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The Future of the Dutch Natural and Built Environment

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Background

The purpose of this scenario exercise is to support the Dutch national government in the development of policies on spatial planning, natural resources, and quality of the physical environment. By exploring how various aspects of the living environment and land use in the Netherlands may develop in the long run (2040), the study aims to show when and where current policy objectives may come under pressure and which new issues may emerge.

Societal Trends Effecting the Natural & Built Environment

Long-term trends, such as decreasing household size, ageing population, international migration, economic growth, and increasing personal welfare, will change the Dutch natural and built environment significantly. This national foresight exercise analyses the combined impact of these trends on various aspects of the Dutch urban and rural landscape, including residential and industrial land use, traffic and transport, energy, agriculture, nature and landscape, water safety, and environment and health. Quantitative forecasts illustrate these trends as well as their effect on the natural and built environment.

Evaluating the Long-term Effects of Current Policy

The study assesses the long-term effects of current policy, given the international economic and demographic context of the Netherlands. Its qualitative and quantitative results should serve as a reference for policy-makers addressing spatial planning, housing, natural resources, infrastructure, and the environment. By exploring how land use and various aspects of the living environment may develop in the long run (2040), the study shows when current policy objectives may come under pressure and which new issues may emerge.



Scenarios and Extensive Integrated Modelling

The long-term future of the Dutch population and economic development and, consequently, of its natural and built environment is highly dependent on international factors. Two critical factors of uncertainty stand out: (1) To which extent will nations and international trade blocks cooperate and exchange, giving up some of their cultural identity and sovereignty? (2) How will governments strike a balance between market forces and a strong public sector? These international political choices determine four possible scenarios for the Netherlands:

- Strong Europe: emphasis on international cooperation and public responsibilities.
- Global Economy: emphasis on international cooperation and private responsibilities.
- Transatlantic Markets: emphasis on national sovereignty and private responsibilities.
- Regional Communities: emphasis on national sovereignty and public responsibilities.

The study builds on earlier work by CPB (2003, 2004) and MNP et al. (2004) in which these scenarios were translated into four development paths for the Dutch economy and demography. In the current project, the resulting economic and population scenarios, including their international contexts, were elaborated for application to the built and natural environment. This required both conceptual thought and extensive integrated modelling, e.g. regarding the coherence and consistency of all different aspects of regional economy, internal migration, urbanization, and environmental pollution. The modelling framework generated quantitative indicators to illustrate the scenarios and support the conclusions.

Scenarios should include realistic options for national policy. To allow for statements on the future effects of current government policy and to compare these with alternative policies, trend-based policy is assumed in all scenarios. However, in the long run, the four scenario contexts will diverge too much for a uniform policy to be realistic. Consequently, beyond 2020 policies may slightly differ among scenarios, as long as they are plausible and consistent with the scenario logic.

Future Problems, Bottlenecks, Challenges and Opportunities

The Increasing Demand for Space Will Level Off

Due to smaller population growth new demand for housing, industrial land use, traffic and transport will level off after 2020. As a consequence of a decreasing labour force and a growing service economy, in three of four scenarios there will be no significant need for greenfield locations for industrial estates and business parks after 2020.

Population growth will slow down and in one scenario even turn into a population decrease. Yet income per capita will continue to rise in all scenarios. Both developments may provide incentives to improve the quality of living, for example by restructuring the built environment.

Living Quality and Safety Issues

Smaller population growth may have negative side-effects like abandoned residential and industrial areas and deterioration of city quarters, if investment policies do not adjust. In addition, immigration flows will have a substantial impact on city size and urban population. The concentration of migrants with little education in cheap housing areas of a few main cities offering limited labour market opportunities to this group may lead to social segregation.

(Inter)National energy consumption and, consequently, the emission of greenhouse gases will continue to grow. Climate change is expected to impose major water safety challenges, especially in the areas below sea level where urbanisation will

proceed most rapidly. The countryside landscape will change too: agriculture will be under pressure not only from growing urbanisation and demand for recreational facilities, but also from increasing competition on international markets, leaving little room for acting in concert with nature. In other parts of the countryside, however, current ecological investment policies will pay off and leave large areas for nature preservation.

Increasing Environmental Exploitation in spite of Decreasing Population

Housing

The highest demand for housing will continue to be in the highly urbanized Randstad area. In order to avoid the degradation of city quarters, the Dutch government should aim to restructure and improve housing quality.

Industrial land use

Restructuring will also become a priority in industrial areas. In most scenarios there will be no further need for additional industrial estates after 2020. A growing service economy will gradually transform many industrial estates into business parks. As a result, environmental risks will decrease, but traffic will grow.

Traffic and transport

In the majority of the scenarios, highway congestion will cease to increase after 2020, as a result of current road building programmes and saturation in car use. In scenarios with considerable economic and population growth, mobility will increase, especially freight transport. It is expected that congestion will remain primarily a problem of the Randstad area.

Energy

Dutch energy consumption may increase up to 50% by 2040 in case of high economic and population growth. Renewable energy will remain more expensive than fossil fuels and therefore dependent on state subsidies. As a result of gas stock depletion, the Netherlands will become more dependent on importing coal and petroleum. This requires policies that guarantee sufficient energy supply.

Agriculture

In the agricultural sector, scale enlargement and specialization will continue. In scenarios with agricultural market liberalisation and abolishment of milk quotas, stock farming will increase significantly, partly at the expense of arable farming. As a result, competition between agriculture and nature preservation will increase. By 2040, 10 to 15% of the current agricultural area will be spatially transformed.

Nature and landscape

Biodiversity will continue to be under pressure, especially in large-scale, intensive agricultural areas. Bird populations will

be affected first. Under strict European ecological policies environmental pressures will decrease and existing nature areas may partly recover. Desiccation, on the other hand, will continue to pose problems on nature areas.

Water safety

Climate change will enhance flood risk and chances of water damage. The lowest parts of the Netherlands, which are more densely populated and highly urbanized, are most vulnerable. Water safety norms should be related to population size and investments to be protected, thus corresponding to population density and urbanisation.

Environment

Air quality will generally improve, apart from the CO₂ emissions, which can be expected to rise without international climate policy. If current emission levels are maintained, the risks of climate change will continue unabated.

2020 Will Mark a Turn for Dutch Society and Politics

The study holds the following messages for Dutch policymakers.

New migrants will have a major impact on new land use, in particular for housing, infrastructure, recreation areas and industrial land use. Demographic and economic growth is mostly determined by future immigration flows.

After 2020 traditional issues regarding the natural and built environment may lose urgency. Congestion growth will level off, air quality will generally improve, and the need for new housing, industrial estates and business parks may disappear. The impact of these trends will be felt at a regional level first. The effects may be both negative (abandoning of residential areas and industrial estates) and positive (opportunities to improve quality of life).

Other issues in the built environment may become more urgent. The growing share of non-European migrants in the Dutch population may increase existing mismatches in urban housing and on labour markets and generate social conflicts. Climate change will continue to be a persistent environmental problem; in the long run the rising seawater level and river runoff will create a water safety problem.

There is a risk of overinvestment. New infrastructure, residential areas and industrial estates require long-term planning and once established may last for several decades. In a population decrease scenario these investments may become obsolete within a decade after realisation, leading to local problems of decay of the built environment. Given the duration time of

these investments, the social cost of public investment policies based on continued growth may exceed social benefits.

The composition of the population and households will change due to demographic developments, like ageing, immigration, and household size reduction. Single, old-aged and migrant households will grow considerably, especially in the main cities. This will affect regional labour markets, housing demand and the nature of commercial and social services.

European policy will become more influential. Further integration of the European labour market and a shift in European immigration policy will affect the size and composition of the Dutch population and the demand for housing, employment, recreation, etc. Common EU agricultural policy will change the agricultural landscape. In addition, European environmental policy may have an influence on future spatial developments. In the Dutch situation, which is characterized by high population density and intensive land use, European environmental regulation and standards may cause local conflicts between housing and infrastructure or agriculture and nature development. Finally, the national gas reserves will gradually run down; Dutch energy supply will be more dependent on imports and thus on international political cooperation.

Strategies

This study does not intend to make policy choices. Instead it presents an approach that may support policymakers in developing robust policies and setting priorities.

Robust policies

Some trends are relatively certain, such as the demographic change after 2020, the proportional increase in population age, household size reduction, increasing personal incomes and climate change. Other trends, such as the effects of immigra-

tion, economic growth and EU policy, are more difficult to predict. Policymakers are challenged to apply flexible and robust strategies that allow for such uncertainty.

Balancing social costs and benefits

In the absence of a robust strategy, policy makers will have to make a choice. Such a policy choice should include an analy-

sis of future social costs and benefits of both options, the assessment of short and long term risks, and the effects for different generations, population groups and regions. The four scenarios and the quantitative data presented in this study provide useful instruments for such a cost-benefit analysis.

Sources and References

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