) in order to adjust the supply of agricultural production to its demand. This acreage amounts to 7% of the total agricultural acreage in the countries of the E.E.C. In addition, government aid allocated to bring uncultivated land under agricultural use would have to be abolished. Furthermore, this reduction of 19,200 sq. mi. would be in addition to the land already withdrawn from agriculture and designated for city expansion, the construction of roads, airports, etc.

In a publication of the National Physical Planning Agency, r. Prillevitz, a staff member of the Agency, indicated the consequences of this Memorandum for the Netherlands. He calculated that with the continuation of the present trends and the steadily increasing space requirements of the urban population, approximately 570 sq. mi. (1500 km²) will be withdrawn from agricultural use in the seventies, with or without this plan. On the other hand, some 78.2 sq. mi. (200 km²) of land will be reclaimed in the Ysselmeerpolders. The net loss of agricultural land will be some 492 sq. mi. (1300 km²). The Memorandum demands, however, that an additional 617 sq. mi. (1600 km²) be designated for alternate uses. Several tentative suggestions were made for alternate uses: expansion of nature areas, creation of landscape reserves, enlargement of recreational water areas, etc.

After lengthy negotiations, the Council of Ministers reached agreement in 1971 (Publication Sheet of the European Communities, # L 96, April 26, 1972). A number of points substantially deviated from the original plan. This agreement has in the meantime been developed into three guidelines:
1. Modernization of agricultural establishments.
2. Termination of some nonproductive agricultural establishments.
3. Socio-economic information and training.

The first two guidelines will undoubtedly result in increased efforts to enlarge the size of agricultural establishments, since the detailed regulations provide, among other things, that an E.E.C. subsidy will only be granted to those establishments which on termination dispose of at least 85% of the cultivated land and allow this land to be operated either as viable agricultural units or for nonagricultural uses. In practice, this will mean that agrarian claims to the land by the Foundation for the Administration of Agricultural Land under reparceling projects will become greater. It is evident from the foregoing that more rigid requirements for the disposal of agricultural land for other uses may be expected in the near future.

The Recreational Aspects -

The Second Report on Physical Planning listed recreational activities as another requirement of reparcelled rural land. This requirement has been specified in a structural outline* and divided into three categories:

1. Parks and aquatic sports areas of national significance, such as the Coastal Dunes, the Valuwe, the Drenthe Plateau, the extreme south of the Province of Limburg, the Frisian Lakes and the Delta Lakes.
2. Parks and aquatic sports areas of regional significance, such as the Utrechtse Heuvelrug, the Veluwezoom, the Peijerij, the Loosdrechtse Lakes and the Wieden.
3. City and regional parks, including the so called large-size elements, such as Spaarnwoude and Hidden Delfland.

The above mentioned areas are located mainly in places where nature and landscape conservation need to be enforced through the creation of recreational areas.

* See appendix III
The Ecological Aspect

A concern for the environment is also being felt in rural areas. This concern relates especially to three elements of the environment: hygiene of soil, water and air, the continued existence of (semi)-natural landscapes and the continued existence of a valuable heritage, such as city centers, old cultivated estates and mansions, monuments, etc.

Concern for the environment eventually brought about the basic policies in the middle sixties that were stipulated in the Second Report on Physical Planning. According to the philosophy of the Second Report, our physical environment should be regarded as undergoing a process of continuous change towards more environmental differentiation. In this context, the notion of the Second Report regarding the development of urban and rural areas in the Netherlands cannot be appropriately understood without having this basic philosophy in mind. The main principles of this philosophy as applied to physical planning may be summarized as follows:

2. This freedom should be effectuated by optimizing the differentiation of the environmental conditions.
3. Only scrupulous and intelligent use of the assets that are yet available in our physical environment may be expected to yield some effects with respect to this incentive.
4. Occupational rather than exploitational considerations should guide human actions in the use of the assets offered by our physical environment.

* See appendices IV, V and VI
5. Policies regarding this use should be continuously adjusted to any new development arising in the process of evolution.

Since information on environmental subjects was not available in the sixties, a true synthesis between the functional and technical use of the physical environment and the preservation of existing conditions involved could not be defined explicitly in terms of a planning policy. For such a synthesis, a systematic survey of the landscape, both regarding its genesis as well as its appearance and its potentials is required. A survey of this kind must involve the soil, vegetation, reclamation history, relief and water regime. Some examples of these surveys and studies are to be found in international literature. The best known examples are the studies in Church's "Design with Nature." However, a great deal of help from other countries cannot be expected. The small scale of the land which has been occupied for such a long time and its unusually rich assortment of historical landscapes necessitates very accurate surveying.

A survey is now in the act of being conducted to serve as a basis of information for the Third Report on Physical Planning, which will appear in the coming years. The study, which was initiated by the National Physical Planning Agency, will be accomplished in cooperation with representatives of other agencies and institutes such as the Ministry of Culture, Recreation and Social Welfare, the National Institute of Nature Management, the Foundation for Soil Surveying, the Universities of Leiden, Leyden and Utrecht and several organizations involved with the protection of nature.

The survey will include:

1. A descriptive inventory of the physical environment for the years from 1910 to 1970, which will be given by the square mile in areas requiring this.

* Design with Nature, Jan L. Church, Garden City, N.Y., 1962
2. An evaluation of the findings for the areas corresponding to this inventory.

3. A survey of potential developments in the existing environment showing what kind of future situations can be expected as a result of different anthropogenous influences.

The survey will distinguish some 50 types of physical environment. The national territory has been subdivided into some 200 different areas for making the research operational.

C. Infrastructural Space Demands

The changing space demands for urban and rural functions will, of course, affect the channels of communication considerably, whether these channels serve to forward message, energy, persons, general or bulk cargoes, fluids (oil, drinking water, sewerage, etc.) or gases.

In order to gain more insight into the space demands of these infrastructural networks, the National Physical Planning Agency directed inquiries to the main agencies responsible for their development and maintenance. The inquiries referred to questions about the specified goals and needs of these agencies in terms of time, space, and money. The aim of this action was to enable those responsible for physical planning to coordinate the different claims by way of their allocation and confrontation. Three fields were covered:

1. Economic - annual growth, GNP, consumption, income, government expenditures, etc.

2. Demographic - growth and distribution of population.

3. Unaltered pattern of human behavior - the pattern of behavior and expenditures will be assured to be the same for a given income group as has been perceived in the past.
The following table gives some information on the answers that have been received from a number of agencies so far (1970 = 100)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Highways</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Railroads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterways</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airports</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harbors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical Plants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solid Waste</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traveler Miles</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cargo Tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acreage Harbor Sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity (max. load)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. **Short Outline of the Planning Method for Stimulating Urban Growth Policy.**

Some of the bottlenecks present in the development of highly urbanized areas are:

1. A relatively great and quickly deteriorating housing stock with a concentration of high dwelling densities and low rents in the city centers.

2. Under the pressure of a great demand for more housing, a high housing production must be achieved in the region surrounding the central city, without affecting the quality of future living conditions.
In a country with as many municipalities as the Netherlands, it is clear that a policy regarding urban growth should be formulated in such a way that it could be adapted by both the large and small municipalities. This means that a nation-wide method has to be developed and applied for the future growth and the future structural composition of each settlement.

In 1965, the following method was developed in the course of preparing the Second Report on Physical Planning. The method consisted of two steps. First, the determination of the approximate size of the number of inhabitants per settlement and second, determination of the character and structural composition of each settlement in itself.

Step 1 - The determination of future settlement size --

The method used in this case consisted of applying the so-called "rank-size rule" to future conditions in the Netherlands. This rule refers to the phenomenon that within a geographical unit of sufficient size and degree of urbanization, the number of urban nuclei of certain size will be inversely correlated with the number of inhabitants. The mathematical model may be written as follows:

\[ YX^a = C, \]

in which

- \( Y \) is the number of nuclei of certain rank size in the geographic unit
- \( X \) is the rank size of the nuclei (average number of inhabitants)
- \( C \) is a constant for a given moment.
- \( a \) is an exponent (depending upon the population density of the geographic unit at that moment), describing how population is distributed over nuclei of smaller and of bigger rank size.

Census data about the number and size of urban nuclei were known for the years 1920, 1930, 1947 and 1960. Apart from this, a projection of the future population in 2000 was given for the nation as a whole as well as for
socio-economic regions. With these data, a fairly accurate extrapolation of the future distribution could be made, if only the unknown variable, exponent a, could be agreed upon by political debate. This question aroused a great deal of discussion since a large portion of the population desired to live in the suburban environment and this did not appear to be compatible with the desire to maintain historic city centers economically, socially and culturally viable and identifiable, which was to have been accomplished by concentrating the residential areas in their neighborhood thus keeping the spaces between them as rural and open as possible.

Step 2 - The determination of the structural composition of settlement in the future --

The assortment and location of nuclei being determined, it was necessary to find an objective device to subdivide these nuclei into urban "environmental areas" based on the principle that the population density in an urban nucleus declines generally with the distance from the center exponentially. The mathematical expression for this relation reads as follows:

\[ d_r = \frac{T}{e^{a_r}} \]

in which

- \( d_r \) = the population density in a ring (or point, depending on the way of measuring, located at a radius or distance \( r \) from the center).
- \( r \) = the distance from the center of the point of gravity of the ring.
- \( T \) = the (theoretical) density at the center
- \( e \) = base number of the natural logarithmic system

On the basis of this relationship, four types of environmental areas were selected, each with a urban nucleus. Each of these environmental areas was supposed to be characteristic for a given part of a city. The following areas were distinguished: (see appendix II)
Environmental Area A - Size 3,000 to 6,000 inhabitants, density about 10 inhabitants/acre

Environmental Area B - Size 11,000 to 22,000 inhabitants, density about 20 inhabitants/acre

Environmental Area C - Size 45,000 to 90,000 inhabitants, density about 30 inhabitants/acre

Environmental Area D - Size 180,000 to 360,000 inhabitants, density about 40 inhabitants/acre

A Tentative Calculation of Urban Space Demands for the Netherlands in the Future -

The following data applies to net urban areas in the Netherlands at the moment:

- 13.1 million inhabitants
- an average dwelling occupancy of 3.4
- 3.8 million dwelling units
- an acreage of urban area of 1,050 sq. mi. or 270,000 km²
  (approximately 8% of Netherlands territory)
- a loss of 250,000 to 300,000 dwelling units in urban renewal areas
- a space ratio of residential to total urban space of 0.5
- an average density in residential areas of some 8 to 12 dwellings per acre (or 20 to 30 dwellings per ha)

This would mean that the existing acreage of urban areas in the Netherlands in the coming decades must be approximately doubled to meet the demands for urban space.

Assumptions for the year 2000:

- 17.1 million inhabitants (increase of 4 million)
- a decline of average dwelling occupancy to some figure between 2.6 and 2.9
SECOND REPORT ON PHYSICAL PLANNING
IN THE NETHERLANDS

domestic names

North: Groningen, Friesland, Drenthe
East: Overijssel, Gelderland
West: Noord-Holland, Zuid-Holland, Utrecht

South: Noord-Brabant, Limburg
South-west: Zeeland
PART II
APPENDIX II
URBAN ENVIRONMENTAL AREAS

SITUATION
1960

SITUATION
2000
Second structure scheme for the physical development of open-air recreation.

- Large-scale elements for day-recreation (in black; elements already indicated on the first structure scheme).
- Regions primarily to be developed on behalf of day-recreation to provide for:
  - Regional requirements
  - Supra-regional requirements
  - Also to be made to serve day-recreation by landscape care and incidental provisions
  - Water and banks also to be made to serve recreation as far as possible by landscape care and further provisions

- Regions primarily to be developed on behalf of week-end and holiday recreation:
  - With emphasis on stimulation of the establishment of new provisions
  - With emphasis on re-development and/or expansion of existing concentrations
  - New possibilities to be developed (partly with the aid of landscape care)
  - Also to be made to serve week-end and holiday recreation by landscape care and incidental provisions
  - Eventually to be involved in incidental provisions
Diagram of the most important natural environments in the Netherlands.
Landscapes with gradual transitions or environment gradients.

Diagram of the most important natural environments in the Netherlands. Landscapes without or with very abrupt transitions of environment.

Landscapes without or with very abrupt transitions of environment (Appendix V)

These include the areas where on the one hand there are large areas with practically uniform conditions of life, while on the other hand widely divergent types of environments border on each other without there being a range of transitional conditions.

A characteristic feature is the more dynamic or progressive nature of the environment. This creates an element of uncertainty and surprise, which from the biological point of view can lead to both enrichment and impoverishment.

Unlike the areas coming under category A, these landscapes harbour relatively few species of plants and animals. The organisms living there, however, occur in large numbers or in colonies.

The most important landscapes of this type.

the entire Wadden Sea, including the adjoining coastal strips and the complex East Scheldt - Grevelingen - Haringvliet - Biesbosch, including the adjoining coastal areas.

the most important areas with geese and waterfowl outside the landscapes mentioned above.

the most important meadow-bird areas.

the areas where there are still extensive moorlands, remnants of peat moors, sand dunes and uniform stretches of woods, which are important, inter alia, for birds of prey, curlew, grouse and crane.

Landscapes with gradual transitions or environment gradients (Appendix IV)

Narrow zones where there are gradual transitions between landscapes with mutually greatly different conditions of life.

Examples of these are the contact zones between salt-water and fresh-water environments, between relatively dry and relatively wet areas, between landscapes with soil rich in food and soil poor in food and the slopes of higher land.

In or in the immediate vicinity of these transition belts there is a large variety of types of environments within a small area and, as a result of this, a wealth of different species of plants and animals, including practically all the rare (i.e. available in small numbers) plant species found in the Netherlands. Further, it is in these regions that natural coppice-woods can develop.

A characteristic feature is also the 'conservative' nature of the environment in this transition zone. This ensures the survival of the species concerned in these places, provided the transition environment is not completely disturbed by modern agricultural engineering and the like.

The estuaries of our large rivers, where – in addition to gradients from salt to fresh water in the west – there are also transition zones with a diminishing influence of the tidal movement in the easterly direction.

Areas in the west of the Netherlands of smaller size, where a relatively large number of transition strips between salt-water and fresh-water environments is found.

Parts of the country where the wealth of special plant species formerly was, and in parts still is, very great. The best example of this was the landscape between Eindhoven and Weert.

2. Text of the Physical Planning Act (as revised by the Act of April 20, 1964).


5. A series of eight documents, dealing with topics on physical planning in the Netherlands, edited by the Information Service of the Ministry of Housing and Town Planning, The Hague.
   5.2 Residential Environment (ditto for 1969).
   5.3 Traffic and Transport, in particular in urban areas (ditto 1970).
   5.4 Rural Areas (ditto 1971).
   5.6 The "Randstad", urbanized zone in the Netherlands, March 1970.
   5.7 The Development of the South-West Region of the Netherlands, April 1971.
   5.8 Some Salient Points of the Physical Planning Act, October 1969.


8. Planning and Creation of an Environment Contribution to the 7th Congress of the International Architects Union (C.I.A.), held in October 1963. Authors: Prof. C. van Eesteren, A. J. van der Steur, and H. van Gelderen.


13. Function and Organization of the Public Works, Department of the City of Amsterdam, 1965, by R. A. van Calraven, Director of P.W.D.


17. Lease-hold in Amsterdam, ed. by Public Works Department, 1970.