

WARMLY RECOMMENDED

TOWARDS A LOW-CO₂
HEAT SUPPLY IN THE BUILT
ENVIRONMENT

DECEMBER 2018



About the Council for the Environment and Infrastructure

The Council for the Environment and Infrastructure (*Raad voor de leefomgeving en infrastructuur*, Rli) advises the Dutch government and Parliament on strategic issues concerning the sustainable development of the living and working environment. The Council is independent, and offers solicited and unsolicited advice on long-term issues of strategic importance to the Netherlands. Through its integrated approach and strategic advice, the Council strives to provide greater depth and breadth to the political and social debate, and to improve the quality of decision-making processes.

Composition of the Council

Jan Jaap de Graeff, Chair
Marjolein Demmers MBA
Prof. Pieter Hooimeijer
Prof. Niels Koeman
Jeroen Kok
Annemieke Nijhof MBA
Ellen Peper
Krijn Poppe
Prof. Co Verdaas
Prof. em. André van der Zande

Junior members of the Council

Sybren Bosch MSc
Mart Lubben MSc
Ingrid Odegard MSc

General secretary

Ron Hillebrand

The Council for the Environment and Infrastructure (Rli)

Bezuidenhoutseweg 30
P.O. Box 20906
2500 EX The Hague
the Netherlands
info@rli.nl
www.rli.nl



The energy transition in the built environment represents the biggest post-war renovation of the Netherlands' building stock. The measures will extend behind the front door of practically every building in the country. It will take more than statements about the number of homes involved and the targets for specific years to persuade individuals to do what is needed to make the transition. People need to be informed more clearly and policy has to be connected with public sentiment in specific neighbourhoods. This year the 'sector platforms' engaged in the talks on a Dutch Climate Agreement have conducted intensive negotiations on the need to accelerate the transition. The Council attended some meetings of the Built Environment sector platform as an observer and has spoken to the chair of the platform (Diederik Samsom) and the chair of the Climate Change Conference (Ed Nijpels). This advisory report is written from the perspective of the citizen and makes specific recommendations on measures that can be taken to accelerate the energy transition.

The Council has investigated what needs to be done for a successful transition. What can be done to provide the certainty that the stakeholders require and to ensure that everyone concerned can and will do what is needed? In this advisory report the Council discusses the freedom of choice of property owners, the public responsibility for infrastructure and the allocation of costs.



CONTENT

FOREWORD	3
SUMMARY	5
1 INTRODUCTION	7
1.1 Request for advice	8
1.2 Scope	8
1.3 Structure of the report	9
2 PROVIDE CERTAINTY AND MAKE A CONNECTION	9
2.1 Introduction	9
2.2 Three basic principles	11
3 RECOMMENDATIONS	14
3.1 Timetable	14
3.2 Costs and affordability	17
3.3 Public support in the neighbourhood	19
3.4 Control-based policy	20

LITERATURE	22
APPENDICES	23
RESPONSIBILITY AND ACKNOWLEDGEMENT	23
OVERVIEW OF PUBLICATIONS	26

Note: The Dutch version of the advisory report contains an additional analytical section.





SUMMARY

Acceleration of the energy transition is needed

To meet the targets of the Paris Agreement on climate change, the carbon footprint of 200,000 homes will have to be reduced to CO₂-low every year until 2050. That represents almost 800 homes on every weekday for thirty years. In other words, practically every household and every owner of a building will be affected by this process in the coming decades. However, realising the energy transition in the built environment is proving to be a complex and difficult undertaking. There is no automatic guarantee of public commitment and involvement in the process. Because only limited progress has been made recently, the Council has investigated what measures are needed to accelerate the transition.

Two requirements: provide clarity and make connection with other issues

The Council observes that two fundamental conditions must be met if individuals and society in general are to be persuaded to act: clarity and connection. Greater clarity is needed about the division of responsibilities, the size and allocation of costs and the timetable for the transition. Furthermore, the transition will only succeed if there is effective communication with the public. The prospect of a successful energy transition will only emerge if other issues that affect the neighbourhoods and the relevant households can be linked to the transition process. This advisory report is addressed mainly to the national government, but is written from the perspective of the citizen.

Three basic principles in the recommendations

The Council has observed in the discussions that led to this report that a political and administrative debate is needed on three basic principles. That debate should culminate in the explicit choices that have to be made to accelerate the transition. The three basic principles are freedom of choice, division of public and private responsibilities and the need to accelerate the first phase of the transition.

Recommendations

On the basis of the basic requirements of clarity and connection and the three underlying basic principles, the Council makes a series of recommendations relating to the timetable for the transition, the costs and affordability of measures that are adopted, investments that have to be made and public support at neighbourhood level.

To meet the public demand for clarity regarding developments relating to the energy transition, a shared view of the timetable is essential. The Council makes recommendations for further refinement of the timetable. For example, in addition to extra funding, the government should also formulate a vision for municipal governance of new infrastructure in the first phase of the transition. During that phase, intensive efforts should also be devoted to promoting energy saving. Every government building should be carbon-neutral by 2040.

The Council regards the construction of the heat infrastructure in the public space as a public task. It recommends that everyone within a supply area

should contribute to the costs of constructing this facility, even individuals who opt for an alternative source of supply. Furthermore, the cost of heat could differ between districts, municipalities and regions. The Council advocates a statutory maximum price for heating, which will require the establishment of a system for regulating costs that spans the entire spectrum of heating supply (different temperatures, all-electric, hydrogen and biogas).

The energy transition is not a priority for everyone, particularly in areas where there are other urgent problems such as a risk of flooding or problems relating to safety or the quality of life. The Council therefore recommends that municipalities should be obliged to ensure that their transition visions and their plans for the heat supply closely reflect the dynamic in the district.



1 INTRODUCTION

Agreements were made at the Climate Summit in Paris in 2015 designed to prevent the average temperature on earth from rising by more than two degrees Celsius, with the ambition of limiting the temperature increase to less than 1.5 degrees Celsius.

In the present government's coalition agreement, the Paris Climate Agreement was translated into the target of reducing greenhouse-gas emissions in the period up to 2050 by 95% compared with 1990. The agreement sets an interim target of reducing emissions by 49% in 2030.

To achieve the present government's climate targets, the current system of generating heat in the built environment from fossil fuels, primarily natural gas, will have to be almost entirely replaced by heat systems based on sustainable energy sources. Natural gas-fired central heating boilers and gas-fired cookers will disappear from homes, business premises and offices in the Netherlands. Further energy savings will have to be made by improving the insulation of buildings, which will make it possible to use alternative sustainable heat sources.

The necessary renovation or modification of more than 7.5 million homes and nearly 400,000 buildings with a social or commercial function has often been described as the greatest renovation programme in the Netherlands

since the post-war reconstruction. In the Council’s view, the number of buildings that will have to be renovated justifies that claim.

The coalition agreement states that 30,000 to 50,000 homes will have to be modified each year up to the end of the current government period (March 2021). That figure represents between 100 and 200 homes each and every working day. In the ensuing period up to 2050, 200,000 homes will have to be made more sustainable every year. That means almost 800 homes every working day, for 30 years. In the coming decades practically, every household and every owner of a building in the Netherlands will be affected by this operation.

1.1 Request for advice

The energy transition in the built environment is proving to be a complex and difficult undertaking. Only limited progress has been made recently, particularly in light of the challenges we face. The Council therefore addresses the following questions in this advisory report:

- *What measures should the government take to ensure that everyone concerned is able and willing to work towards a rapid transition to a low-CO₂ heat supply in the built environment?*
- *What financial measures and what agreements on the role and responsibilities of public authorities are needed to achieve the objectives defined for 2030 and 2050 in the coalition agreement?*

The Council sets out what it considers to be necessary, in addition to existing plans, to accelerate the transition to a low-CO₂ heat supply in the built environment and to maximise the prospect of success. The report is written from the perspective of the citizen.

1.2 Scope

This advisory report concentrates on the modifications that have to be made in, on and to existing buildings and on the construction of the infrastructure for supplying heat to homes and industrial premises.¹ The report does not consider the construction of *new* buildings because specific agreements have already been made in that regard (Tweede Kamer, 2018a). The *generation* of electricity from renewable sources is also not covered in this report.

The report is addressed to *every party* that will be required to take action to accelerate progress with the transition: market actors and public authorities, owners and tenants. For the reader’s convenience, the phrase ‘*owners of dwellings or other buildings*’ is frequently used. The Council is fully aware that a large proportion of the housing stock is owned by housing associations which have to take account of the views of their tenants when planning large-scale renovations. In addition, a large proportion of

¹ The report therefore fleshes out the ‘low-temperature heat function’ track in the report ‘A Prosperous Nation without CO₂’ [Rijk zonder CO₂] (Rli, 2015).



owner-occupied homes are managed by Owners' Associations. Other stakeholders are investors, building companies, installation companies, architects, financiers, network managers and private landlords and this report is also addressed to them.

1.3 Structure of the report

Chapter two discusses the overarching challenges facing public authorities in making the transition of the heat supply to buildings and homes and makes suggestions for the basic principles that the Council feels should guide the transition process. Chapter three presents the Council's specific recommendations for achieving the targets that have been set. They relate to the timetable for the transition, the costs and affordability of measures, home investments and public support for the transition. The chapter concludes with recommendations that are relevant for the proper preparation for subsequent phases in the transition process.

2 PROVIDE CERTAINTY AND MAKE A CONNECTION

2.1 Introduction

In its advisory report 'A Prosperous Nation without CO₂' [Rijk zonder CO₂] (Rli, 2015), the Council concluded that the energy transition in the built environment could proceed relatively quickly because the technology was available. Moreover, the Netherlands is far less dependent on international policies and less affected by international competition in this domain than with respect to other areas of energy demand (for mobility or energy-intensive industry, for example). Despite that, little progress has been made in relation to the built environment. The slow pace of the energy transition in the built environment appears to have other causes.

The provisional conclusions of the Built Environment sector platform in the negotiations on a new Climate Agreement show that the transformation of the heat supply to buildings is technically feasible. Although the transition will be very expensive – a sustainable heat network or heat pump can still not compete with heat produced with cheap natural gas from Groningen in terms of cost-efficiency – the bill is not so high as to be unaffordable from a macro-economic perspective. Furthermore, the costs of the energy transition are offset by significant social benefits. However, technology and



social costs are only part of the puzzle. An essential factor for the success of the energy transition in the built environment is the willingness of eight million households and owners of buildings to make an effort to achieve it. In other words, it is far more than just a technical or accounting exercise.

The efforts and commitment of society cannot be taken for granted. Many Dutch people are concerned with very different problems than using energy more sustainably. Some are struggling with problems in their relationship or with debt; others devote their energy to creating a better future for their children; yet others are endeavouring to build a customer base for their new start-up. Amidst all of these concerns, responsibilities and dreams for the future, the government has to find a way of persuading people to think about and invest substantial time and money in pursuit of goals that are not a short-term priority, but which cannot be put off any longer in the wider public interest.

What distinguishes the energy transition from other major economic changes is that it is not being driven by the free market as a result of technological developments, as in the case of the invention of the steam engine or the computer for example. The energy transition has been initiated by the government, in the public interest, and that complicates efforts to make it a success.

In a report entitled 'Influencing Behaviour: More Effective Environmental Policy through Insight into Human Behaviour' [Doen en laten, effectiever beleid door mensenkennis] (Rli, 2014), the Council recommended making

better use of knowledge of human behaviour to achieve the objectives of environmental policy. Knowledge derived from behavioural science is also essential to formulate effective policy in the transition to low-CO₂ heat supply.

Because this report is concerned mainly with the initial phase of the energy transition in the built environment, the Council asked a large number of stakeholders for their views on what is required most of all to persuade society and individual citizens to take the necessary action. The interviews revealed two main preconditions for a successful transition: *the need for greater clarity and the need for more effective communication with the public.*

Provide clarity

The Built Environment sector platform has formulated a package of measures, together with a timetable, with which the government's target for 2030 can in principle be achieved (Hekkenberg & Koelemeijer, 2018). In its proposal the Regional Energy Strategies (RES) and the municipal visions and plans for the transition will provide guidance on the transition and form an important basis for its implementation. However, the provisional 'Proposal for key points of the Climate Agreement' leaves many questions unanswered – questions relating to the division of responsibilities, the costs and how they will be allocated, whether the decision-making procedures will be fair, the timetable – at least until 2030 – and guarantees that the necessary renovations will be feasible and affordable for everyone. To secure public support for the transition, answers will have to be provided for these outstanding questions as soon as possible.



Connect with other issues

The transition will only be realised if the questions, interests and wishes of owners are effectively addressed. The Council has concluded that this will only be possible if the transition process is actively linked to other issues that occupy the minds of people in the districts and the relevant households. The prospect of a successful energy transition is only possible if these other issues are successfully linked to the implementation strategy based on technology and policy objectives.

The Council also observes that there is a contradiction between the demand for greater clarity and an implementation strategy based on a connection with the needs and wishes of residents and districts. In the Council's opinion, it is therefore crucial to find the right balance between these two aspects. In reviewing how this balance can be found, the Council considered three basic principles that play an important role in the debate on the transition of the heat supply but have not yet been explicitly discussed and formulated. The Council has used these three basic principles as the starting point for the specific recommendations it makes in the following chapter.

2.2 Three basic principles

2.2.1 Establish that collective choices take precedence over individual choices

The Dutch attach great value to freedom of choice, especially concerning private matters such as the furnishing of their own home or investments in their own business. For the energy transition in the built environment, however, coherent choices will have to be made regarding the energy systems of the future on various scales and on the basis of technical possibilities and costs. This collective decision-making on the heat supply for a district, a municipality or a region will greatly curtail individual freedom of choice. On the other hand, respecting complete freedom of choice would lead to a delay in making decisions and to solutions that are sub-optimal and cost-ineffective. In the worst-case scenario, it would lead to the economically imprudent construction of parallel infrastructures (a heat network **and** a gas network **and** a stronger electricity grid). The Council advises the government to clearly pronounce the position that the public interest in a timely and affordable transition to low-CO₂ heat takes precedence over individual freedom of choice. However, the curtailment of the individual's complete freedom of choice is only defensible if the political decision is made transparently and is democratically legitimate. The right to consultation and appeal must therefore be clearly regulated at the start of the decision-making process.

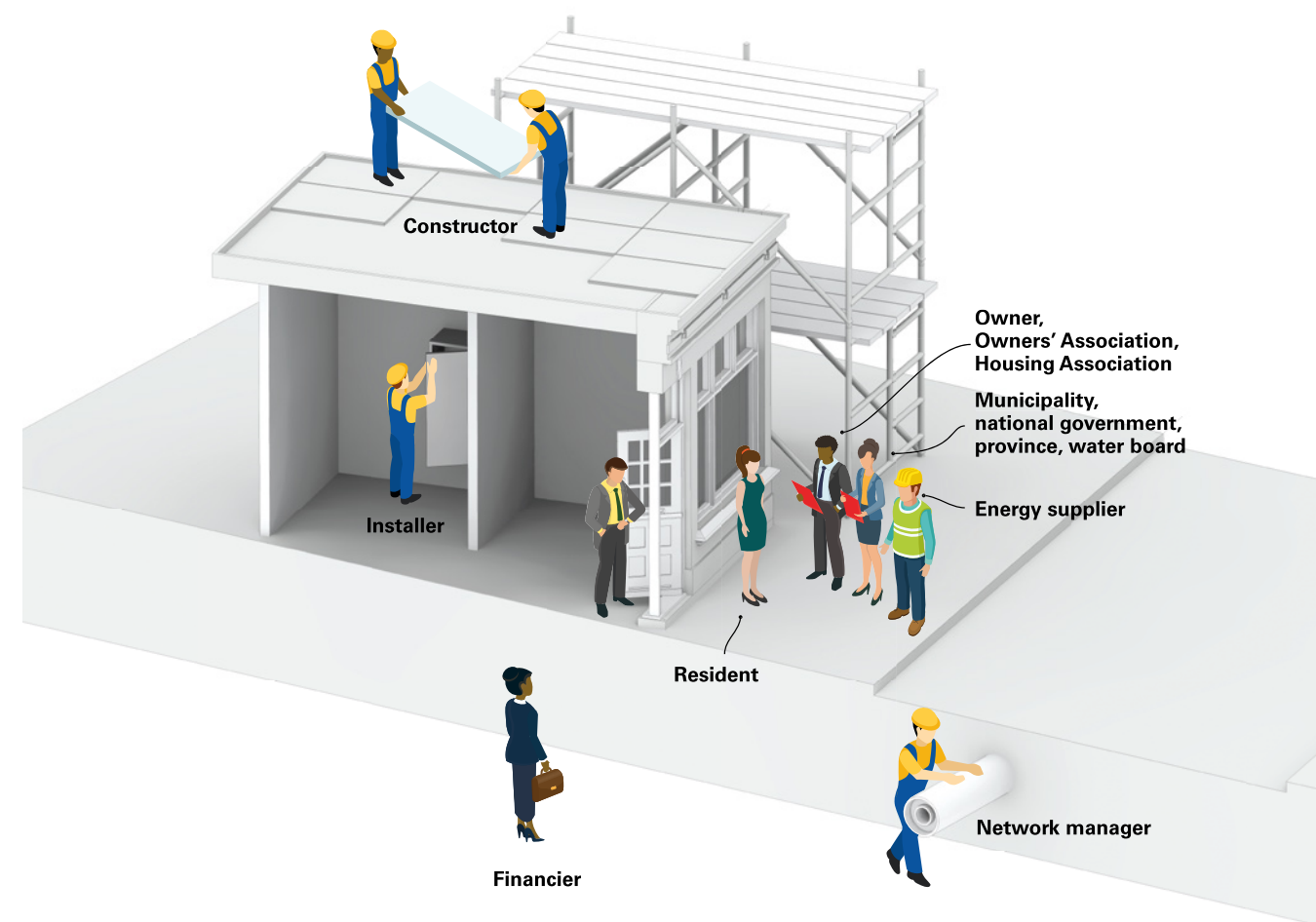
2.2.2 Establish the division of public and private responsibilities in advance

What are the respective responsibilities of public authorities, citizens



and businesses in the transition to a low-CO₂ heat supply for buildings in Netherlands? It is a straightforward question, but it has also not been clearly answered yet. The answer will determine who will have to make investments and how the costs will in principle be allocated. The construction of the heat infrastructure also raises the question of how end users of heat can be protected against abuses or the negative effects of monopoly positions.

Figure 1: Actors in the energy transition in the built environment



The Council takes the view that it is also important to make and document clear choices on this point, since this could help to avoid complicated discussions during the implementation process. In the Council's opinion, the logical choice for the dividing line between the public and private domain is the normal boundary of the front door of homes and business premises. This means that the construction and financing of the new heat infrastructure is the responsibility of the government up to front door. In the view of the Council, this new infrastructure should, like the infrastructure for fossil energy, be wholly or partially owned by the government or by companies that are wholly or partially owned by the government or by public-private partnerships (PPPs). Government ownership could also be made a precondition if a concession model is adopted. The Council further suggests that a clear choice should be made on how the construction of the heat infrastructure will be funded. The Council recommends that those costs should be passed on to every citizen and business within the supply area of a particular heat infrastructure (see also recommendation 3.2.1).

The choice of the front door as the boundary between public and private responsibility implies that owners of homes and commercial buildings will bear responsibility for modifications to the insulation of a building and for the necessary appliances in the home. This is justified, for example, by the fact that the appreciation in the property's value also benefits the owner (not the tenant). Moreover, a great many owners have in the past, with the help of subsidies or otherwise, invested in making their home or commercial property more sustainable at their own expense.



However, this choice raises another question: how to ensure that everyone is actually able to make the necessary investments. The Council believes that the government should adopt the basic principle that everyone must have access to sustainable heat and that it should therefore facilitate the necessary investments if necessary. Uncertainty on this point will seriously undermine public support for the transition

2.2.3 Accelerate the transition to low-CO₂ buildings in the initial phase with additional measures, but regularly assess the feasibility of the planning

To achieve the objective of realising a low-CO₂ built environment by no later than 2050, an enormous acceleration of the operation to increase the sustainability of the building stock is needed. The Council has considered when and how the acceleration should ideally occur.

In that context, the Council concludes that there is no time to lose. In view of the unprecedented scale of the renovations, the deadline of 2050 will otherwise no longer be feasible. In the following chapter the Council makes a number of recommendations for a more intensive, publicly financed programme to kick start the acceleration of the operation in the initial phase. This programme is needed to increase the momentum of the further development of existing technologies for sustainable heating of buildings and so reduce the costs of infrastructure and equipment more rapidly.

However, the Council concludes that this will not be sufficient to guarantee that the price of sustainably-generated heat will decline rapidly enough to

make it affordable in time for every owner. It is also impossible to predict how the economy, and with it the capacity of owners to invest in their properties, will develop in the course of the transition. Furthermore, at district and municipal level the costs of constructing new infrastructure for heating will be lower if it can be carried out in combination with other public works in the district or municipality. In addition to starting the process as soon as possible, the Council therefore also calls for intensive monitoring of the feasibility of the planning. The timetable for the transition should be reviewed at regular intervals, for example every two years, to ascertain whether it needs to be revised in light of economic, social and technological developments. This oversight will reduce the risk of losing public support.



3 RECOMMENDATIONS

3.1 Timetable

The Council makes a number of recommendations for refining the timetable in order to provide the clarity about the course of the energy transition that the public demands. In 2019, for example, municipalities should be provided with a guideline for determining what will be done in each district and when. The Regional Energy Strategies should then be published in 2020, so that the municipalities can then adopt their Transition visions for Heat in 2021. The Council's recommendations are concerned not only with achieving the objectives for 2030 and 2050, but also relate to the measures that need to be taken during the current government's term of office and up to the end of 2040, respectively.

3.1.1 In 2019, adopt a national strategic narrative for the energy transition in the built environment that is supported by the entire government and provide for periodic review of the narrative

The Paris Climate Agreement and the ensuing agreements in the present government's coalition agreement form the basis for the discussions on the new Dutch Climate Agreement. In the view of the Council, merely referring to the government's signing of the Paris Agreement and the coalition agreement does not provide an adequate basis for a transition that requires the participation of every household and owner of a building. In the Council's

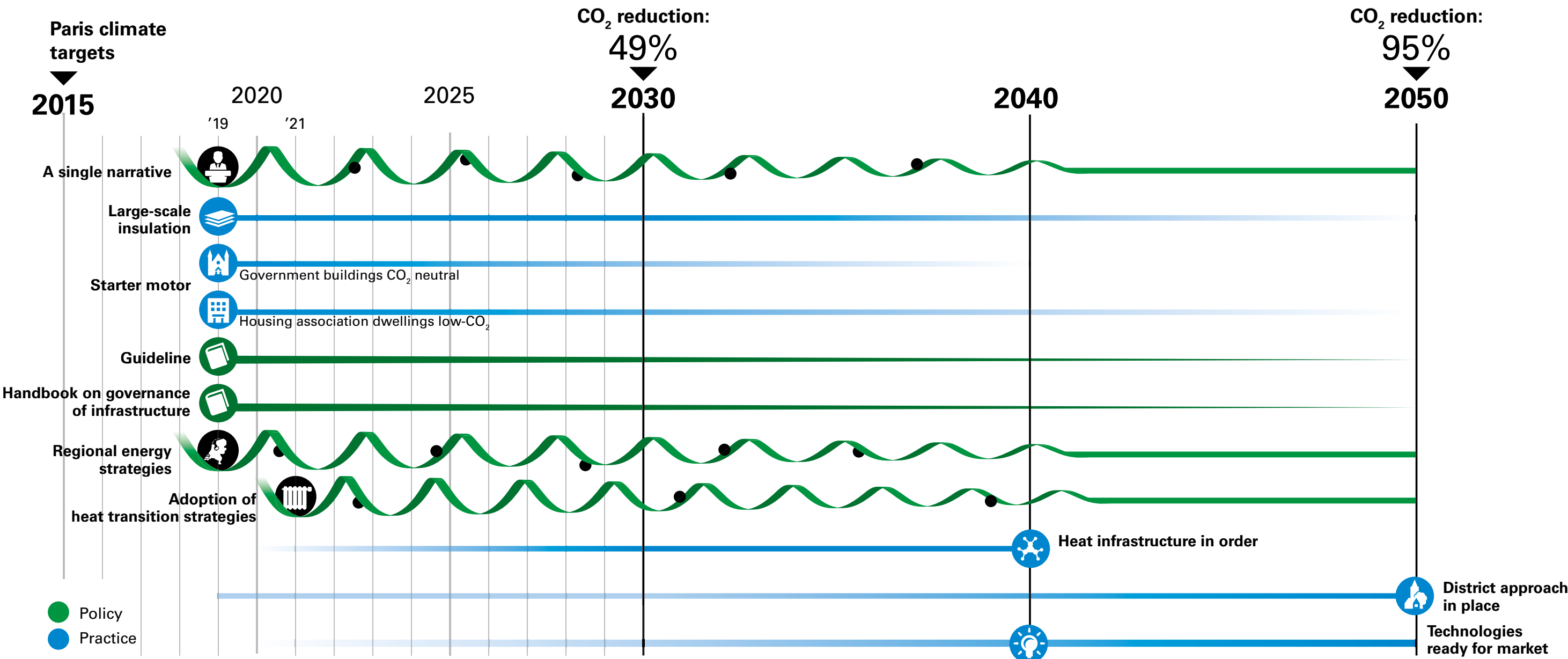
opinion, to secure public support for the government-initiated transition in the built environment the government must display more political leadership on the issue. The Council therefore calls on the government to publish a national strategic narrative for the energy transition within a year.

The narrative should describe the usefulness and necessity of the transition, enumerate the costs and revenues in the shorter and longer term and describe the envisaged ultimate situation. It should also set out the policy framework and the timetable for implementing the transition. With government-wide promotion, this narrative could explain the importance of the operation to society and generate the necessary public support. Primary responsibility within the government for the transition to low-CO₂ heat supply in the built environment should rest with the Minister of the Interior and Kingdom Relations. Providing clarity and securing public support start with a convincing narrative promoted by the entire government.

In the Council's view, the Minister of the Interior and Kingdom Relations should also clearly convey the fact that the transition is such a complex and substantial project that it will inevitably be a process of trial and error. The guiding narrative should therefore also be revised periodically, for example every two years.



Figure 2: Paths to low-CO₂



3.1.2 Establish a strategy for the governance of the new infrastructure, and flesh it out in guidelines on how municipalities can meet their responsibilities

On the assumption that the new heat infrastructure is a public responsibility (section 2.2.2), municipalities will have to flesh out their transition visions for heat at district level and deliver the infrastructure. Practical experience illustrates the difficulty of getting heat networks off the ground. There is no ready-made solution: the municipality can grant a concession, participate in a heat company, form a public-private partnership, etc.

In the Council's opinion, the national government must assist the municipalities in this process and therefore recommends that in 2019 the Minister of Economic Affairs and Climate Policy should draft a strategy document setting out the basic principles for the governance of new infrastructure and then flesh it out in practical guidelines for the municipalities with respect to every possible form of new infrastructure: for heat, electricity and sustainable gas.

3.1.3 Reserve additional funds at the start of the transition

The energy transition in the built environment will cost the government and the owners of buildings a lot of money. Government funding will be needed to make all government buildings more sustainable, to train and retrain the necessary workforce, to build infrastructure, etc. The money can be provided in the form of incentive funds, subsidies or through an investment institution like Invest-NL. The Council therefore advises the government to

earmark the necessary funds in its budget. That will also send a clear signal to society of the government's commitment to the transition.

3.1.4 Focus heavily on energy saving through insulation of buildings in the initial phase of the transition and earmark some of the additional government funds to it

Even before a choice has been made for an alternative to natural gas in a district, owners can start by insulating their properties. The Council regards this as an essential step that can be taken irrespective of the future heat supply (no regret) and will directly contribute to reducing demand for heat in the home and in commercial buildings so that they are ready for the next step in the transition of the heat supply.

To encourage home owners to actually make the necessary investments in this type of measure, the Council calls for the creation of a large-scale and long-term subsidy scheme. In addition to subsidies, it is important to facilitate the financing of insulation measures in cooperation with banks, pension funds and insurance companies.

3.1.5 Oblige municipalities to finalise their transition visions for heat by 2021 at the latest

Agreement has been reached in the negotiations on the Climate Agreement and in the intergovernmental programme (Tweede Kamer, 2018b) that municipalities will finalise their Heat Transition Visions and their Heat Plans by 2021. The Council recommends making this agreement mandatory. This



will only be possible if it is clear what instruments the municipalities will be given. That is the only way of ensuring that it is quickly clear to owners of buildings how heat will be supplied to their home or commercial building. Private owners require certainty to make the right decisions on investments. If it is still not clear in 2021 what the best alternative to natural gas is, there must at least be an indication of when that certainty will be provided.

A decision on the nature of the future sustainable heat supply and when it will be introduced is closely connected with a decision that might have to be made on the date the natural gas supply to a district will be cut off (see recommendation 3.4a).

3.1.6 Oblige all public authorities to make all of their buildings CO₂-neutral by 2040

The Council recommends that, subject to exceptions, all government bodies should be obliged to make their properties CO₂-neutral by 2040 at the latest. In the intergovernmental programme (Tweede Kamer 2018b) and at the Built Environment sector platform in the talks on the Climate Agreement (2018), the public authorities are lobbying for the drafting of road maps for the process of making public property more sustainable (Sectortafel Gebouwde omgeving, 2018). The Council recommends that the final deadline in these road maps should be 2040. The government would then be setting the right example, which is important for gaining public support. The government would also be playing an important role as launch customer in kick-starting the transition. Together with the efforts of housing associations and an insulation programme (recommendation 3.1.4), this could enable the target for 2030 to be achieved. By taking the lead, the government will ensure that

the necessary knowledge and experience can be acquired more quickly and contribute to the development of technologies for producing sustainable heat at a lower price. The 'Proposal for key points of the Climate Agreement' assigns a similar role to housing associations. In Council's opinion, because the government owns a lot of property, it should also take initiative itself.

3.1.7 Ensure that the public infrastructure for sustainable heat is in place by 2040

The availability of the infrastructure to supply sustainable heat is an important requirement for accelerating the transition. Creating that infrastructure will involve major, radical and complex projects. The Council's point of departure is that creating heat networks and strengthening electricity grids is a collective, public task. Because a new heat infrastructure has to be built before buildings can switch to sustainable heat, the Council recommends completing it ten years earlier than the planned date of 2050 in order to avoid delays in the transition being built into the process from the outset.

3.2 Costs and affordability

The costs of the energy transition are substantial. Some of the modifications represent profitable investments for owners, who can recoup their investments within a reasonable period through lower energy costs. But profitability does not mean that everyone can finance the costs. Financial products should therefore also be available to facilitate



pre-financing. There is also part of the investment in modifications that cannot be earned back. Making arrangements for the financing of this part of the investment is less straightforward. The Council makes a number of recommendations below for ensuring the fair allocation of costs and transparent decision-making procedures. Those recommendations could help to ensure that in principle every household and every owner of a building is able to bear the costs of making the necessary investments in sustainability.

3.2.1 Establish that everyone will help to pay for the collective infrastructure

The Council is of the opinion that the construction of the infrastructure in the public space, as prescribed in the heat plan, is a collective, public task. The measures include strengthening the electricity grid, constructing a heat network or possibly modifying the gas network for the use hydrogen in the future. The Council recommends that, as with other public infrastructure, the basic principle should be that everyone in a particular supply area should help to pay the costs of constructing this facility, even individuals who opt for an alternative method of heating, such as a heat pump. Individuals who choose an alternative should pay any additional costs themselves.

3.2.2 Be transparent and explain that the costs of heat can differ depending on the district, municipality and region

The costs of supplying heat can vary from place to place depending on the technical possibilities. The costs of heat from a connection to a heat network will also vary according to the nature of the local sources. The Council believes that it is possible to opt for equalisation on a lower scale

in financing the construction of the heat infrastructure. Whether that is desirable is a political decision to be made at local level. The costs of building-related measures paid for by the owners themselves will also vary according to the type of dwelling. There are already differences in energy costs, but they could increase in the course of the transition because of the greater differentiation in systems for supplying heat. The Council argues that this fact should be documented in the municipal heat plan (part of the environmental plan). The costs (and differences in them) to be paid by individuals must be clearly communicated. The costs that qualify for equalisation or compensation, for example in the form of subsidies, must also be clearly explained.

3.2.3 Guarantee a maximum statutory price for heating

Despite the possibility of differences in the price, everyone is entitled to affordable heat regardless of what alternative to natural gas is chosen and where a person lives. The maximum tariff for heat is currently set by the Consumers and Markets Authority [Autoriteit Consument en Markt] (ACM) on the basis of the price of natural gas. The Council recommends developing a new instrument for setting a maximum tariff for the supply of heat to buildings from a variety of sources. That will require changes in the regulatory framework with an alternative to the natural gas-based 'no more than otherwise' principle.² In the Council's opinion, there should be a single system of regulating costs embracing the entire spectrum of heat

² 'No more than otherwise' means that the maximum price of heat is based on the price of natural gas. Consumers of heat pay no more than they would have to pay if they had a natural gas connection, based on an average consumer.



supply (high-temperature, medium-temperature, low-temperature, all-electric and sustainable gases).

3.2.4 Facilitate building-based financing

Many of the investments required to supply low-CO₂ heat to buildings have a lengthy earn-back period. For a successful transition in which entire neighbourhoods are cut off from the natural gas network, every owner must be able to make the necessary investments in their own property. This calls for new forms of financing. The introduction of building-based financing would help to reduce the risk of exclusion. The Council therefore recommends introducing rules to facilitate this new form of financing and concluding an agreement with financiers to encourage them to be generous in providing this type of financing. To remove the risk for banks of defaults on repayment, the Council recommends that, by analogy with the National Mortgage Guarantee, the government should guarantee building-based loans for measures connected with the sustainable heat supply through a National Energy Loan Guarantee, as well as making the interest on loans deductible for the purposes of income tax.

3.3 Public support in the neighbourhood

The energy transition in the built environment will have to be implemented in stages, with buildings being converted one neighbourhood at a time. Consequently, opposition in districts represents a significant threat to the success of the transition. After all, the energy transition is not a priority for

everyone, especially if the district is confronted with various other urgent issues, such as problems with flooding or in relation to safety and the quality of life. Opposition by individuals because of debt or other private problems is another factor that needs to be considered. Because many of the modifications have to be made behind the front door, the transition can only succeed with the cooperation of the neighbourhood's residents. The Council therefore recommends that municipalities should be obliged to ensure that their transition strategies and their plans for the heat supply closely reflect the dynamic in the district.

With knowledge of the neighbourhoods and through discussions with local residents it will be possible to make the connection between implementation of the energy transition and other issues of concern in the neighbourhood. The same applies for combining work on the transition with other work already planned in the district, such as the replacement of sewers or road surfaces. Creating work with work is cheaper and reduces the nuisance caused for residents.

The Council recommends making funds available to enable municipalities to appoint an independent process manager and neighbourhood ambassadors, whose task should be to link the interests and concerns of residents and owners to the national and municipal objectives. The Council recommends immediately starting experiments with this idea in the first neighbourhoods that will no longer be using natural gas.



3.4 Control-based policy

The Council regards it as likely that further measures and regulation will be needed to maintain the ambitious pace of renovation of the Netherlands' building stock. The Council therefore recommends immediately studying the effectiveness, efficiency and feasibility of a number of measures that could potentially be adopted in later stages of the transition. Options identified by the Council include:

a. prohibitions that could steer the transition in a clearer direction.

The Council is thinking in this context of the fixing of a year in which the supply of natural gas in the built environment will be prohibited. By extension, each municipality would have the power to fix a year in which the natural gas supply would be shut off in each district. Another measure that deserves to be explored is a ban on selling or letting a home or commercial building that fails to meet a prescribed minimum energy performance rating. Finally, it should be investigated whether announcing a ban on the sale or purchase of natural gas-fired boilers and natural gas-fired cookers with effect from a specific year would have an effect in terms of phasing out the use of these appliances.

b. amendment of tenancy law.

Tenancy law, and more specifically Article 7:220 of the Dutch Civil Code, lays down the rights of tenants and landlords in relation to renovations and ensuing rent increases. An important criterion is that at least 70% of the tenants of an apartment block or a dwelling divided into apartments must agree to a renovation. As a result, it will not be easy to make

investments for the purpose of the energy transition. Investigate whether the 70% criterion should be abolished with respect to modifications to homes relating to the energy transition.

c. a variable property transfer tax linked to the energy performance of a dwelling or building.

In addition to the aforementioned ban on selling a property with a poor energy performance, the Council considers it advisable to explore the effect of a variable property transfer tax. In that case, the level of the tax would be dependent on the property's energy performance rating. In that context, it is important that both seller and the buyer benefit from the improvement in the dwelling's energy performance. The Council's suggestion is a rebate on the property transfer tax for a substantial improvement in a property's energy performance within a specific period after it has changed hands.

d. an obligation for every appraiser to indicate the cost of improving a dwelling's energy performance or energy label to a specific level.

With this obligation the buyer would be informed of the possibilities for making the dwelling more sustainable and what it will cost. The valuation could be linked to the determination of the (variable) property transfer tax. A higher transfer tax for properties with a poorer energy performance could then be weighed against the cost of improving the energy performance.

e. adjustment of the differentiation in energy tax in the utilities sector.



The current differentiation in the energy tax means that the tax on natural gas and electricity is lower per unit of energy for larger consumers. There should be a study into the effect that reducing this differentiation would have on support for the transition among home owners and on the willingness of owners of commercial buildings to make the necessary investments. It is also necessary to explore whether the resources that are made available by the increase in the energy tax could be used effectively to finance the energy transition.

f. linking the obligation to take measures to make buildings more sustainable to the permit for a renovation

Measures to improve sustainability can be carried out most efficiently when work is already being done on the property. Work can then create work and so reduce costs. Furthermore, advice from the government is most likely to have an effect through direct contact with the resident. Research is needed into the possibility of attaching specific requirements to improve the sustainability of a dwelling to the actual plans in an application for a renovation permit.

g. the availability of sufficient labour for the transition to low-CO₂ buildings in the period up to and beyond 2030.

The pace of the transition depends to a large extent on the availability of staff for public authorities, building companies, installation companies and network companies. The Council recommends that in 2019 a study should be carried out into staffing requirements (in terms of capacity, knowledge and experience) and that a policy plan should be drafted on the basis of the outcome. The plan should show what measures will be taken to ensure that there will be a sufficient workforce in the period up to 2030 and in the period 2030-2050.



LITERATURE

- Hekkenberg, M. & Koelemeijer R. (2018). Analyse van het voorstel voor hoofdlijnen van het klimaatakkoord. Den Haag: PBL.
- Raad voor de leefomgeving en infrastructuur (2014). Doen en laten, effectiever milieubeleid door mensenkennis. Den Haag.
- Raad voor de leefomgeving en infrastructuur (2015). Rijk zonder CO₂: naar een duurzame energievoorziening in 2050. Den Haag.
- Sectortafel Gebouwde omgeving (2018). Bijdrage van de sectortafel Gebouwde omgeving aan het Voorstel voor hoofdlijnen van het Klimaatakkoord, 2018. Geraadpleegd op 24 oktober 2018 via: <https://www.klimaatakkoord.nl/gebouwde-omgeving/documenten/publicaties/2018/07/10/bijdrage-gebouwde-omgeving>
- Sociaal Economische Raad (2018a). Voorstel voor hoofdlijnen van het Klimaatakkoord. Den Haag: Klimaatberaad.
- Tweede Kamer (2018a). Gewijzigd amendement van het lid Jetten C.S. ter vervanging van dat gedrukt onder nr. 23. van 25 januari 2018. Behorende bij Wijziging van de Elektriciteitswet 1998 en van de Gaswet (voortgang energietransitie). Vergaderjaar 2017-2018, 34 627, nr. 39.
- Tweede Kamer (2018b). Programmastart IBP Samen meer bereiken als één overheid. Rijk, gemeenten, provincies en waterschappen starten met een interbestuurlijk programma en een gezamenlijke agenda. Vergaderjaar 2017-2018, bijlage bij Kamerstuk 29 362 nr. 266.

APPENDICES

RESPONSIBILITY AND ACKNOWLEDGEMENT

Advisory committee

Prof. Niels Koeman, Council member and committee chair

Sybren Bosch MSc, junior-Council member

Prof. Andy van den Dobbelsteen, external committee member

Prof. Anke van Hal, external committee member

Joop Oude Lohuis, external committee member

Ellen Peper, Council member

Project team

Anita Bruines BA

Mirjam van Gameren

Folmer de Haan, project leader

Martijn Koop, extern team member

Yvette Oostendorp

Consultees

Rob Aalbers, CPB

Peter Appeljan, Achmea Vastgoed

Jelger Arnoldussen, Economisch Instituut voor de Bouw

Peter van Asperen, ACM

GertJan van der Baan, Vesteda

Mieke van den Berg, Woningcorporatie Eigen Haard
Sanne de Boer, Stedin
Ron van den Boom, Rijksvastgoedbedrijf
Sanne de Bruin, DWA
Nico van Buren, Platform31
Christine Carabain, Sociaal Cultureel Planbureau
Thijs de la Court, Gelders Energie Akkoord
Thomas Dekker, Rabobank
Gerben Dros, Bewust investeren
Ronald Franken, Aedes
Matthijs Gordijn, Gemeente Den Haag
Vera Haaksma, Gemeente Utrecht
Koen Haans, Witteveen+Bos
Niels Hanskamp, VNG
Femke Heijnen, ACM
Taco van Hoek, Economisch Instituut voor de Bouw
Bart Hoevers, Bewust Investeren
Paola Huijding, Platform31
Inge van de Klundert, Gemeente Utrecht
Oscar König, Steeds
Cees Kortleve, Invest-NL
Vincent van Lange, ACM
Frans Lemmens, WonenBregburg
Astrid Madsen, Municipality Rotterdam
Gijs de Man, StadsVerwarming Purmerend
Marijke Menkveld, ECN part of TNO

Albert van der Molen, Stedin
Remco van Montfoort, Invest-NL
Haico van Nunen, Bouwhulp
Ton Overmeire, Municipality Den Haag
Harm van den Oever, Uneto-VNI
Goda Perlaviciute, Rijksuniversiteit Groningen
Diederik Samsom, voorzitter Overlegtafel Built environment
Ben Spiering, De Bouwagenda
Sjuul Stappers, Janssen de Jong Bouw
Maya van der Steenhoven, Provincie Zuid-Holland
Linda Steg, Rijksuniversiteit Groningen
Casper Tigchelaar, ECN part of TNO
Nicoline Tijssen, Nederlandse Vereniging of Banken
Martine de Vaan, Rijksvastgoedbedrijf
Donald van der Veen, Stichting Maatschappelijk Vastgoed
Maarten Eeke van der Veen, Vereniging Eigen Huis
Edwin van Veenhuizen, BNG Bank
Wouter Verduyn, Energie-Netherlands
Friso Waagmeester, DWA
Rob Weterings, SER Borgingscommissie Energieakkoord
Kirsten Wilkeshuis, Netbeheer Netherlands
Felix Wolf, Overlegorgaan Fysieke Leefomgeving

Government

Jorrit Bakker, Ministerie van BZK
Jan van Beuningen, Ministerie van BZK



Martin Bottema, Ministerie van BZK

Edwin Buser, Ministerie van BZK

Jos van Dalen, Ministerie van BZK

Sandor Gaastra, Ministerie van EZK

Sabine Galjé, Ministerie van BZK

Cees Kortleve, Ministerie van EZK

Chris Kuijpers, Ministerie van BZK

Ferdi Licher, Ministerie van BZK

Remco van Montfoort, Ministerie van EZK

Joost Vermeulen, Ministerie van EZK

Tjalling de Vries, Ministerie van EZK

Bert Wilbrink, Ministerie van EZK

David van der Woude, Ministerie van BZK

Reviewers

Pieter Boot, Planbureau voor de leefomgeving

Astrid Madsen, Gemeente Rotterdam



OVERVIEW OF PUBLICATIONS

2018

National Environment and Planning Strategy. ['Nationale omgevingsvisie: lakmoesproef voor de Omgevingswet']. November 2018 (Rli 2018/06)

Accelerating housing production, while maintaining quality. ['Versnelen woningbouwproductie, met behoud van kwaliteit']. Juni 2018 (Rli 2018/05).

Better and different mobility. ['Van B naar Anders: investeren in mobiliteit voor de toekomst']. Mei 2018 (Rli 2018/04).

The healthy city: delivering health through environmental and planning policy. ['De stad als gezonde habitat: gezondheidswinst door omgevingsbeleid']. April 2018 (Rli 2018/03).

Sustainable and Healthy: working together towards a sustainable food system. ['Duurzaam en gezond: samen naar een houdbaar voedselsysteem']. March 2018 (Rli 2018/02).

Electricity provision in the face of ongoing digitalization. ['Stroomvoorziening onder digitale spanning']. February 2018 (Rli 2018/01).

2017

A broad view of heritage. The interactions between heritage and transitions in the physical environment. ['Brede blik op erfgoed, over de wisselwerking tussen erfgoed en transitie in de leefomgeving']. December 2017 (Rli 2017/03).

Energietransitie en Leefomgeving: kennisnotitie. [only available in Dutch]

Land for development. Land policy instruments for an enterprising society. ['Grond voor gebiedsontwikkeling. Instrumenten voor grondbeleid in een energieke samenleving']. June 2017 (Rli 2017/02).

Assessing the value of technology. Guidance Document. ['Technologie op waarde schatten. Een handreiking']. January 2017 (Rli 2017/01).

2016

Faster and closer: Opportunities for improving accessibility in urban regions ['Dichterbij en sneller: kansen voor betere bereikbaarheid in stedelijke regio's']. December 2016 (Rli 2016/05).

International Scan 2016. Emerging issues in an international context. November 2016 (Rli/EEAC).

The connecting Landscape ['Verbindend landschap']. November 2016 (Rli 2016/04).



Challenges for Sustainable Development: Main Focus Areas Identified in Advisory Reports Published in the Past Four Years by the Council for the Environment and Infrastructure. [‘Opgaven voor duurzame ontwikkeling - Hoofdlijnen uit vier jaar advisering door de Raad voor de leefomgeving en infrastructuur’]. July 2016 (Rli 2016/03).

Beyond Mainports [‘Mainports voorbij’]. July 2016 (Rli 2016/02).

System Responsibility in the Physical Living Environment. [‘Notitie Systeemverantwoordelijkheid in de fysieke Leefomgeving’ – only available in Dutch]. May 2016 (Rli 2016/01).

2015

Reform of Environmental Law: Realise your Ambitions [‘Vernieuwing omgevingsrecht: maak de ambities waar’]. December 2015 (Rli 2015/07).

A Prosperous Nation Without CO₂: Towards a Sustainable Energy Supply by 2050 [‘Rijk zonder CO₂: naar een duurzame energievoorziening in 2050’]. September 2015 (Rli 2015/06).

Room for the Regions in European Policy [‘Ruimte voor de regio in Europees beleid’]. September 2015 (Rli 2015/05).

Changing Trends in Housing: Flexibility and Regionalisation within Housing Policy [‘Wonen in verandering, over flexibilisering en regionalisering in het woonbeleid’]. June 2015 (Rli 2015/04).

Circular Economy: From wish to Practice [‘Circulaire economie: van wens naar uitvoering’]. June 2015 (Rli 2015/03).

Fundamental Revision of Environmental and Planning Legislation [‘Stelselherziening omgevingsrecht’ - only available in Dutch]. May 2015 (Rli 2015/02).

Survey of Technological Innovations in the Living Environment [‘Verkenning Technologische Innovaties in de leefomgeving’]. January 2015 (Rli 2015/01).

2014

Managing Surplus Government Real Estate: Balancing Public Interest and Financial Gain. [‘Vrijkomend rijksvastgoed, over maatschappelijke doelen en geld’]. December 2014 (Rli 2014/07).

Risks Assessed. Towards a Transparent and Adaptive Risk Policy [‘Risico’s gewaardeerd, naar een transparant en adaptief risicobeleid’]. June 2014 (Rli 2014/06).

Recovering the Costs of Environmental Damage: Financial Indemnity to be Provided by High-Risk Companies [‘Milieuschade verhalen, advies financiële zekerheidsstelling milieuschade Brzo- en IPPC4-bedrijven’]. June 2014 (Rli 2014/05).



International Scan 2014: Signals: Emerging Issues in an International Context [Internationale verkenning 2014. Signalen: opkomende vraagstukken uit het internationale veld]. May 2014 (Rli 2014).

The Future of the City. The Power of New Connections [‘De toekomst van de stad, de kracht van nieuwe verbindingen’]. March 2014 (Rli 2014/04).

Quality Without Growth: On the Future of the Built Environment [‘Kwaliteit zonder groei, over de toekomst van de leefomgeving’]. March 2014 (Rli 2014/03).

Influencing Behavior, More Effective Environmental Policy Through Insight into Human Behaviour [‘Doen en laten, effectiever milieubeleid door mensenkennis’]. March 2014 (Rli 2014/02).

Living Independently for Longer – A Shared Responsibility of the Housing, Health and Welfare Policy Domains [‘Langer zelfstandig, een gedeelde opgave van wonen, zorg en welzijn’]. January 2014 (Rli 2014/01).

2013

Sustainable Choices in the Implementation of the Common Agricultural Policy in the Netherlands [‘Duurzame keuzes bij de toepassing van het Europees landbouwbeleid in Nederland’]. October 2013 (Rli 2013/06).

Pulling Together. Governance in the Schiphol/Amsterdam Metropolitan Region [‘Sturen op samenhang, governance in de metropolitane region Schiphol/Amsterdam’]. September 2013 (Rli 2013/05).

Safety at Companies Subject to the Major Accidents Risks Decree: Responsibility and Effective Action [‘Veiligheid bij Brzo-bedrijven, verantwoordelijkheid en daadkracht’]. June 2013 (Rli 2013/04).

Dutch Logistics 2040: Designed to Last [‘Nederlandse logistiek 2040, designed to last’]. June 2013 (Rli 2013/03).

Nature’s Imperative: Towards a Robust Nature Policy [‘Onbeperkt houdbaar, naar een robuust natuurbeleid’]. May 2013 (Rli 2013/02).

Room for Sustainable Agriculture. [‘Ruimte voor duurzame landbouw’]. March 2013 (Rli 2013/01).

2012

Keep Moving, Towards Sustainable Mobility. Edited by Bert van Wee. October 2012 (Rli/EEAC).



Colophon

Original title

Warm aanbevolen. CO₂-arme warmte in de gebouwde omgeving

Text editing

Annemieke Diekman

Photo credits

Cover: Werry Crone / Hollandse Hoogte

Page 5: Michiel Wijnbergh / Hollandse Hoogte

Infographics

Vizualism: Frédéric Ruys (page 12 and 15)

Graphic design

2D3D Design

Publication Rli 2018/07

December 2018

Translation

Livewords/Balance Translations Amstelveen/Maastricht

Please cite this publication as:

Council for the Environment and Infrastructure (2018) Warmly recommended: towards a low-CO₂ heat supply in the built environment. Digital edition

ISBN 978-90-77166-76-5

NUR 740

