

Table of contents

Introduction	3
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1 Futureproof accessibility policy	6
1.1 Starting position	7
1.2 Ambition	12
1.3 Objectives and strategy	12

2 Integrated accessibility objectives	15
2.1 Towards an integrated approach to accessibility	16
2.2 Coherence with the vision on spatial challenges	19
2.3 Coherence with policy for critical functions	21
2.4 Coherence with international networks	23
2.5 Coherence with other wellbeing economy objectives	23
2.6 Coherence between modes of transport	24
2.7 Towards achieving the integrated accessibility objectives	24

3 The right mobility in the right place at the right time	27
3.1 Using every capacity	28
3.2 Optimum deployment of modes of transport	29
3.3 Strengthening connections	32
3.4 Opportunities from innovations	33
3.5 Opportunities in an international perspective	35

4 Within the public frameworks	38
4.1 Safety	39
4.2 Climate (CO ₂)	40
4.3 Nitrogen (NO _x)	42
4.4 Particulate matter (PM _{2.5} en PM ₁₀)	43
4.5 Noise	44
4.6 Vibrations	46
4.7 Use of natural resources	46
4.8 Effects for accessibility policy and the mobility system	46

5 Effective management relationships and instruments	48
5.1 Cooperation	49
5.2 National frameworks, area-specific approach	49
5.3 Integrated investment in accessibility	50
5.4 Focusing on mobility behaviour	53
5.5 Focus on elaborating the policy spearheads	54

Appendices	55
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Introduction

National government is working on a more integrated accessibility policy. At present that policy is too fragmented. Given the challenge to maintain a sustainable system, that is something we cannot allow. Fortunately there are good practices and opportunities for tackling the challenge. This memorandum presents an outline of the more integrated accessibility policy.

The outline policy memorandum adopted on 14 October 2022 is the starting point for this Framework Memorandum. It describes the underlying principles, the approach and the process. The Framework Memorandum Mobility Vision 2050 contains and combines partial visions on mobility, such as the future prospects for car mobility, future vision on public transport, future vision on cycling, the goods transport agenda, the 2020-2050 civil aviation policy memorandum and the vision on sources of sustainable energy in mobility. The Framework Memorandum is an umbrella document for the partial visions and lays out a strategic course for future policy.

The four policy spearheads for 2050 are:

- 1 Striving for more **integrated objectives** that safeguard the public interest of access to critical socioeconomic functions across the Netherlands.
- 2 Utilising, reinforcing and combining the strengths of the various modes of transport in such a way that the accessibility objectives are efficiently and effectively achieved: **the right mobility in the right place at the right time**. With that in mind, national government is increasing its efforts to utilise and encourage innovations.

- 3 The mobility system of the future complies with the public **frameworks** for sustainability, healthy living environment and safety.
- 4 The three policy spearheads above are elaborated in **an area-specific manner**, in close consultation with the administrative partners, in a process that also involves the users of the mobility system. For goods transport, a **corridor-based** approach that ties in with international networks is used.

This memorandum explains these four policy spearheads. It reflects the efforts of national government and the intended method for making our approach to accessibility futureproof.

It is expressly a framework memorandum. The wish was expressed to provide an 'adaptive' approach. For that reason, the document is relatively limited in size (as compared to the partial visions) and primarily has an agenda-setting character, whereby that agenda-setting process clearly identifies the direction for any follow-up policy. In the follow-up process, the integrated objectives and core themes from the Framework Memorandum will be elaborated and serve as input for the future partial visions.

Block 1 Consultation

In drawing up both the outline policy memorandum and this Framework Memorandum Mobility Vision 2050, a number of different stakeholders and other levels of government were involved.

The Mobility Alliance, the Logistics Alliance, administrative umbrella organisations like the Association of Provincial Authorities (IPO) and the Association of Netherlands Municipalities (VNG), the transport regions and the five metropolitan regions, the mobility network of medium-sized and small municipalities and a very wide range of participants in the consultation group of the Physical Environment Consultative Council all responded to the outline policy memorandum and, subsequently, to the first official draft of the Framework Memorandum Mobility Vision 2050 (the consultation document).

The stated objective of working on a long-term vision and following an integrated approach enjoys very broad support, as does the involvement of stakeholders at the earliest possible stage.

Many substantive points are included in the Framework Memorandum, while others can best be tackled in the follow-up period after the Framework Memorandum. There are reactions both to passages and specific subjects, as well as more fundamental reactions. With regard to the latter category, the most important points are discussed below. For a detailed overview of the contribution from civil-society parties to the consultation document, we refer to the report of the Physical Environment Consultative Council (OFL): [Mobility Vision 2050 | Physical Environment Consultative Council](#).

Various parties have advised on the basis of the consultation document to make the Framework Memorandum shorter and more emphatic, and to reflect more prominently the human perspective in relation to the system perspective. As compared to the consultation document, the text of this Framework Memorandum has been halved. The human perspective has been added in various sections.

Other government bodies and various civil society parties have expressed their preferences for presenting an ambitious set of wishes. As explained in the outline policy memorandum, this Framework Memorandum starts with an analysis of existing partial visions, before elaborating a more coherent whole, and then moving on to ambitious goals on the road to 2050. In this document we explain a coherent approach to future policy. The follow-up process offers space for working on those ambitious goals, in a gradual process.

The consultation provided an additional motivation to focus on balance in the attention paid to passenger and goods transport in this Framework Memorandum. The consultation also provided a source of inspiration in focusing attention on new forms of transport. These then form the starting points for further elaboration.

In any consultation, it goes without saying that attention is focused on specific forms of transport. Representatives of each mode of transport can present excellent supporting arguments. However, ensuring that in this memorandum we maintained our focus on the policy spearheads, those arguments could not always be followed. The partial visions

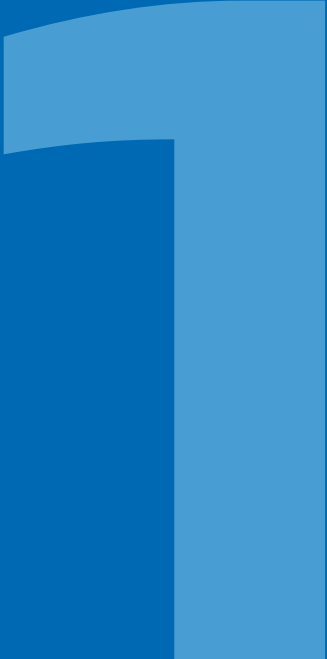
are a better place for fulfilling those arguments, as seen in the recent future prospects for car mobility and last year's future vision on cycling.

On the advice of various parties, greater attention was focused on the financial aspects of mobility. The tie-ins with digitalisation and the energy transition have also been included in the Framework Memorandum, for example in the description of the relationship between mobility and other tasks (including spatial ones). A link was also established with the vision on sources of sustainable energy (and its update).

Various stakeholders also expressed the desire to focus on the wellbeing economy, rather than accessibility. The Framework Memorandum as a whole does consider the various aspects of wellbeing economy. The Framework Memorandum discusses accessibility as an essential goal, linked to vital socioeconomic functions and considers the contribution of mobility to safety, climate, the living environment and health.

Representatives from local and regional authorities suggest that in further elaborating various aspects of the Framework Memorandum it is worthwhile to consider the different areas that make up the Netherlands. This area-specific approach is also reflected in the Framework Memorandum, and will be continued together with local and regional authorities, in the further elaboration of this Framework Memorandum.





Futureproof accessibility policy

- a Mobility is a core activity of our social and economic life, and will remain so in the future. Everyone is entitled to mobility and the free passage of goods and persons within and beyond national boundaries.
- b The starting position is favourable. We have access to multiple well-developed transport modalities.
- c Guaranteeing accessibility for future generations demands attention, if only in the face of economic and population growth, and stricter requirements.
- d We wish to fulfil that need by opting for an approach that focuses on:
 - integrated accessibility goals that guarantee access to critical functions;
 - utilising the strength and opportunities offered by all modes of transport: the right mobility in the right place at the right time.
 - within public frameworks; and
 - managed by effective, area-specific instruments.

1.1 Starting position

The terms accessibility and mobility

In this Framework Memorandum, the term *accessibility* refers to the number of destinations that can be reached from a specific location. Accessibility is a product of the range of destinations and the ease with which people and goods can travel or be transported to those destinations. The complete set of transport options is referred to in this memorandum as the *mobility system*.

Accessibility and mobility are crucial for individual citizens and for business and industry, in order to participate in society and for the earning capacity of the Netherlands. This is something everyone experiences on a daily basis: young people attending school, the elderly in continuing participation in society, employees for travelling to work, the ambulance en route to the hospital, entrepreneurs in carrying their products across the globe, tourists in search of recreation. Goods transport fulfils an essential role for industry, distribution companies and private individuals in the Netherlands and the European hinterland.

Transport facts and figures

The 'average Dutch person' travels more than 13,000 kilometres every year within the Netherlands. Measured according to the number of kilometres, most of that travel is completed by car as driver (50%) or passenger (18%). Measured in the number of movements or the number of hours, the car is also most commonly used as driver (35-33%) or passenger (11-13%), with the bicycle in second place (28-22%). Of all movements, the majority fulfil a social-recreational function (more than one third). Around a quarter of all travel movements are for work (home-work travel and business travel), with just under 10% for education. Around 20% of movements is for shopping purposes. These are often short journeys: 9% of the total number of kilometres travelled is for shopping.

Every year, around 2,000 million tonnes of goods are transported in the Netherlands. Approximately two-third crosses the country's borders. The majority of goods transport by water, rail and air is transnational. By road, on the other hand, the majority of transport is domestic. Heavy goods and large volume (bulk) goods are carried relatively often by ship. Light-weight, valuable and time-sensitive products are carried relatively often by truck and aircraft. (source: CBS/KiM).

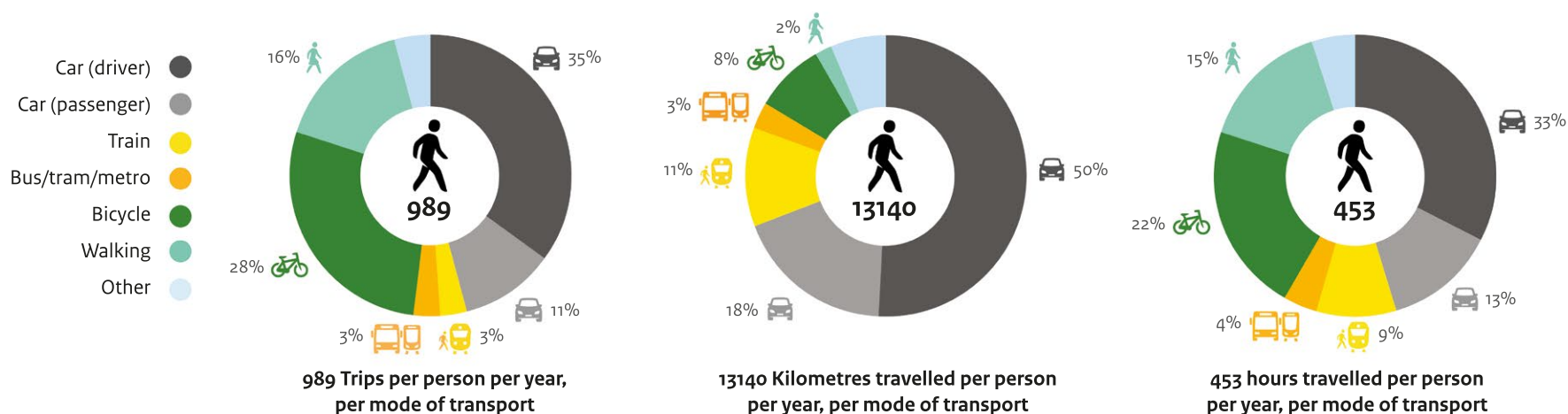


Table 1: Passenger transport 2019 (source: Statistics Netherlands, ODiN 2019)

	Movements	Kilometres	Hours		Movements	Kilometres	Hours
Total per number per year	989	13140	453		989	13140	453
Commute	18%	27%	20%	Passenger car (driver)	35%	50%	33%
Business	4%	9%	5%	Passenger car (passenger)	11%	18%	13%
Shopping	20%	9%	11%	Train	3%	11%	9%
Education	8%	6%	7%	Bus/tram/metro	3%	3%	4%
Visits/stayover	10%	16%	11%	Bicycle	28%	8%	22%
Recreational	25%	23%	36%	Walking	16%	2%	15%
Other	14%	10%	10%	Other modes of transport	4%	6%	5%

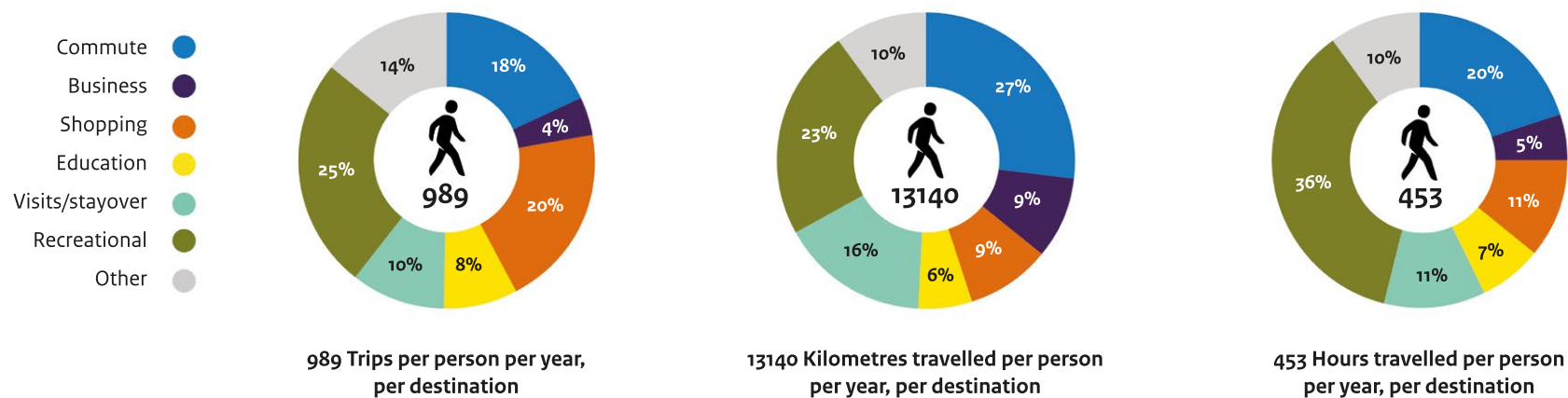
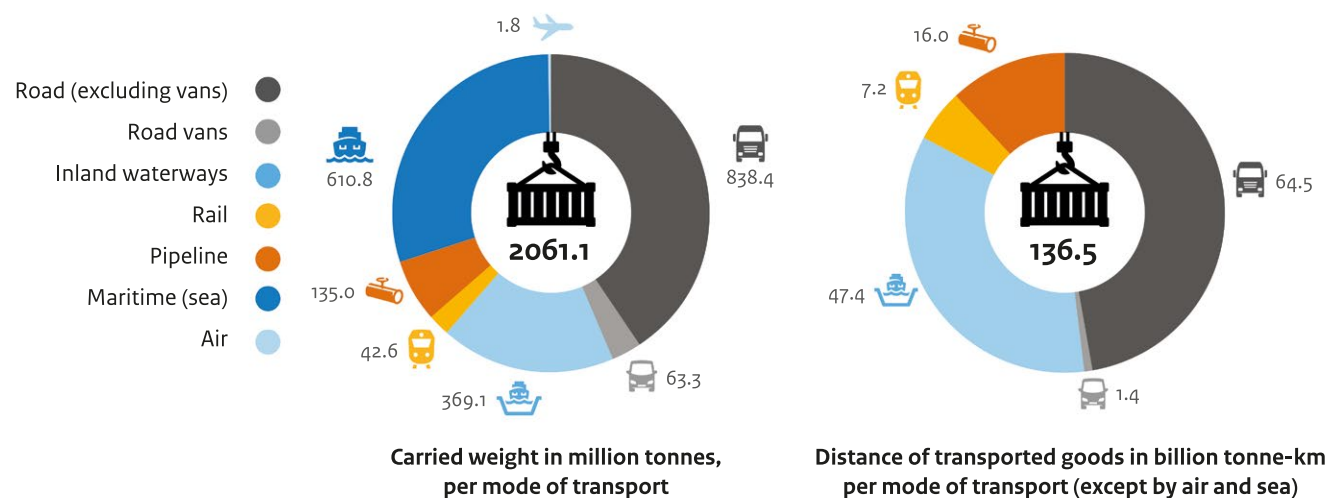


Table 2: Goods transport on Dutch territory (source: CBS/KiM)

Transport mode / total goods volume	2019	Distance travelled	2021	Distance travelled
	Carried weight		Carried weight	
	2,041,0 million tonnes	133,7 billion tkm	2,061,1 million tonnes	136,5 billion tkm
Road (excluding vans)	815,9	62,4	838,4	64,5
Road vans	60,8	1,4	63,3	1,4
Inland waterways	357,1	47,0	369,1	47,4
Rail	42,7	7,1	42,6	7,2
Pipeline	133,8	15,8	135,0	16,0
Maritime (sea)	629,1	-	610,8	-
Air	1,7	-	1,8	-



Favourable position in an international perspective

Every mode of transport has its own strengths. The actual value above all depends on the degree of urbanisation of an area, the nature of what is to be transported and the distance to be travelled. The efforts aimed at improving quality are presented in the separate visions on each of the modes of transport. And not without result. In many areas, we can be proud of what we have achieved in the past few decades. It is not unusual for us to

achieve a favourable score as compared to other countries. In the Global Competitiveness Report 2019, the Dutch infrastructure is 2nd (source: WEF, 2019). In the Logistics Performance Indicator 2018, the Netherlands is in 6th place (source: World Bank, 2018) (see: Toekomstbestendige mobiliteit, Brede maatschappelijke heroverweging, 2020) and in the DHL Global Connectedness Index (2020), the Netherlands is number 1 (source: PWC, Doing Business in the Netherlands 2022, 2022).

Block 2 Modes of transport in the Netherlands enjoy a solid starting position in international comparisons.

Bicycle: Together with Denmark, the Netherlands is at the top of the ranking of best cycling countries in Europe, as drawn up by the European Cyclists' Federation. Dutch people rely on the bicycle for more than one-quarter of their trips (source: Cycling facts).

Roads: the quality of our roads is very high, and the coverage of the charging infrastructure for electric vehicles is among the best in the world.

Railway: the Dutch railway network is one of the most intensively used networks in the world. In many fields of performance, the Netherlands is a frontrunner (source: international benchmark 2020).

Aviation: Thanks to the Air France KLM hub-and-spoke model, many intercontinental destinations can be reached directly from Amsterdam Airport Schiphol. Together with other airlines, a total of around 270 destinations can be travelled to directly – more than would normally be expected on the basis of the Dutch domestic market. The advantage of the hub system for Dutch passengers is that they are often able to fly direct.

Maritime and inland shipping: The Netherlands is the maritime centre of Europe, and Rotterdam is one of the world's largest seaports. Maritime shipping is essential in granting the Netherlands access to the global goods markets. The favourable location in a natural delta offers the seaports a unique position. They are connected to around 250 inland ports. Inland shipping is responsible for around 35% of all goods transport within the Netherlands and a similar percentage is transported abroad via inland shipping (for the Ruhr area in fact more than 50%).

Logistics: globally, the Netherlands occupies a leading position in logistics. The Netherlands is home to less than 0.25% of the world's population but is responsible for 3% of world trade and is worth more than 1% of global GDP (2021). More than half a million people work in logistics, and the sector contributes almost 9% to the GDP of the Netherlands (source: Panteia 2020). For Europe, the Netherlands is the logistic gateway: as a transport and logistics country, the Netherlands fulfils a critical function in worldwide managed *supply chains*. The Netherlands is in sixth place in the international comparison of logistic systems.

Pipelines: transport by pipelines represents more than 10% of total goods transport in the Netherlands. The network of pipelines is essential for energy supply and for the safe transport of hazardous substances for the petrochemical industry.

Action needed in the face of population growth, unsafety and sustainability

The favourable starting positions are no guarantee for the future, in which population rise and economic growth will result in growing demand for mobility. In terms of road safety, we have fallen from fourth to ninth place, in Europe. The zero-emission objectives and emissions also make further steps necessary (source: Toekomstbestendige mobiliteit, Brede maatschappelijke heroverweging, 2020), on top of the action already being taken for sustainable mobility (see chapter 4).

New challenges from outside the mobility domain are already emerging: the nitrogen problem, the war in Ukraine, drought and flooding, the consequences of the COVID-19 pandemic, housing shortages, and a serious shortage on the labour market. In the partial visions on the individual mobility domains, the awareness of these challenges is clearly expressed. The result is the following picture of the urgency for the mobility system:

Block 3

Development in demand for goods: goods transport is growing substantially in terms of transported weight in all modes of transport, in scenarios of both high and low growth. Growing demand for goods transport will result in the more intensive use of the networks (source: IMA 2021).

Development in demand for passenger transport: mobility is increasing in all scenarios, for many modes of transport, due to population growth and increased prosperity. A large proportion of this growth is taking place in, between, and from and to cities (source: IMA 2021).

Accessibility: accessibility for jobs and facilities in such regions as the Northern and Eastern Netherlands, the upper part of Noord-Holland, Zeeland and Limburg is declining. This is mainly the consequence of the expected shrinkage and clustering of jobs and facilities in these regions (source: IMA 2021).

Infrastructure: many roads, bridges, viaducts and locks were built in the mid-20th century and will therefore require large-scale maintenance or replacement over the coming period.

Safety: in the Strategic Road Safety Plan 2030, the stated ambition is to reduce the number of traffic accident victims to zero. However, there has been no further significant decline

in victim numbers over the past few years. As far as possible, we wish to avoid the related human suffering. The estimated costs to society of road unsafety amount to approx. €27 billion per year.

International security: the mobility of the armed forces is an essential precondition for military operations. The Member States of the European Union have therefore jointly decided to develop national plans for military mobility and to prioritise the implementation of those plans. With its National Plan Military Mobility, the Netherlands is concentrating on the concept of a transit country: a strategically located country for facilitating safe and rapid military movements. Moreover, with this in mind, additional capacity will be needed for defence tasks in the military airspace. In the period 2023-2035, there are plans for restructuring the airspace.

Climate: in the Climate Act, the objectives are laid down for a climate-neutral European Union by 2050, with the interim objective of 55% reduction of greenhouse gases in 2030 compared to 1990. Our daily mobility is responsible for around 20% of total CO₂ emissions (source: Klimaatakkoord; visie Duurzame Energiedragers in Mobiliteit). To successfully deal with the consequences of climate change, new requirements will be imposed on the mobility system.

Circularity: the Dutch government is striving to achieve a fully circular economy by 2050, in order to contribute to improving the climate, the environment, biodiversity and the security of supply of raw materials (source: : Brief Uitwerking Coalitieakkoord, 11 February 2022).

Living environment: the Dutch government has set the ambition of achieving a healthy, clean and safe living environment by 2050. The National Strategy on Spatial Planning and the Environment (NOVI) formulates it as follows: 'The task is to improve the health and safety of our living environment to such an extent that by 2050, the negative effects of the environment on our health are reduced to a negligibly low level.' This will be implemented via the National Environmental Policy (NMP).

Nature: pursuant to the European Bird and Habitats Directives, the Nature Conservation Act and the Act on Nitrogen Reduction and Nature Improvement there are no specific quantitative standards for nitrogen emissions or depositions when it comes to mobility. However, in order to halt the decline in nature and to achieve nature recovery, it is essential to focus not only on nature conservation in nature conservation areas but also beyond, so that more space is created for biodiversity. The Coalition Agreement is therefore explicitly addressing nature conservation and recovery, and combining the nature challenge with agriculture, housing and infrastructure.

The challenges and their urgency are made all the more evident by the shortage of resources in terms of money, personnel and physical space. Choices must therefore be made. We plan to make those choices on the basis of integrated objectives, aimed at **the right mobility in the right place at the right time**, within the Netherlands and across our national borders. In other words, a balanced approach to securing and maintaining high-quality accessibility to critical socioeconomic functions in the future. In achieving those goals, not all mobility will be possible or necessary in all places at all times and it will not be possible to infinitely satisfy all demands.

1.2 Ambition

Within the current public frameworks, everyone in the Netherlands is entitled to be able to travel by road and by public transport, through the air and over water, in order to reach their destination. In the same way that everyone has access to electricity, water and the sewer system. The central focus is on enabling people to fulfil their critical socioeconomic functions. People make intensive use of the right to mobility in order to satisfy such needs as healthcare, education, employment and daily shopping and the supply system that makes these functions possible. Due to population and economic growth, use of those functions is set to grow, over the coming years. Take for example the one million new homes that will have to be connected to the grid in the next ten years. The nature of the demand for mobility is also set to change. For example as a result of population ageing.

In addition to the right to travel, everyone is entitled to a healthy and safe living environment, now and in the future. The Netherlands has agreed on national and international environmental standards..

Against this background, the right to accessibility does have limits. With additional mobility due to population growth and population concentration in urban areas, maintaining the balance of public interests represents a greater challenge.

The Ministry of Infrastructure and Water Management has taken the initiative and is in charge of drawing up and elaborating a mobility vision on which the national approach to accessibility is based. The core of this vision is that national government will focus on infrastructure and mobility, in conjunction with a focus on proximity (spatial planning/ location policy) and on the policy for facilities (healthcare, education, employment, accommodation, etc.). The overall starting point is 'wellbeing economy'.

1.3 Objectives and strategy

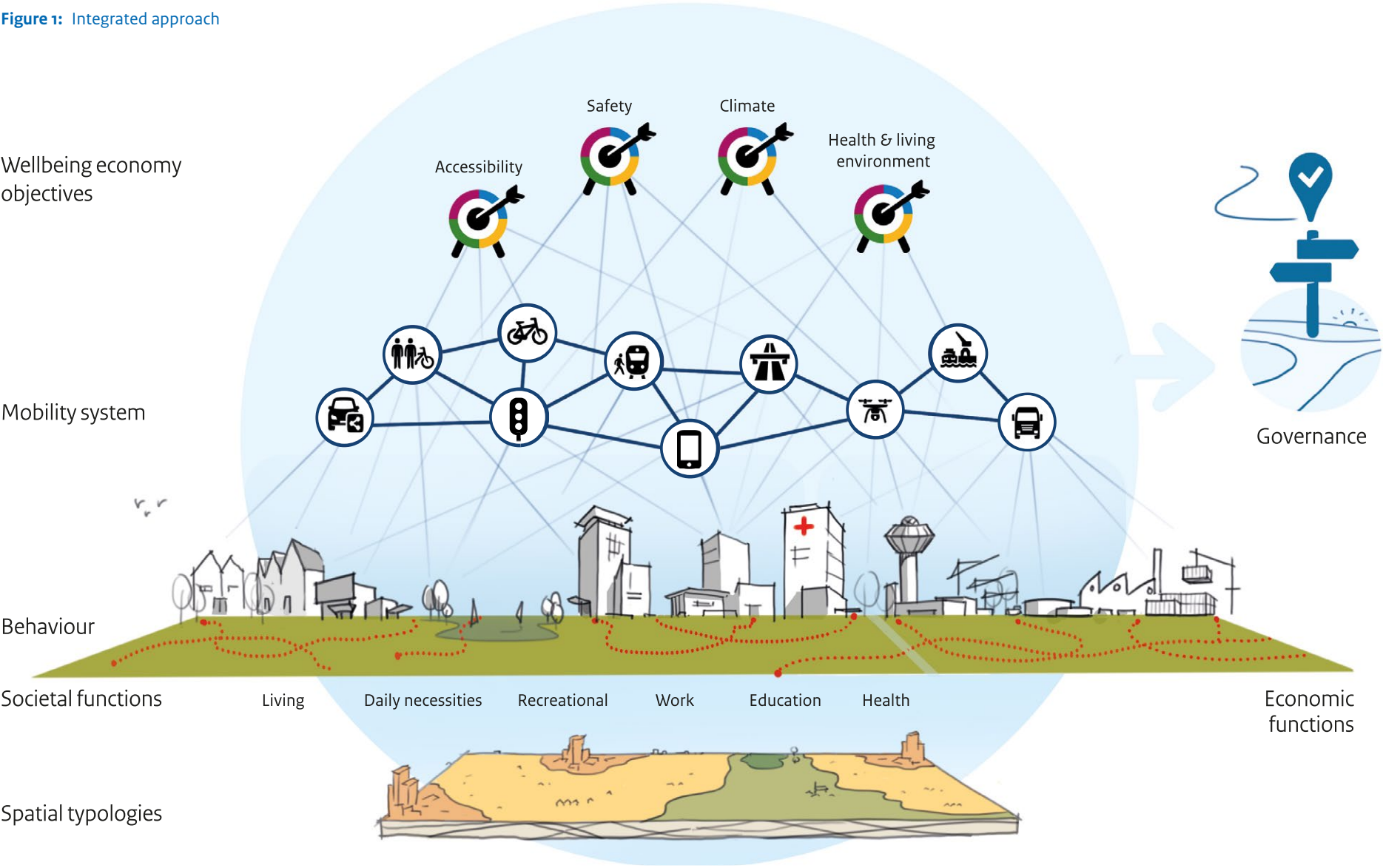
The broad nature of the definition of the term accessibility results in a major challenge not only for the Ministry of Infrastructure and Water Management but also for other government departments, at local and regional authorities and for business and industry. We will all have to join forces in order to safeguard the viability of high-quality access to critical socioeconomic functions, in the future. In this Framework Memorandum, we indicate which elements make up such an integrated approach, and how we aim to implement it. This is based on four strategic lines:

- 1 Formulating **integrated objectives**.
- 2 Providing **the right mobility in the right place at the right time**. The capacity of all modes of transport and **innovations** will be optimally utilised in order to achieve the objectives set. Both in the Netherlands and across the nation's borders.
- 3 Examining the compatibility of the integrated mobility system with **legal frameworks** for safety, healthy living environment, nature and sustainability.
- 4 Deploying integrated **steering and policy instruments**. The transport of goods and passengers from A to B can rarely be elaborated within a single geographical scale or within the remit of a single competent authority. Within national frameworks, what is needed is an area-specific approach.

In this memorandum, we elaborate the outlines of these four components.



Figure 1: Integrated approach







Integrated accessibility objectives

- a We view accessibility from a broad socioeconomic perspective.
- b Our overall goal will be to reinforce coherence:
 - with spatial planning (ensuring proximity)
 - with policy on critical functions (healthcare, education, jobs, life essentials, nature and economic development)
 - between national main networks and international networks
 - with other wellbeing economy objectives
 - between modes of transport.
- c And we will investigate how we can achieve integrated accessibility objectives.

2.1 Towards an integrated approach to accessibility

Over the past decade, the Infrastructure Fund has been converted into a Mobility Fund, to make it possible to weigh choices beyond the boundaries of the individual modes of transport. As part of that process, the National Market and Capacity Analysis (NMCA) has been converted into an Integrated Mobility Analysis (IMA). The IMA places the policy challenges in a broader perspective. In addition to the bottlenecks in the infrastructure network, bottlenecks are also described in terms of proximity to jobs and facilities, road safety, sustainability and a healthy living environment. The various visions on the individual modes of transport also contain elements of this expanded frame of reference. They express the realisation that good accessibility needs more than just arranging mobility and the mode of transport dealt with in the partial vision (see block 4).

For the future, we underline the growing importance of integrated accessibility. In other words, accessibility seen from a broad socioeconomic perspective in relation to jobs, production locations, shops, healthcare, education and recreation. And all implemented in such a way that a contribution is made to the transitions to renewable energy and circularity. This ties in with the already formulated partial visions, which entail a series of necessary challenges for mobility policy (see block 5).

These are important building blocks for integrated accessibility. By integrating our accessibility objectives, we are aiming for coherence between accessibility and the spatial tasks, with vital functions, with international networks, with other wellbeing economy objectives and the coherence between modes of transport. That relationship is further elaborated in sections 2.2 through to 2.6.

Block 4

Future prospects for car mobility: alongside other means of transport, the car is and remains an essential element of our mobility system. The social and economic importance of the car is and remains considerable. For many people and for many logistic movements, it is the best and sometimes the only realistic means of travelling from door to door. Cars are becoming ever smarter, cleaner and safer and on certain routes may in the future be able to drive autonomously.

Future vision on cycling: as well as being essential and healthy means of travel over shorter distances, cycling and walking are an essential link in public transport: almost half of train passengers and a growing number of bus passengers travel to the bus and train station by bicycle.

Future vision on public transport: public transport is an essential element of the mobility system, with a focus on the traveller and their door-to-door trips. Public transport and the railways can make an important contribution to such social challenges as housing, sustainability, access to work locations and satisfying the growing demand for mobility. The large cities enjoy strong collective transport combined with the bicycle, and short travelling times between them.

Civil aviation policy memorandum: KLM, Amsterdam Airport Schiphol, NS and ProRail and national government are working together on the Action Agenda for Trains and Aviation. The plan is built around six high-opportunity links: London, Brussels, Paris, Frankfurt, Düsseldorf and Berlin. For each destination, the plan outlines the possibilities for the short term and the key conditions for the longer term. For example shorter travelling times, expanding transport capacity on international routes and further improvement in the air/rail ticket product for transfer passengers.

Goods transport agenda: the network of waterways, motorways, railways and pipelines will not only be optimally utilised by 2050, but will be developed as an interdependent system. To a limited extent, the various modes of transport can operate as mutual alternatives. Cargoes can switch between modes of transport with a minimum of costs, procedures and loss of time. National government is working to achieve an integrated transport system.

Seaports policy document: More than in the past, national government wishes to consider the allocation of funding to mainport Rotterdam in combination with the further development of other essential clusters such as mainport Schiphol and Brainport Eindhoven, as economic core areas of national importance, the Greenports and the logistic system of sea and inland ports. This in no way represents a reduction in the special position of mainport Rotterdam but instead a broader economic vision from a national perspective.

Policy letter on maritime shipping: the accessibility of the Netherlands for goods must be increased while reducing congestion levels. This requires the deployment of all modes of transport, with excellent opportunities above all for transport via inland waters and Short Sea connections. With that in mind, national government will focus on the importance of integration of maritime transport (sea and inland shipping) in the logistic chain. To be able to transport cargo sustainably, reliably, rapidly, on time and at low cost, a seamless transport network will be required, with safe and secure maritime access routes, powerful logistic hubs and excellent hinterland connections, including good connections between the maritime transport network and other modes of transport such as road transport, railways and pipelines. Administrative harmonisation will be another important element.

Policy letter on inland shipping: The letter to Parliament on the future of inland shipping discusses the opportunities for inland shipping and the challenges facing the sector in becoming futureproof. A futureproof inland shipping sector is sustainable, innovative and an integral part of the new logistic chain, and operates in a futureproof network of navigable waterways. Inland shipping can relieve the pressure on the road network and play a central role in the mobility system of the future, but a number of necessary steps will first have to be taken. The measures needed to ensure a futureproof inland shipping sector will be elaborated together with the relevant stakeholders.



Block 5

Climate: pursuant to the Paris Agreement, the EU has set itself the target of climate neutrality by 2050. This in turn results in the so-called Green Deals, that fill in the EU strategy on climate neutrality and setting targets for 2030. With the Climate Act (2021) the target of climate neutrality by 2050 with as an interim target a 55% reduction in greenhouse gases by 2030 compared to 1990 is laid down in law. The vision on sources of sustainable energy in mobility (2020) is an elaboration of the part about sources of sustainable energy of the mobility chapter of the Climate Agreement. This vision also includes maritime shipping and aviation, that are outside the scope of the Climate Agreement.

Healthy living environment: to ensure air quality, an objective has been set for a permanent improvement in air quality, in line with the WHO guidelines, with as an interim target 50% health gains by 2030 compared to 2016, for the health effects of air pollution from domestic sources (source: Clean Air Agreement). New WHO guidelines have been introduced for noise. The National Environment Policy (NMP) will focus attention on this accumulation of environmental problems. The Healthy and Active Living Agreement (January 2023) aims to achieve a healthy physical environment that encourages exercise and interaction.

Nature: in the Nature Inclusive Agenda, work is underway on the broad application of nature inclusivity in all sectors and domains, including the infrastructure: railway lines, motorways and roads, canals, waterways and the energy infrastructure. Surrounding this infrastructure is a potential nature network that covers around 8% of the total surface area of the Netherlands. To date, nature has not been included as a separate *asset* with its own quality requirements in the management and maintenance of this

infrastructure. For that reason, work is being carried out on two campaigns: (1) Integrating nature-inclusive working in visions, policy and action plans; (2) including nature-inclusive working in the scope and awarding of contracts for the construction, design and management of infrastructure. The Ministry of Agriculture, Nature and Food Quality is working on a standard for ecological verge management.

Water and soil: climate adaptation in the mobility domain starts with the protection of the mobility system against the changing condition of water and soil due to climate change. It also relates to managing the negative impact of the mobility system on the quality of water and soil. Water and soil are guiding principles in Dutch government policy when it comes to reaching future choices about such functions as urbanisation, agriculture, nature development and mobility.

Spatial development: the ambition of the National Strategy on Spatial Planning and the Environment is that by 2050, the Netherlands will function as a network of well-connected cities and regions, supported by a rapid, sustainable and comfortable mobility system. At the same time, living, working, nature, landscape and facilities in towns and cities will gradually become increasingly interconnected. We can work more from home, there is more green in our immediate residential environment and we walk and cycle more. Issues relating to digitalisation and mobility/accessibility are closely related. All of these options require excellent accessibility. For that reason, by 2050, we will have a sound and reliable infrastructure as part of a safe, robust and sustainable mobility system. This applies both to connections within and between cities and economic core areas throughout the country, cross-border connections, international trading networks and hinterland connections.

Safety: traffic safety is a spearhead in the Cabinet's Coalition Agreement. The Strategic Road Safety Plan 2030 features a zero ambition: every victim of traffic accidents is one too many. In 2021, Parliament adopted a motion for an intermediate objective of 50% fewer traffic accident victims by 2030. This is currently being implemented. As well as ensuring safety for traffic participants themselves, it also includes rules for the acceptable risks for local residents of infrastructure elements in the event of an accident.

National resilience: in December 2022, the Council of Europe adopted a directive and recommendation for making critical entities (including infrastructure) that are of crucial importance for critical social functions and economic activities more resilient and less vulnerable. They must for example be resilient to hybrid attacks, natural disasters, terrorist threats and health crises. Member States must also be capable of preventing, protecting themselves against, responding to and recovering from threats of this kind. They must therefore formulate a national strategy to increase the resilience of critical entities, conduct a risk assessment at least once every four years and identify which critical entities provide essential services. This ties in closely with the security (including cyber security) of our critical infrastructures and international and domestic hubs, such as the port of Rotterdam, as well as the undisrupted functioning of society in the Netherlands and Europe.

2.2 Coherence with the vision on spatial challenges

The considerations in the mobility domain and spatial development in an area should ideally be organised coherently. Structuring principles in that process are the requirements imposed by the first layer (water and soil) on the structuring of the second layer (network) and the third layer (occupation). This is crucial for the mobility system according to the requirements of climate adaptation, water quality, circularity and biodiversity. It will help contribute to nature inclusivity in infrastructure planning, as a means of considering the spatial integration of infrastructure by consciously also considering whether space can be created for biodiversity, so that the infrastructure and its use can be combined with space for more plants and animal species diversity.

In the second layer – the network layer – close harmonisation will be essential between housing, commercial and work locations, the energy transition and mobility. This relates both to appropriate spatial choices for new housing and commercial sites, and organising economically and socially efficient connections.

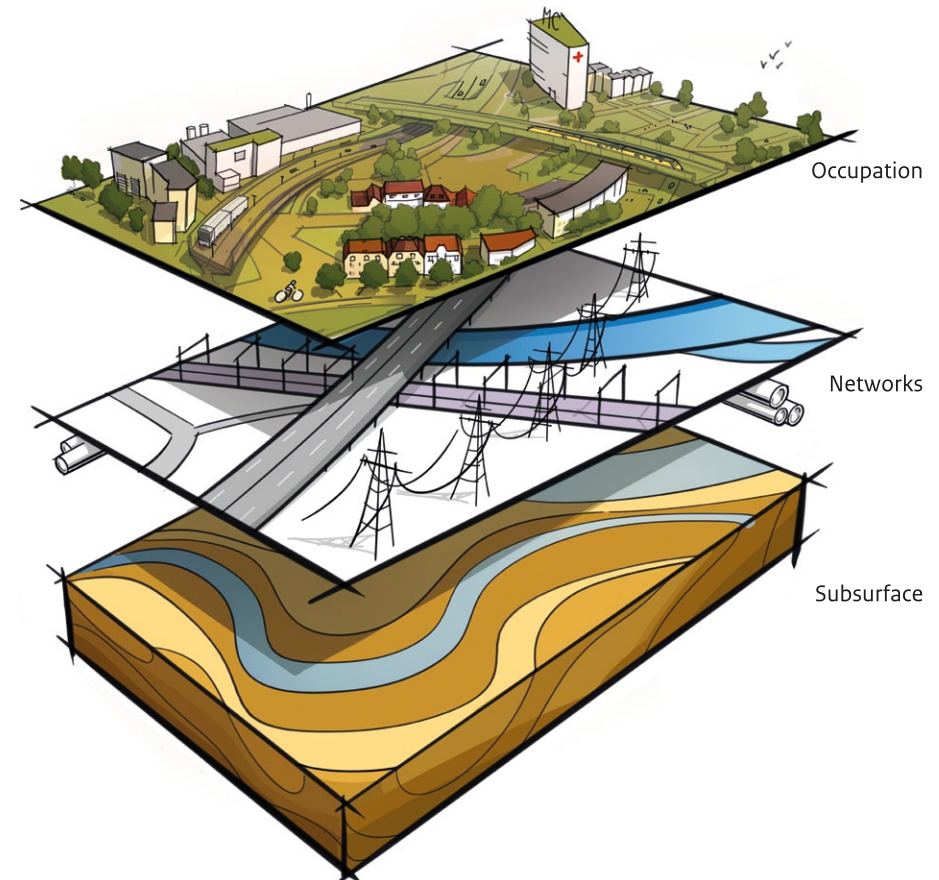
Given the scarcity of physical space, coherence in meeting the challenges must be recognised and utilised. Substantive ambitions, transition challenges and bottlenecks must all be brought together.

Block 6 Examples of combined accessibility and space

We can do it. As has for example been shown with the spatial integration of the A2 motorway in Maastricht and the concentration of logistic activities in the multimodal hubs in goods transport corridors. At the Ministry of Infrastructure and Water Management, too, we have enough challenges facing us, on the drawing board. The reallocation of civilian and military airspace in combination with urban developments in the north wing of the Randstad conurbation. Consideration of a Lely railway line in combination with the Delta Plan for the North and cross-border train connections to the east and north-east. The conversion of pipelines for the transport of oil and gas to hydrogen (H₂) via the port of Rotterdam. There is sufficient space for us to more emphatically combine our objectives with the transitions and other challenges in the spatial domain, as a means of identifying surprising new solutions.

The various spatial challenges and their ties with mobility are outlined below.

Figure 2: Different system layers in the context of mobility



Water and soil are the guiding elements

The infrastructure is susceptible to drought, flooding, heat and other climate impacts. The extreme flooding in July 2021 demonstrated that that susceptibility can in fact result in the washing away of houses and infrastructure. Given the large-scale claims on space for housing, energy, mobility, agriculture and nature, the space available for mitigating climate impact is shrinking. The risk that the infrastructure will experience such negative effects is set to rise in the future. This imposes physical limits on the mobility system.

The Delta Plan on Spatial Adaptation specifies that the whole of the Netherlands, including the main infrastructure, must be climate resilient by 2050. In spatial planning in general and planning for the infrastructure in particular, we must take account of climate adaptation. Ensuring that management and maintenance of the networks is well organised is an essential prerequisite for the climate resilience of those networks.

Water and soil are guiding elements in making choices in the mobility system. It is no longer possible to build everywhere. The construction of infrastructure cannot be carried out at the expense of the soil and water system (salination, desiccation, soil subsidence). In arriving at these decisions, the 'no, unless' principle applies.

Housing locations: urbanisation challenge

The Netherlands faces a major urbanisation challenge. According to forecasts, the Dutch population will continue to grow at least until 2050. In addition, more and more people are living on their own.

The growth in the number of houses will result in increased demand for mobility. At the same time, the way in which urbanisation takes place influences the way in which we travel. Compact urbanisation entails a larger role for the bicycle and public transport, and attention for adequate supply systems for jobs, institutions and businesses. Spreading out home construction will result in more transport by car, over longer distances. Location also influences the living environment and health (air quality, noise).

In the framework of the NOVEX programme, the provinces have been called upon to integrate the spatial plans of the major challenges for the coming decades, including urbanisation, sustainability and mobility. In parallel, an integrated spatial future vision will be drawn up in the new Spatial Policy Document (Nota Ruimte). This includes the urbanisation challenge, in close combination with mobility.

There is already much harmonisation between urbanisation and mobility. In the Coalition Agreement, €7.5 billion euros were set aside for good accessibility and improving access to the 17 large-scale NOVEX housing locations and other locations. In the choices relating to this funding, it was determined whether the mobility investments actually result in accelerating housing. The opposite was also considered: whether the choice of location and the necessary access to residential districts do not in fact lead to a worsening of the bottlenecks further down in the mobility system. It was also assessed whether housing and the accompanying access can satisfy the parameters for water and soil, nitrogen, noise and external safety (now and in the long term). This broad-based system of assessment and consideration is an excellent example of a consideration framework within which space, accessibility and living environment are successfully combined.

Block 7 New construction and accessibility of facilities

Housing will above all be realised in existing urban areas, often close to public transport hubs and in the vicinity of existing facilities and jobs. In developing metropolitan housing locations, the related mobility funding (for example acceleration agreements, mobility packages and public transport scale leaps) will be invested in local and regional infrastructure, including active mobility (walking and cycling), shared mobility and mobility hubs. In this way, via the housing challenge and the related mobility investments, the focus will be shifted to the accessibility of jobs, facilities and social contacts, as a result of close proximity. Because more essential destinations will be brought within walking and cycling distance, the accessibility of these facilities will be increased.

Business locations

Work locations also have a major impact on mobility. The accessibility of companies to employees and goods is essential for manufacturing and trade and for consumer needs. In the programmes for work locations (Ministry of Economic Affairs and Climate Policy) and GRIP for large-scale company business locations (Ministries of Economic Affairs and Climate Policy, the Interior and Kingdom Relations, Infrastructure and Water Management and the provinces), agreements are being reached in relation to clustering, provincial need assessments, regional added value, reuse, landscape integration and the design of commercial estates and work locations.

The increase in numbers and concentration of employment at a number of urban work locations, with more widely distributed housing, will result in growing numbers of commuter movements to and between cities. This growing demand for transport has already partially been addressed in the form of infrastructure investments for the large-scale housing locations. At the end of the day, a focus on proximity of housing, working and facilities, and the smart concentration of working and facilities around public transport hubs will make an important contribution to the efficient and sustainable use of our mobility system.

For the planning of work locations, we operate according to four principles:

- preventing mobility movements by organising the proximity of employees and efficient traffic and transport between economic and urban hubs;
- better utilising existing infrastructure by developing or using locations where there is still space on the mobility networks;
- making optimum use of alternative modes of transport; and
- investing sustainably in new infrastructure by focusing on corridors and hinterland hubs in combination with the activities that depend on these corridors.

2.3 Coherence with policy for critical functions

Accessibility is closely tied to spatial planning, but also policy for critical social functions such as employment, healthcare, education, production, daily shopping and recreation. The security of supply for goods (such as raw materials for energy, equipment for healthcare, food) also represents a critical function of goods transport. Accessibility is not exclusively determined by infrastructure and mobility, but also by the policy for these critical functions.

The realisation is growing that a coherent approach is needed, in which both the sectoral socioeconomic domains and the mobility domain all play a role. One example is the possibility of reaching a 'green' environment within a set number of metres or the idea of the 10-minute city. Our aim is to further emphasise the link between accessibility and critical socioeconomic functions. Within mobility policy, this requires a more emphatic focus on the effects on the accessibility of facilities. And in terms of facilities policy, it requires greater attention for the effects on mobility. The result will be more coherent choices that contribute to a greater insight into accessibility deficits and their prevention. This is indeed an area of shared responsibility between the ministries concerned. In block 8, we offer an initial inventory of the current 'accessibility visions' for a number of critical functions.

The accessibility needs are diverse from the point of view of the different critical functions. Facilitating national security (military and disasters) for example imposes requirements on accessibility and reliability of the national mobility system, while ensuring the proximity of green in the neighbourhood calls for a more local elaboration.

Block 8 Accessibility from the perspective of critical functions

In respect of **education**, national government policy is aimed at ensuring access to education on location. In primary education, municipalities are responsible for the provision of transport of schoolchildren. There are no national standards for maximum journey times or distances to educational institutions. On the other hand, municipalities are required to lay down rules for journey times for transport for children with special needs and the conditions according to which agreements can be reached on these facilities (this may be private transport, public transport or transport for children with special needs). There are also options (including statutory ones) for funding a new location in the event of sufficient demand subject to special conditions. For secondary professional education and higher education, access is facilitated by the issuing of a student public transport pass.

In terms of accessibility to **healthcare**, the national policy spearhead is to offer healthcare close to home where possible (if possible digitally via e-health or by some other means in the home or in the neighbourhood, for example low-complex healthcare) and further from home if necessary (for reasons of quality or efficiency, for example specialist healthcare). As far as possible, the aim is to provide tailored healthcare services. It is currently being investigated whether the 45-minute catchment area standard for accident and emergency departments and acute obstetric services can be replaced by standards that better reflect medical quality and accessibility. This approach does involve greater need for helicopters for trauma care and ambulance care, in order to transport people to highly specialised healthcare centres, in time. Municipalities are responsible for organising transport for people with an impairment within the Social Support Act (Wmo).

When it comes to access to **jobs and economic functions**, the aim is as far as possible to achieve optimum utilisation of infrastructure, so that the system does not become bogged down, and access to jobs and economic functions remains possible. In the letter to Parliament on space for the economy (October

2022), three clusters of national importance were identified: 1) energy-intensive industrial clusters (Northern Netherlands, North Sea Canal area, Rotterdam-Moerdijk, Zeeland, Chemelot), 2) knowledge clusters/campuses and 3) large-scale business locations (logistics and otherwise). These cluster locations require physical space for sustainable mobility, optimum home-work connections and a multimodal connection to important national and international transport corridors.

When it comes to **shopping**, the national ambition is as far as possible to match locations for department (and other) stores and new offices and commercial estates with the traffic and transport network, thereby reinforcing the attractiveness of urban and rural locations (NOVI). Municipalities are able to implement policy for accessibility or localisation of shops and to create additional infrastructure access. However, they have little influence on the eventual choice by shopkeepers for opening or closing a shop, or on consumers on whether or not to use a particular shop. As a consequence, shops in areas with a declining population often move away, so that creating possibilities for residents to reach shops further afield becomes increasingly important.

As concerns accessibility to **green and nature**, the Ministry of Agriculture, Nature and Food Quality is working with other stakeholders on the Nature Inclusive Agenda. The aim of this agenda is to prevent damage to nature in all parts of society, and to ensure the possibilities offered by nature are used, on the road to a nature-inclusive society. Amongst other things, efforts are focused on integrating nature in infrastructure and construction plans. Government bodies (including semi-government bodies) and market parties are together developing standards for access to green in built-up areas according to the objective group.

Reliable and affordable green **energy** is a basic requirement for a sustainable society and economy. The urgency of expanding the infrastructure in time is clear. This is also confirmed in the

recently published Climate and Energy Outlook 2022 (appendix to Parliamentary Paper 32813, no. 1112). The high prices for fossil (and other) energy are increasing the desire for faster sustainability measures. Without a suitable infrastructure for energy and raw materials, the Netherlands will lose its attractiveness for existing and new businesses, and as a result its earning capacity will shrink. Without timely energy-infrastructure investments, the housing challenge and the sustainability ambitions for example for mobility will also be threatened. The Dutch government is making every possible effort to realise the necessary infrastructure in time (see progress letter MIEK, dated 2 December 2022).

In facing up to **disasters** (natural disasters and fires) and for **national security**, it is crucial that the emergency services such as fire brigade and police be able to reach a home, shop, company or other location, in good time. Time standards have been set for this purpose, and laid down in law. These time standards are taken into account in the localisation and deployment of vehicles (via proximity). The police aims to be at the scene within 15 minutes following receipt of a report, in 90% of all emergency calls. It goes without saying that good quality infrastructure and access to residential and work areas are relevant in this context.

With regard to **international security**, the government has the constitutional task of protecting our territory and that of our allies. The government aims to achieve this objective by establishing three multimodal corridors for military movements according to the infrastructure requirements for military mobility drawn up by the EU. These are physical requirements on facilities and infrastructure in respect of roads, railways, ports, airports and inland waterways. The bottleneck analysis reveals that for the most part the Dutch infrastructure satisfies European military requirements, but that temporary measures and alterations are sometimes necessary to the logistic chain in order to facilitate military transports. The tasks the armed forces are required to perform pursuant to the Constitution also imply the use of airspace.

2.4 Coherence with international networks

The Netherlands is typically considered an open and internationally oriented economy and society. In particular our country is linked to other continents of the world via a worldwide network of destinations by aviation and maritime shipping. The excellent international accessibility of our country is of essential importance for our open economy and contributes to the establishment and business climate for international businesses, the competitive position of our country and the range of services available to Dutch and foreign travellers. The quality and continuity of this international network are of public importance.

To measure the public importance of good international links, both objectively and unequivocally, the Ministry of Infrastructure and Water Management developed the policy framework for aviation network quality (Parliamentary Paper 31936-1021). Using this policy framework, the quality of the network at Dutch airports can be objectively and unequivocally measured, with a focus on the quality of the connections as opposed to the quantity. Over the coming period, the Dutch government can use the policy framework to map out the importance of destinations for the Dutch economy, and monitor the development of the quality of the network of connections.

For international train traffic, we are concentrating on direct links to large parts of the Netherlands and the most important strategic hubs, economic centres and inner cities in Germany, Belgium, France and England. We also wish to improve the market opportunities for international night trains, thereby creating an attractive international product for journeys of up to 1250 kilometres. Moreover, together with the neighbouring countries and border regions, we are encouraging new, short connections by train, tram and bus in the border regions, and permitting existing trains to travel across the border to nearby strategic hubs.

The Netherlands has access to major seaports, a network of transport facilities via the existing rivers and canals, excellent goods transport corridors that connect to three trans-European transport links and a solid maritime cluster. As such, the Netherlands has developed as the gateway to Europe for global goods flows and an attractive business location for companies. We wish to safeguard this strong position, also because of its important contribution to Dutch earning capacity. This requires international cooperation,

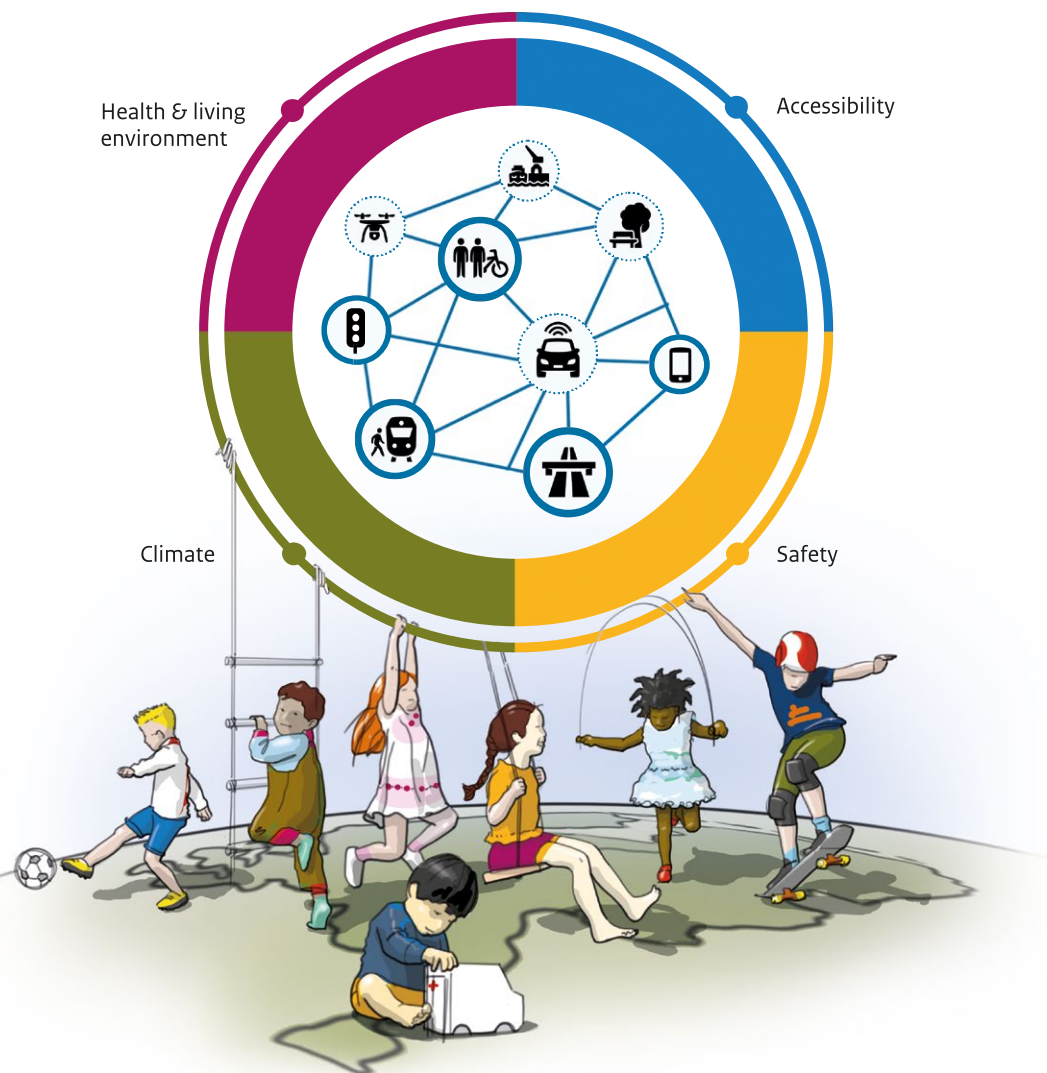
monitoring of the good connections to European transport links and compliance by Dutch maritime shipping with high international standards. By helping to establish European and global agreements, such as the EU-ETS (Emissions Trading System), the competitive capacity and a level playing field for the Dutch transport sector can be maintained.

2.5 Coherence with other wellbeing economy objectives

In determining the integrated accessibility objectives, it is also important to follow wellbeing economy economics. Wellbeing economy economics relates to:

- Mobility as a 'carrier' for wellbeing economy tasks: Mobility policy not only ensures accessibility but also contributes to the energy transition and achieving climate goals, building new homes and ensuring they remain accessible, creating high-quality public space, improving the quality of life and biodiversity.
- The balance with other objectives within the field of wellbeing economy: Mobility policy has a positive impact on the psychological and physical wellbeing of people, by facilitating contacts, encouraging exercise (walking and cycling) and facilitating economic development. There is also negative impact from mobility on wellbeing, due to harmful emissions or unsafe situations (in particular traffic situations).
- Taking account of the distribution effects of policy. Mobility policy has different impact for different groups of people or areas. For some people it is difficult to make use of mobility, so that critical functions are less accessible to them (accessibility deficits). Digitalisation can result in exclusion of the less digitally skilled. An insight into the distribution effects and accessibility to mobility can give rise to an area-specific approach or an objective group approach.
- Taking account of future generations. Mobility has consequences for the current and future generations. In the analysis and formulation of mobility policy, this is taken into account.

Figure 3: Wellbeing economy objectives and the mobility system



2.6 Coherence between modes of transport

In chapter 3, we describe how through a more coherent approach to the modes of transport, we aim to reinforce the scope and level of service provided by mobility to the social and economic challenges.

2.7 Towards achieving the integrated accessibility objectives

Taking account of the focal points already referred to, the formulation of integrated accessibility objectives contributes to setting the course we need to follow in order to safeguard the long-term future of high-quality accessibility to critical socioeconomic functions

Block 9 Parliamentary Motions

Both during the MIRT Memorandum Consultation on 28 November 2022 and the budget negotiations on 30 November and 1 December 2022, the Mobility Vision was discussed in Parliament. In the debates, a request was issued to investigate an accessibility standard for facilities. There were also calls to include (1) regional accessibility and (2) spreading, avoidance and working from home, in the vision:

- The motion from Members of Parliament De Hoop (PvdA) and Bouchallikht (GroenLinks) about a national vision for a basic level of accessibility and the introduction of standards as are proposed in its report by the Netherlands Environmental Assessment Agency (PBL).
- The motion from Members of Parliament Van Ginneken (D66) and Van der Graaf (ChristenUnie) regarding a priority list and an approach to the least accessible education, healthcare and employment clusters in the Netherlands.

The social and economic functioning of Dutch society requires a basic level of accessibility. Everyone in the Netherlands must be able to reach critical facilities within a set time, and security of supply for essential goods must be guaranteed.

Together with other ministries, we are examining for which facilities this minimum limit will be defined (at least including education, healthcare, jobs and food supply). This will also help us identify the types of objectives this results in, and which instruments have to be deployed. This will in turn contribute to reducing transport poverty. Both public and private partners will be carefully included in the elaboration process.

Each region has its own accessibility issues. Local governments, residents and businesses are often in a better position to clarify the local needs. Within national government system responsibility, national government and regional partners will elaborate the quality profile for accessibility that those areas hope to achieve. This will involve ensuring coherence between spatial development, social and economic functions and the wishes of users of the mobility system. For goods transport, this quality profile will take the form of goods transport corridors.

Block 10 Elaborating objectives

In jointly elaborating the accessibility objectives, consideration could be given to both the focus and the form of these objectives, and the role of the various stakeholders. Possibilities include differentiation depending on the type of functions, modes of transport and objective groups, the desirability of legally binding standards, interim objectives, etc. The Netherlands Institute for Transport Policy Analysis (KiM) has drawn up an analysis framework for this purpose (see appendix to this Framework Memorandum).



3

The right mobility in the right place at the right time

- a To ensure that socially and economically important facilities remain accessible in the future to people and businesses, we must make use of the full capacity of all modes of transport. The goal is to ensure the right mobility in the right place at the right time.
- b This relates to five points:
 1. We organise modes of transport as alternatives (substitutes) for each other with the efficient deployment of each of those modes of transport (from the integrated objectives and public frameworks);
 2. We organise modes of transport in such a way that they supplement (complement) each other in the transport or travel chain from A to B and ensure a seamless connection;
 3. We organise hubs so that from the viewpoint of the critical functions served by the mobility system, they form effective and efficient transfer and transshipment points;
 4. We make use of the opportunities offered by innovations in strengthening the mobility and transport network;
 5. We utilise the opportunities that occur in an international perspective.

3.1 Using every capacity

When it comes to using modes of transport, we assume the integral strengths of each of those modes of transport: is it a question of individual or collective transport, what distance is covered, in what area, and how much surplus capacity is there?

Better use of the still available capacity in the network is not something that happens automatically. It requires an active effort. The goal is to achieve a level of network utilisation that ensures a better match between supply and demand of transport services: the right mobility in the right place at the right time. The freedom of choice for passengers and shippers requires an approach in which we encourage the users of the mobility and transport networks to select a mode of transport of their choice.

Insight into residual capacity in the system

The recent letter to Parliament about the *modal shift* approach describes how existing bottlenecks in the multimodal network will be tackled. Shippers are encouraged to consider using surplus capacity on the railways and in inland shipping as an alternative for transport by road. For travellers, greater insight can be generated into the possibilities for reaching their destination comfortably: how much seating capacity (in car, train, bus, tram or metro) is available and what is the required travelling time for the various alternative modes of transport? In its investigation of capacity in the system (2021), the Netherlands Institute for Transport Policy Analysis (KiM) conducted an initial assessment of what capacity is still available and examining various possible shifts.

Capacity utilisation is of additional importance because an analysis by the CPB revealed that over the coming decades, large-scale infrastructure projects will often be less cost effective. One key reason for this fall in cost effectiveness is the high installation and integration costs for new infrastructure, specifically at those locations where physical and environmental space is already scarce and hence costly.

Advances in the digitalisation of processes in the mobility domain are an essential precondition for an integrated mobility policy. To achieve synergy in the various modes of transport, the interchange of data between the modes of transport is essential. The success of realising hubs for passenger and goods transport will for example be reinforced by the possibility of exchanging data about the occupancy levels in means of transport, and loading percentages. Also in order to optimise the use of physical networks, data must be available from those networks, to permit targeted management.

Flexibilisation

Greater flexibility in terms of supply and demand is an essential key in making optimum use of the capacity available within the mobility system, and creating space for new transport concepts in goods and passenger transport.

For example, large-scale collective transport is no longer sufficient to meet the demands from passengers, with fixed infrastructure, long-running concessions and costly means of transport. With a flexible and diverse selection of additional collective transport (public and private), such as the existing Collectief Vraagafhankelijk Vervoer (Collective for Demand-based Transport), it is possible to tie in more closely with individual travel needs. This calls for agreements between government and transport companies about timetables and means of transport for tailor-made transport solutions, with flexible or semi-fixed routes.

Block 11 Innovative collective transport

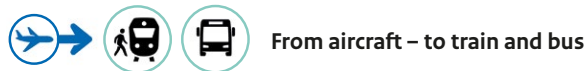
Traditional public transport is a form of collective transport that provides travel according to fixed timetables, along fixed networks of routes. Thanks to such developments as automation and digitalisation, more possibilities are emerging for making collective transport more flexible. The development of shared bicycles, scooters and cars is just one example. The total proportion of shared mobility is still relatively limited, but in urban areas is showing rapid growth. In certain areas and for certain groups of passengers, it can represent an important addition to their range of transport options. In the logistic chain, too, the sharing of space could represent an attractive, cost-efficient option.

In neighbourhood bus and group transport, flexibilisation of collective transport is already clearly visible. The concept of Bus Rapid Transport (BRT) is another form of flexibilisation, as an alternative for rail travel over longer distances between A and B. It is conceivable that new transport marketplaces will emerge on which the transport of passengers and/or goods from A to B will be marketed, possibly via user collectives and transport cooperatives that mediate in the accessibility of social and economic functions, for their users. Private parties can in this way become important players in the provision of collective transport, in the future.

3.2 Optimum deployment of modes of transport

Can flows of passengers and goods be adjusted in such a way that the mobility system as a whole is more efficiently utilised? This is certainly a question at issue in the following connections:

International passenger transport

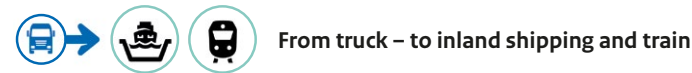


There are a number of initiatives currently underway aimed at encouraging sustainable international travel, for both public and private parties. NS, ProRail, Schiphol and KLM are working together with the Ministry of Infrastructure and Water Management and the train and aviation action agenda, with the aim of further improving the international train as an attractive alternative for aviation, for six priority destinations Brussels, Paris, London, Düsseldorf, Frankfurt and Berlin.

Collaboration with partners is essential, for example in order to match timetables and to create a sustainable European mobility system. One remaining point for attention here is the emergence of for example the Flix-Bus. Because the coach is both cost-effective and attractive (source: Prijs van de Reis, CE Delft), coach travel can also contribute to the connectivity of the Netherlands, certainly in situations where international train connections are not an option.

Goods transport

According to the size of the goods flows and the connection to the trans-European logistics networks, the Netherlands has four goods transport corridors. Above all the hinterland connections via the East and Southeast corridor (Brabant route) and the 'new' South corridor (Amsterdam, Rotterdam, Antwerp) are seen as decisive in the functioning of the transport system and the relevance of Dutch logistics on a European scale.



The aim is to reinforce the position of railways and waterways as alternatives for road transport. The shift to another mode of transport is the first step towards a highly integrated and robust transport system. The future vision on inland shipping, for example describes how inland shipping is relevant to and can grow in importance for the logistic chain. Consider the transport of large cargoes over long distances, in combination with well-integrated pre and post-transport by road or pipeline. This is already a commonly used formula in container transport and the chemical sector.

There is plenty of surplus capacity on the waterways. To utilise this potential, major advances will be needed over the coming years. This sector needs to strengthen its logistic network in order to face up to the challenge of a 'reverse modal shift'. Inland shipping needs to rapidly achieve more sustainable status. Practical proposals will be elaborated on this issue, in consultation with the sector.



Short sea shipping is another area of opportunity: sea transport over relatively short distances. For this reason, national government wishes to integrate maritime transport in the logistic chain. Not only does this require a good physical connection with other modes of transport. Solid administrative links are also important. Transport documents used for one mode of transport may not form an obstacle for continuing the journey with another mode of transport. Short sea transport still has a considerable deficit compared to other forms of transport within the EU. The European project Blue Belt is the first step towards a European maritime space, without borders.



From transport – to pipelines for hazardous substances

The transport of gases and liquids via pipelines can free up other modes of transport, above all tanker shipping and rail transport. It also restricts the safety risks and nuisance for local residents. In the chemical industry, demand is growing for the development of pipelines for the transport of hydrogen, CO₂, LPG and propene. Pipeline connections are currently being developed for the cost-efficient, sustainable and safe transport of gases and liquids from Rotterdam to Chemelot and the Ruhr area – the Delta Corridor.¹ Work is also underway on a policy framework for pipelines as a complete alternative within the future goods transport system.

Passenger transport within the Netherlands

In national passenger transport too, modes of transport can be evaluated and mixed: car, bicycle and other forms of active mobility, train, bus, tram, metro, shared mobility, motorcycles, scooters, etc. There is already regional attention for influencing this mix. This could make a real difference in urban and rural areas – and in the small town areas between them.

- 1 In **urban areas**, public transport occupies a more important position in the mobility mix than in the Netherlands as a whole. This applies in particular to inner cities. The strength of public transport in these areas that it is able to transport large numbers of people on busy routes in densely populated areas with limited impact on space and the living environment.

Cities should also remain accessible to cars, both for visitors to the facilities and residents of the cities. To keep inner cities accessible and to improve the air quality, work is underway on hubs at strategic locations or at city limits, where people can switch flexibly, safely and rapidly to active, sustainable and where possible compact means of transport, both individual and collective. For example forms of public transport, shared mobility or bikes (including cargo bikes).

In cities, buses, trams and the metro offer a good, public access alternative. Cycling and walking represent flexible additions. Hence the provision of good and fast bicycle and pedestrian infrastructure.

To support door-to-door trips, the transport system in urban areas will be further strengthened by considering all collective and individual means of transport together. Access will be enlarged, as will comfort, social safety and reliability. Passengers boarding collective transport must be confident that they will reach their destination. Making the journey plannable in advance simplifies this process. This can be achieved via an app for shared cars, public transport and bicycle use. When confirming the journey, a guarantee is issued that these resources are all available or that alternatives will be offered if necessary.

- 2 **Suburban areas, small towns and large villages** are home to a large proportion of the Dutch population.

Of the 75% of the population who live in urban areas, half live in metropolitan areas with the other half living in the surrounding suburban areas (in other words more than 37% of the population). This is more than in any other European country (source: Netherlands Environmental Assessment Agency (PBL), *De stad verbeeld*, 2015). Given their location, these areas have their own, often complex mobility needs.

Residents of these areas – for example two-parent families with young children – must lay a mobility puzzle, every day. With one parent working in the city centre, child day care and school in an adjacent district, the other parent working in a municipality slightly further away, daily shopping in the local neighbourhood, children who have to travel to the periphery of the municipality for their sport activities, etc. Without the flexibility of private transport, it is difficult to imagine that these residents can have practical access to important social facilities.

¹ See letter to Parliament on the Delta Corridor project approach (Parliamentary Paper 29826-134).

Block 12 PBL analysis

With its report *Toegang voor iedereen?* (Access for all?), the Netherlands Environmental Assessment Agency (PBL) provided a first insight into the accessibility of basic facilities and jobs. For the first time, this study offers us a quantitative insight into the nature of the differences in accessibility between objective groups, modes of transport and facilities. It discusses the accessibility of essential destinations such as healthcare, education and work. The study reveals that there are major discrepancies in the accessibility of basic facilities and jobs. In city centres, accessibility of facilities and work is high, but outside those areas – at the periphery, in suburban areas and in rural areas – those same facilities are only accessible if you have access to a car.

- 3 In **rural areas**, the car is essential for accessibility. Here, cars literally have the space, and enjoy a relative advantage in terms of affordability and accessibility. Many residents in these areas use this means of transport and indeed are required to do so, because there are no cost-effective alternatives, either from a public perspective or a private perspective. The challenge in rural areas is maintaining social facilities for local residents, including the connections for reaching them.

At the same time, certain groups are dependent on public transport. Above all young people with no driving licence, the elderly for whom car and bicycle is no longer an alternative, and people who cannot afford to purchase a car. This situation places alternative modes of public transport very much on the agenda in these areas. The most prominent opportunities lie in tapping in to the communities and their needs.

Traditional public transport systems in rural areas are concentrated on routes that are relatively intensively used. This applies both to buses and trains. As a consequence, the essential element for local residents is increasingly pre and post-transport. The transfer must be ‘warm’, with good bicycle parking facilities, bus stops, options for replacement transport in the event of breakdown, etc. The on-call bus and on-call car can to some extent compensate for the shrinking public transport service. This shift from traditional public transport to collective transport is a prominent option for residents of rural areas.

Block 13 The Groningen approach

The mobility programme for the Province of Groningen places the approach to collective transport in a new light:

“In 2018, transport for schoolchildren and social support transport, regional taxi and neighbourhood bus services were integrated, with the establishment of the project organisation Publiek Vervoer and a common tender procedure for public transport in Groningen and Drenthe. This also led to the introduction of the hub taxi. The goal is fine-meshed public mobility in outlying areas. This makes transport more efficient and better organised for the passenger, but still available at the public transport rate. This service will transport you from any front door to a hub, and from any hub back to your door. The use the hub taxi expanded gradually until the COVID-19 pandemic. We are now seeing passengers increasingly making use of this door-to-door solution: use levels are now once again higher than the pre-COVID rates. To better optimise this process, we are broadening our approach and working towards people’s mobility. A single system that will take you anywhere, even if you have no own vehicle (car/bicycle) at your disposal. (...) The basis for people’s mobility consists of the current basic network of public transport, hubs and the hub taxi. These hubs are then supplemented with a variety of activities. This helps boost the quality of life and creates local employment opportunities. We encourage employment further if we can use people’s mobility for small-scale goods transport. For example medicine delivery in areas where dispensing chemists are far away.”

Coherence between passenger transport and goods transport

Passenger transport and goods transport by road, rail and through the air all use the same infrastructure. The question that emerges is whether the networks can be improved by adjusting distribution, cooperation and/or interaction between passenger transport and goods transport. This question of the coherence between passenger and goods transport is particularly relevant for road and rail. This represents a major opportunity to provide solutions for dilemmas involving, for example, passenger versus goods transport and goods transport versus urban development along railway lines, in an integrated corridor approach and doing justice to the interests of all stakeholders.

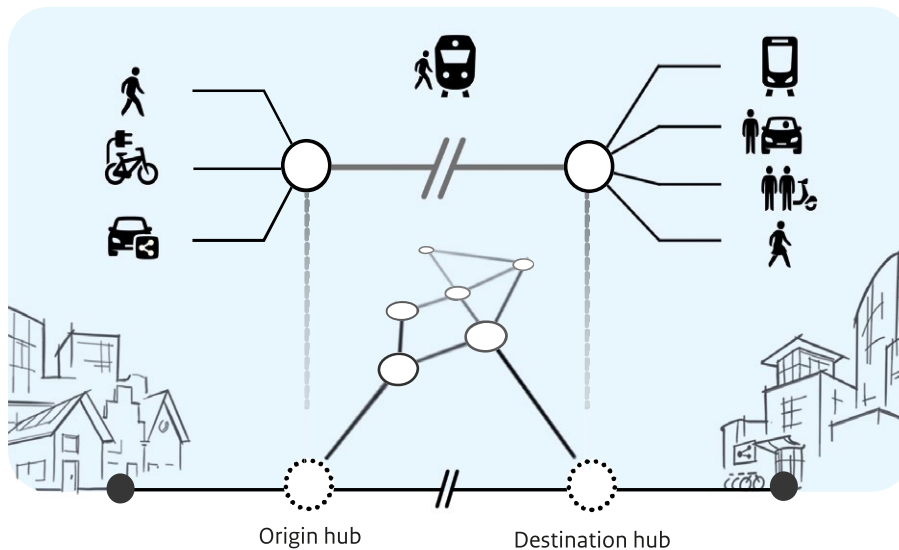


3.3 Strengthening connections

How can the various modes of transport be connected seamlessly? This is both in the interests of passenger travel and the transport of goods. Both offer travel along a chain. The key here is combining different modes of transport and organising good-quality hubs and transfer options, without raising obstacles.

We will investigate how the process can be made more seamless. At hubs, the focus will be on providing sufficient facilities, transfer and transshipment capacity, the logic behind the structure of these hubs and the proximity of important economic and social facilities.

Figure 4: Multimodal passenger travel via hubs



Block 14 Seamless goods transport

An example of seamless mobility is the corridor approach for goods transport. According to this approach, for long-distance transport along the goods transport corridors, logistic efficiency is employed, with greater economic impact and fewer negative external social effects. The success is based on more intermodal cooperation, the combination of transports and integrated decision making.

The Coalition Agreement and the Ministry of Infrastructure and Water Management policy programme² stipulate that national government will increase its focus on hubs. Steps have already been taken, with the decision on the distribution of the €7.5 billion for improving access to housing. In regions such as Amsterdam, Utrecht, Eindhoven and Groningen-Drenthe, initiatives have been launched to improve existing hubs and perhaps to create new ones. Regional studies by the MRA and Eindhoven region and a study by the KiM³ have identified a number of opportunities and dilemmas. Based on these experiences, hub policy can be further developed. As announced, the coming years will be used to advance knowledge about shared mobility hubs. €7 million euro has been set aside for this purpose (from the Veilig, Slim en Duurzaam programme) in around ten regions.

² Letter to Parliament on Ministry of Infrastructure and Water Management policy programme (Parliamentary Paper 35925-XII-106)/

³ KiM, investigation of the mobility hub concept, 2021.

Block 15 Matching hubs to passengers

The success or failure of the hub concept will eventually be decided by the potential users. That fact underlines the importance of knowing which conditions users impose on the equipment of hubs. Those conditions will of course not be the same in every situation. Each design must be reconsidered individually.

There are however a number of fixed criteria. We can for example learn from the successful hub development on an international scale, with KLM as hub operator. The result is an attractive product for passengers, with short transfer times, attractive packages of destinations, limited land footprint (the 'one terminal' concept), good information provision and excellent service. Reliability (security and hence predictability) is a core topic.

It is useful to apply quality criteria from existing practical experiences beyond the scope of individual domains, and with attention for the user. This will help passengers truly experience hubs as pleasant places for a 'warm transfer' from one means of transport to another.

3.4 Opportunities from innovations

We want smart, sustainable solutions for infrastructure and means of transport to be made available and usable as quickly as possible. This not only requires technological innovations, but also innovations that through their impact on behaviour mean that the mobility system is used more efficiently, as with healthcare and remote education.

Every innovation in the field of accessibility that can contribute to the goals of the wellbeing economy objectives is welcome. The government can consider playing a role in these innovations if:

- it is an innovation that brings policy objectives closer;
- the innovation would not or would only slowly be achieved without government intervention;
- the social benefits exceed the social costs;
- the government role can be downscaled once the innovation is in use.

The operating principle is to allow experiments with mobility innovation so as to acquire practical experience and to gather data about the effects. National government can encourage

experiments of this kind, and work alongside the private sector in order to channel new developments and to supervise standardisation. Below we discuss three forms of innovation.

Automation

Automation affects transport in many different ways. Take for example autonomous transport. This development still requires development time and experimental space, both physical, legal and financial.

Automation can be effective in expanding the capacity of modes of transport and encourage road safety (with back-up systems). Automation can also make public transport less dependent on already scarce personnel. Examples from practice are the ParkShuttle in Capelle aan den IJssel and the metro system in Toulouse.

There is also potential in goods transport. One example is smart shipping, which can help compensate for the staff shortages in inland shipping. Another example is the autonomous truck that could provide an answer to the shortage of drivers or unsafe driving behaviour.

Block 16 Advanced Driving Systems

Intelligence and automation are advancing rapidly. There are already vehicles on the worldwide market that can fully take over the task of driving from the human driver, on stretches where autonomous vehicles are permitted and that have been designed for this purpose. These Advanced Driving Systems can result in major changes to the mobility system. Interesting applications for investigations in the Netherlands include:

- automated hub-to-hub freight transport on heavily used routes, at night time or outside peak hours (given the shortage of drivers and the volume of traffic on the road);
- automated public transport services on bus lanes (given the high operating costs and driver shortage) as a high-frequency 'last mile' connection between hubs and top economic locations;
- Autonomous Lane Keeping Systems on motorways (so that journey time can be used for other purposes).

The Ministry of Infrastructure and Water Management is working with other ministries, implementing organisations and local and regional authorities on the responsible approval of these new vehicle technologies.

The development of a hyperloop is also a form of automation with some potential. Government will have to impose appropriate conditions in time to ensure that innovations of this kind can be safely and sustainably integrated in the environment and the Dutch and European traffic and transport systems. It also calls for a promotional role for example in developing knowledge.

Digitalisation

Advances in digitalisation offer opportunities for mobility:

- Data are the hub around which opportunities rotate for ensuring optimum use of the mobility systems and providing users and managers of the infrastructure with rapid and reliable information. Data also contribute to the optimum use of the physical space and establish links for example with the energy transition and the construction task.
- If data are shared in logistics, every stakeholder knows at a given moment where the goods and means of transport are located in the supply chain. This makes it possible to make better use of the capacity and to switch between modes of transport. For passenger transport, too, data interchange helps better match the supply of mobility services with demand. This is achieved using MaaS (Mobility as a Service) solutions. They help passengers plan, book and pay for all combined modes of transport, making alternatives attractive and accessible.
- Passenger cars and trucks are already today equipped with a whole range of sensors and Advanced Driver Assistance Systems that gather huge volumes of data. These data can be used to detect and tackle unsafe situations on the road. Based on data, measures can be implemented to enable shared scooters and other forms of shared mobility to make better use of the public space, for example less illegal parking and vehicles used more efficiently.

Electrification

Electrification affects almost the whole of the mobility sector: from electric bicycles to electric aircraft. The vision on sources of sustainable energy in mobility describes the challenges for each mode of transport. A nationwide network of charging infrastructure will be needed. The Alternative Fuels Infrastructure Directive provides regulations for this infrastructure on the European network. The national charging infrastructure agenda contains actions for creating a charging infrastructure for road transport. This will be included in the Regional Energy Strategies that are being drawn up.

Block 17 Batteries and other sources of sustainable energy

The report on energy chains for CO₂-neutral mobility (KiM, 2022) shows that a great deal of CO₂-neutral electricity, and hence physical space for wind turbines and solar panels, will be needed to make mobility climate neutral. The most efficient option is to use this electricity in direct electrification in the form of battery-powered electric vehicles. For road transport, this is also possible. To run all buses, passenger vehicles, vans and trucks in the Netherlands on electricity, a wind farm the size of the Province of Utrecht will be needed. For sea shipping and intercontinental aviation, synthetic fuels and biofuels will be needed, because batteries and fuel cells are too heavy and too voluminous. In the production and use of these fuels, a large proportion of energy (around 75-85%) continues to be lost.

One urgent issue is whether non-fossil sources of energy and the necessary distribution and refuelling/charging infrastructure will be available, in sufficient quantity. Between sectors (industry, agriculture, mobility, built environment) and within the mobility sector itself, the government will have to decide which sources of energy should be given priority for the different functions. In this distribution of the 'trias energetica', the operating principle will be: reduction (less energy consumption), smarter (combining supply and demand across sector boundaries) and sustainable (for the energy system). The National Energy System Plan will lay down the contours of a CO₂-free energy system by 2050, over the coming months.

Block 18 Zero Emission Services in inland shipping

One example of what electrification can contribute to better air quality is Zero Emission Services (ZES) in inland shipping. This initiative has been granted €50 million from the National Growth Fund, for the coming years. ZES is a comprehensive concept for climate neutral and practically emission-free inland shipping based on exchangeable energy containers (batteries).

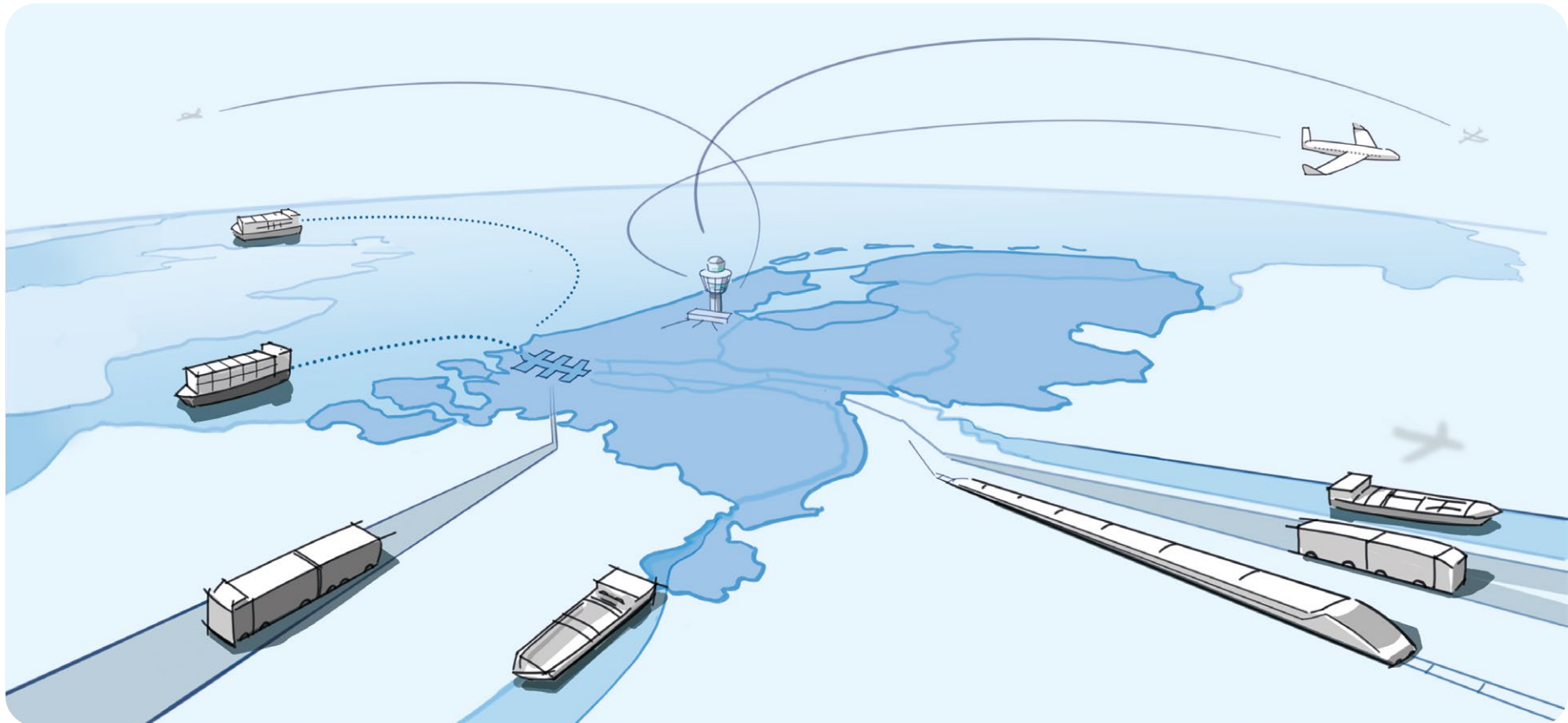
Electrification offers both new opportunities and challenges. Think of the potential new role for regional airports for electric flight. Also think of electrification of bicycles, enabling cyclists to cover greater distances.

3.5 Opportunities in an international perspective

The international connectedness of the Netherlands offers opportunities but also engenders risks. It is the foundation stone for our competitive position and the basis for a large proportion of our prosperity. However, for transport systems, value chains and the raw materials for our transitions, we are also dependent on actors outside our national boundaries. This calls for an active approach, both in our contact with individual countries and on an international scale.

We combine policy, knowledge and economic diplomacy in realising our transitions and securing our earning capacity for the future. New value chains, such as Mobility as a Service or *vehicle-to-grid charging* in which vehicles return energy to the grid, offer new niches and earning models. These need to be investigated, developed and backed up with the appropriate instruments and support, in order to enable international upscaling.

Figure 5: International mobility



Increasingly we are experiencing the risks involved in growing international interdependencies. The geopolitisation of the economy means that we need to map out our economic security and strategic dependencies, at national and European level. Security of supply of critical goods is a key issue.

Thanks to our geographical location, we also need to live up to our responsibility as gateway to the European Union. This directly affects the policy for our international seaports and our network of intercontinental connections by air, and cross-border connections and international goods (and other) chains such as the TEN-T and HSL networks.

As announced in the outline policy memorandum, an international comparison of strategic issues and choices in respect of mobility has been made. The initial insights appear in block 19 and the appendix.

Block 19 Strategic mobility choices in other countries

A desk study⁴ into mobility visions in Belgium/Flanders/Brussels, Germany, France, United Kingdom, Sweden, Singapore and Japan reveals the following findings:

- **Integration.** In many countries there is a shift from policy documents per mode of transport to an integrated vision on mobility; integration with other policy domains is present in respect of climate, but not such domains as healthcare or education.
- **Policy objectives.** In the countries of Europe, the climate/sustainability and accessibility goals are central; in the countries of Asia, the primary focus is on accessibility and the economy. In Sweden, the climate challenge is translated into the necessity to reduce mobility and goods transport; in France it is reflected in short-distance flights. Elsewhere the focus is diverse: safety is the key objective in Belgium and Sweden, inclusivity in France, Japan, Germany and Singapore. Japan has an extensive set of translations into policy objectives (per mode of transport) in the form of critical performance indicators.
- **Spatial policy** Integration with spatial policy at national level is only reflected in Singapore; in Belgium/Flanders and France, there is integration at regional scale, and in Japan around public transport stations. There is a recognition in many countries of the need to differentiate mobility policy according to areas or regions.
- **Modes of transport.** Attention is shifting clearly from the car to public transport, bicycle, walking and new modes of transport (shared mobility, MaaS) and from truck to rail and inland shipping. On a regional scale, there is considerable attention for cycling and public transport. Many countries are aiming to accelerate the use of electric transport and the introduction of sustainable aviation fuels. There is also a shift from new construction to management and maintenance.
- **Governance.** There are many examples of national strategy with implementation at regional and local level and a trend towards more decentralisation. Asia offers examples of intensive cooperation with business and industry, above all in relation to economic development and innovation.

4 MuConsult/Panteia, international comparison of mobility visions, March 2023.



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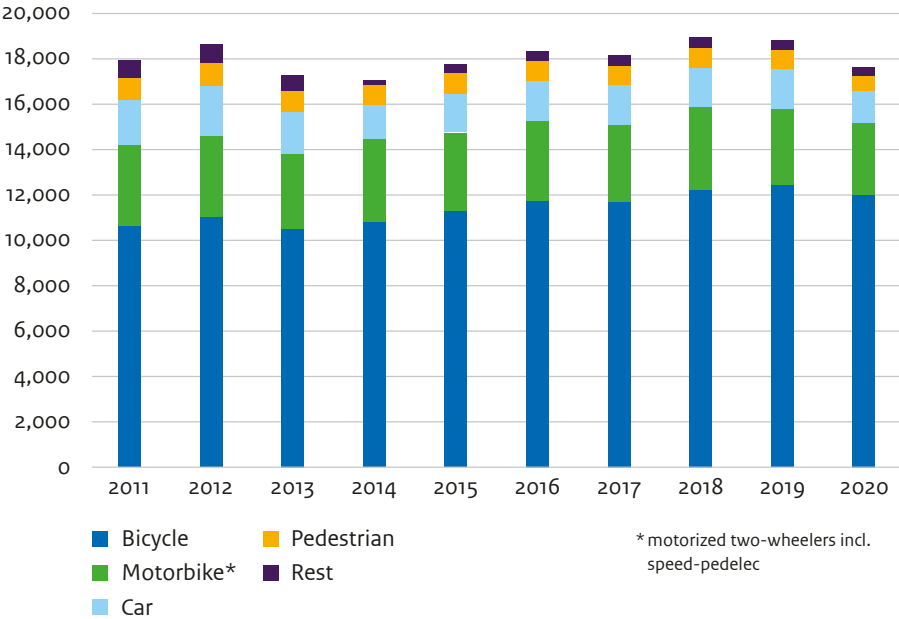
Within the public frameworks

Our aim is to ensure that critical functions remain accessible to everyone within the established public frameworks for a safe, healthy and clean living environment. On the road to 2050 there are three vulnerabilities:

- safety
- CO₂
- regional concentrations of air pollutants.

TNO, the Netherlands Organisation for Applied Scientific Research, has mapped out developments and forecasts on the basis of formal reports in respect of established frameworks. For CO₂, nitrogen and particulate matter, use was made of the Climate and Energy Outlook 2022 and the recent estimates of national emissions of air pollutants by the Netherlands Environmental Assessment Agency (PBL). The forecasts are based on current and proposed policy. The most important findings are listed below and the full report is attached as an appendix to the Framework Memorandum.

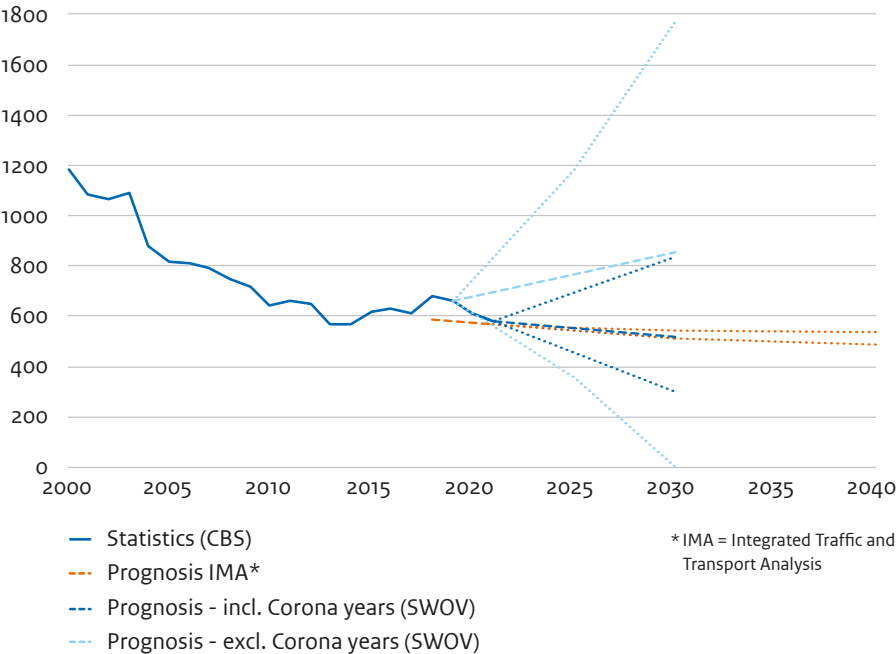
Graph 1: Serious traffic injuries according to mode of transport (source: SWOV, report R-2021-21A)



4.1 Safety

The development of road safety is presented by the number of deaths and serious injuries as a result of traffic accidents. Unfortunately, numbers have not fallen over the past ten years. The Integrated Traffic and Transport Analysis (Integrale Mobiliteitsanalyse) predicts a doubling in 2040 in the number of victims of serious traffic injuries, in particular among cyclists. Without supplementary measures, the number of victims will rise in 2030. Road safety will therefore receive specific attention (see section 2.1).

Graph 2: Road traffic deaths realised and forecast (source: miscellaneous, processed by TNO)⁵



⁵ See TNO report 2023 P10437 attached as an appendix to this Framework Memorandum.



Block 20 Other safety

Rail: specific challenges include passing signals at red (trains that pass a signal at red and prevention by the ERTMS system), suicide prevention and safety at level crossings.

Aviation: specific points for attention include crossing runways, *runway incursions* (accidents on or around runways) and runway changes. The Dutch Safety Board issued a series of recommendations several years ago to maintain safety risks at an acceptable level, in the event of an increase in aircraft movements in excess of 500,000 at Amsterdam Airport Schiphol.

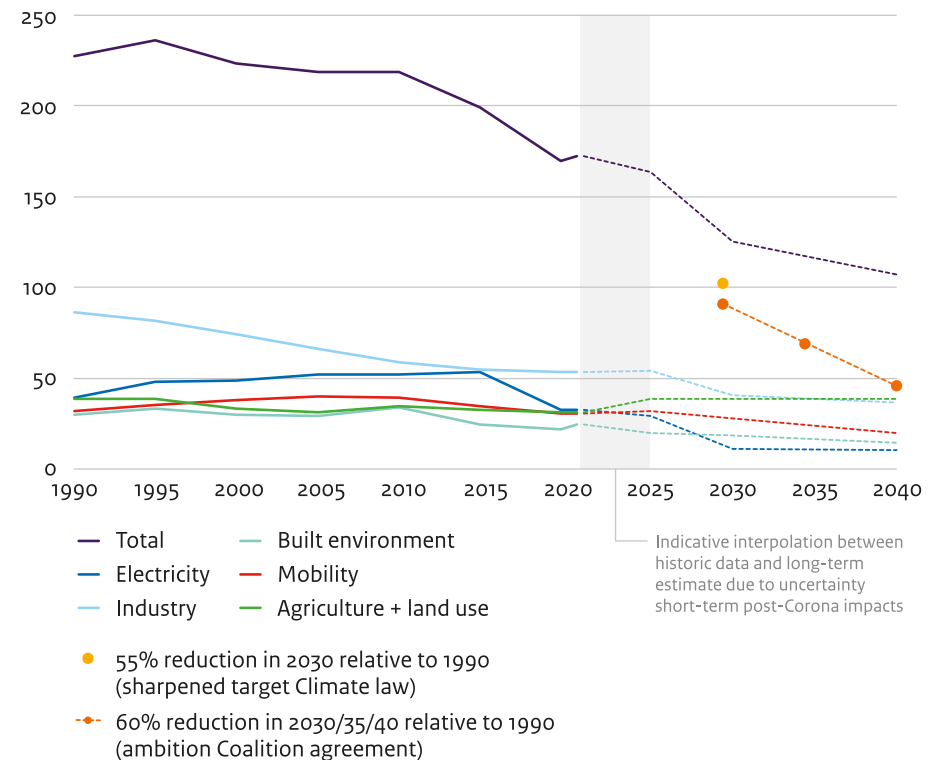
Social safety: this relates to the extent to which people feel protected against danger caused by human activity in public spaces. To increase social safety in public transport, the Ministry of Justice and Security has entered into a covenant with the Ministry of Infrastructure and Water Management.

External safety: there are rules for the acceptable level of risk run by people who live close infrastructure, in the event of a traffic accident. For aviation, the risk of the external safety indicator is derived from internal safety in combination with the number of homes in the vicinity of the airport. For road, rail and water, external safety above all relates to the transport of hazardous substances. A basic network is designated for these transport operations, aimed at establishing a balance between the interests of transport of hazardous substances and a safe living environment. It contributes to the possibility of an integrated approach to transport and spatial development. For a specific proportion of hazardous substances, pipelines could compensate for the expected growth in goods transport.

4.2 Climate (CO₂)

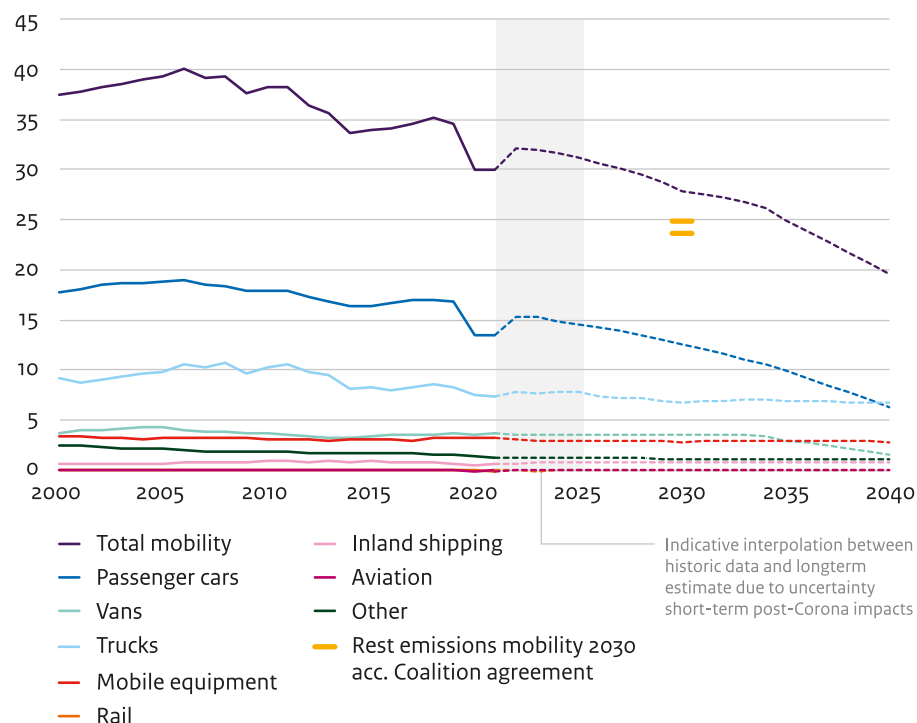
The total realised and forecast CO₂ emissions from all sectors together are demonstrating a major downward trend. However, this downward trend is not yet sufficient to bring it into line with the objectives from the Coalition Agreement: 55% reduction by 2030 compared to 1990, in accordance with the European Fit-for-55 objective (amendment to the Climate Act), the policy aimed at achieving a reduction of approximately 60% by 2030, and efforts to achieve a reduction of 70% by 2035 and 80% by 2040, compared to 1990.

Graph 3: Greenhouse gases (in Mtonnes CO₂eq) realised and forecast per sector (source: PBL, KEV 2022, publication 4838, processed by TNO)⁶



⁶ See TNO report 2023 P10437 attached as an appendix to this Framework Memorandum.

Graph 4: Greenhouse gases (in Mtonnes CO₂eq) realised and forecast according to mode of transport (source: PBL, KEV 2022, publication 4838, processed by TNO)⁷



The expected CO₂ emissions for mobility in 2030 are 12.5% lower than in 1990. The objective for 2050 for the total of all CO₂ emissions is a reduction of more than 90%. A large proportion of the reduction compared to 1990 will still have to be achieved beyond 2030.

Despite the expected growth in the number of car kilometres, CO₂ emissions from passenger cars are expected to fall sharply over the coming decade as a result of the European CO₂ standards and advances in electrification. For vans and trucks, the improvements in sustainability will take place more slowly, and reductions per vehicle kilometre are negated to a greater extent by the increase in the number of these vehicle kilometres.

In order to achieve the sharpened CO₂ target 2030, we need to search for other reduction options. The Minister for Climate and Energy Policy elaborated on this subject in the Coalition Agreement, in 2022⁸. The indicative residual emission for mobility for 2030 is between 23.7 and 24.9 Mtonnes. Together with the reduction objective for 2050, this results in a challenge for intensifying CO₂ policy for mobility, both before and beyond 2030.

Block 21 Vision on sources of sustainable energy in mobility

Our daily mobility and the transport of goods are responsible for around 20% of total CO₂ emissions. In the vision on sources of sustainable energy in mobility (elaboration of the mobility chapter of the Climate Agreement), consideration is also given to maritime shipping and aviation that are beyond the scope of the Climate Agreement. In order to tackle climate change and to improve the quality of our living environment, we must make our mobility system more sustainable. The tightening up of the 2050 objective to climate neutrality is fundamental. It however requires an update of the vision on sources of sustainable energy. The Dutch government wishes to have this revised vision ready at the end of 2023/start of 2024, as part of the update to the new Climate Plan pursuant to the Climate Act.

⁷ See TNO report 2023 P10437 attached as an appendix to this Framework Memorandum.

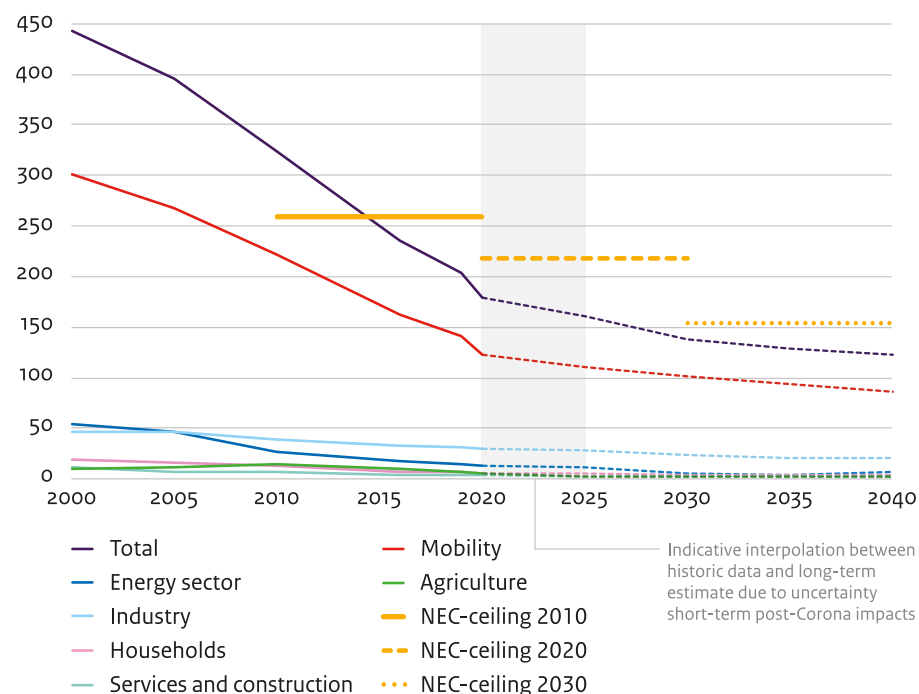
⁸ Letter to Parliament on elaboration of coalition agreement on climate and energy (Parliamentary Paper 32813-974).

4.3 Nitrogen (NO_x)

The nitrogen problem relates to the deposition of nitrogen in protected (Natura 2000) areas. This problem is caused by the emission of NO_x (nitrogen oxides) and NH₃ (ammonia). Above all the NO_x emissions are relevant for mobility. Over the past decade, these emissions have declined sharply, and will continue to decline, in particular as a consequence of the introduction of ever stricter European standards for exhaust gas emissions. This fall in total emissions has been achieved despite the considerable growth in traffic volume: the number of vehicle kilometres of motor vehicles was almost 20% higher in 2018 than in 2000⁹. Beyond 2025, electrification will further reduce emissions, although the relative benefits of zero emission compared to the then applicable Euro 6/7 standards will be limited. In the framework of nitrogen policy, an indicative emission reduction objective for NO_x for the mobility sector was introduced, of 25% by 2030 compared to 2019.¹⁰ There is a National Emission Ceiling (NEC)¹¹ for the total emission of NO_x in the Netherlands. These standards are expected to be achieved on the basis of current and proposed policy.

In addition to the NEC ceilings for the national emissions (in total), there are other European standards for air quality. Mobility plays a role in those too, in particular in urban networks. In the vicinity of vulnerable nature areas, even limited additional emissions can be critical, causing more mobility projects to be brought to a standstill.

Graph 5: Nitrogen emission (ktonnes NO_x, based on European definition for the NEC), realised and forecast per sector (source: PBL Emission estimate 2023, publication 4930, processed by TNO)^{12, 13}



⁹ <https://www.cbs.nl/nl-nl/nieuws/2019/46/helft-meer-kilometers-dan-in-1990>

¹⁰ Letter to Parliament on progress of integrated approach for rural areas, including the National Programme for Rural Areas (Parliamentary Paper 34682-114).

¹¹ Directive 2001/81/EC of the European Parliament and the Council of 23 October 2001 on the national emission ceilings for certain air pollutants, and Directive (EU) 2016/2284 relating to the reduction of the national emissions of certain air pollutants.

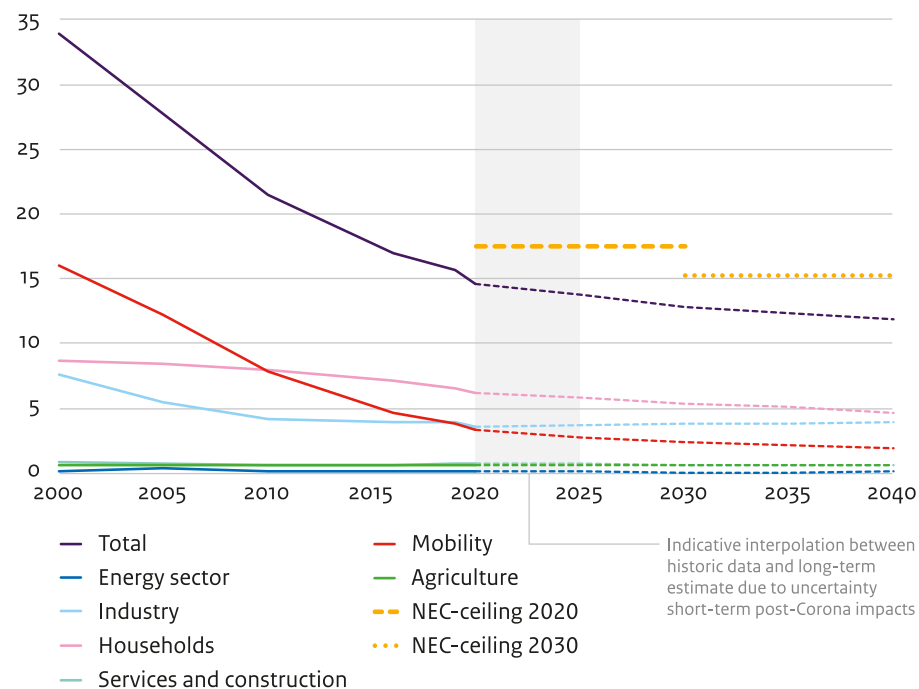
¹² In the NO_x emissions based on the European definition for NEC, the emissions from sea shipping are not included. The emissions from sea shipping are included in the determination of NO_x concentrations and deposition.

¹³ See TNO report 2023 P10437 attached as an appendix to this Framework Memorandum.

4.4 Particulate matter (PM_{2.5} en PM₁₀)

An NEC ceiling has also been introduced for particulate matter PM_{2.5} for total emission from all sectors. The realised level in 2020 and the forecast level for 2030 are well below these maximums. The particulate matter emissions from mobility have declined sharply and the trend is set to continue on the basis of ever stricter European standards for exhaust gas emissions and the use of soot filters. Here, too, electrification will contribute to further reduce emissions of particulate matter PM_{2.5} beyond 2025.

Graph 6: Particulate matter emission (ktonnes PM_{2.5}, based on European definition for the NEC), realised and forecast per sector (source: PBL Emission estimate 2023, publication 4930, processed by TNO)¹⁴



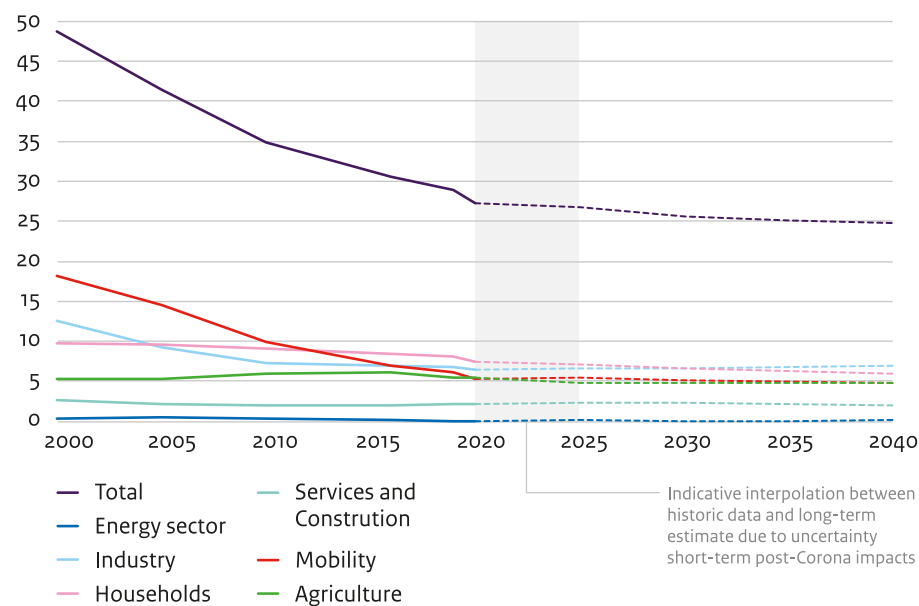
14 See TNO report 2023 P10437 attached as an appendix to this Framework Memorandum.

Emissions as a result of the wear of brakes, tyres and the wear course of road surfaces continue to rise due to the increase in traffic volumes. As a consequence, PM_{2.5} emissions from mobility will not be reduced to zero, not even if all vehicles are electrified or in some other way release no more emissions.

Just as in the case of NO_x, there are European standards for the concentration of particulate matter (with regard to PM_{2.5} emissions). The share of traffic emissions in the concentrations of air pollutants is also higher for particulate matter in cities, than the proportion in national average emissions. There is no NEC ceiling for PM₁₀. The development of PM₁₀ can be compared to that of PM_{2.5}.

The decline in total emissions has been achieved despite the considerable rise in traffic volumes.

Graph 7: Particulate matter emission (ktonnes PM₁₀, based on European definition for the NEC), actual and forecast per sector (source: PBL Emission estimate 2023, publication 4930, processed by TNO)¹⁵



15 See TNO report 2023 P10437 attached as an appendix to this Framework Memorandum.

In September 2021, the WHO tightened up the recommended values for air quality (NO₂, PM₁₀ and PM_{2.5}). As a consequence, the European air quality directive is currently being revised. On 26 October 2022, the European Commission published a proposal for the new air quality directive, with tighter standards that must be achieved at the latest by 2030. The proposed standards are higher than the WHO guidelines, but significantly lower than the current EU standards. One thing the National Environmental Policy will consider is which reductions are needed in mobility. Within the Clean Air Agreement, research is being conducted into how to gradually move towards achieving the WHO guidelines.

For ultrafine particles (PM_{0.1}, particles smaller than 0.1 micrometres) there are as yet no public frameworks or recommended values. There is insufficient knowledge about the concentrations of ultrafine particles to which humans are exposed, what the health effects of exposure are and the possible effects of exposure to a combination of (ultra)particulate matter. Attention for the health effects is growing.

Block 22 National Environmental Policy

As announced in the NOVI, the Ministry of Infrastructure and Water Management is working on a National Environmental Policy (NMP). The NMP will put into practice the vision from the National Environmental Policy Plan (NMK) and will safeguard environmental policy for the long term. Pollution has negative consequences for nature and on human health. If we prevent environmental damage, the result will be a more sustainable economy and a wellbeing economy for our population. The challenge is to reduce the negative effects to a negligible level, by 2050. The ten basic principles in the NMK Policy will serve as an assessment framework for environmental policy, together with four building blocks: preventing environmental losses, preventing the shifting of responsibility, ensuring continuous improvement in environmental quality, connection and cooperation. The NMP is the implementation tool of national government for achieving the objectives from the European Green Deal and the accompanying action plan 'Toward Zero Pollution for Air, Water and Soil'.

4.5 Noise

Noise influences the living environment and human health. Exposure to noise can result in disrupted sleep, high blood pressure and cardiovascular disease. There are also indications that in the event of prolonged exposure, cognitive effects can occur such as reduced reading skills in children. It is therefore essential to mitigate the impact of noise.¹⁶

The various modes of transport are subject to a number of different statutory regimes for limiting noise. For main roads and mainline railways these matters are dealt with in the Environmental Management Act. For local roads and local railways, the Noise Abatement Act applies. These laws will be integrated in the Environment and Planning Act. Aviation is subject to the Aviation Act. These regimes for noise nuisance are not identical (see below).

Block 23 Noise legislation for road and rail

Noise legislation for road and rail features limits and preferred values (numerical comparable with the recommended values from WHO). In the event of noise loads between the two values, an assessment (of effectiveness) is required for projects. The aim is to remain as close as possible to the preference values. The result is a noise production ceiling, as already in place in existing situations. There are also remediation programmes for the locations with the highest noise load. For national infrastructure, this is conducted within the multiyear programme on noise remediation. Pursuant to the Environment and Planning Act, the focus will be expanded to include provincial roads, a large proportion of municipal roads and local railways.

For the time being, all these measures have not brought about a reduction in exposure to noise. This is due to the growth in car traffic over the past decade. Electric vehicles are quieter, but on many roads the primary source of noise is the tyre and wind noise, which will remain present.

¹⁶ Prior to the COVID-19 pandemic, 970,000 people in the Netherlands experienced serious nuisance from road traffic noise (including around 800,000 due to traffic in cities), around 260,000 from aircraft noise, almost 100,000 from rail noise and more than 7,000 from wind turbines. See RIVM: Schoningh and the WHO guidelines for environmental noise – Het doel heiligt de middelen (2018).

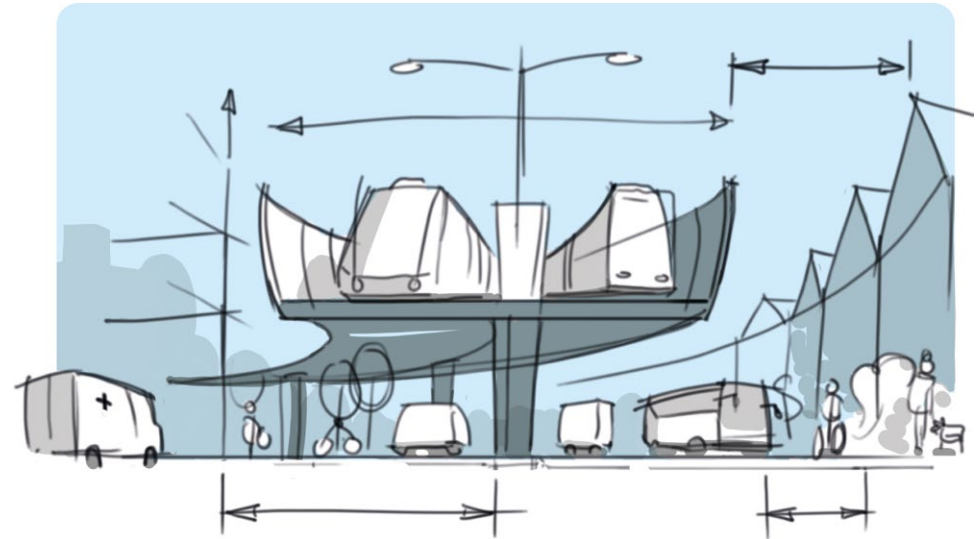
Noise legislation for aviation

The Aviation Act sets down the rules for limiting noise nuisance around airports. These rules are elaborated in 'orders in council' for specific airports. For Amsterdam Airport Schiphol, this takes the form of the Schiphol Airport Traffic Decree. A violation (or threatening violation) of the standards can have consequences for traffic development. In addition, there are rules for the use of runways and flight routes. Unlike with roads and railways, the standards do not impose any statutory task for insulation or other measures. The Dutch House of Representatives has been informed in detail over the past few years about the state of affairs concerning the regulatory system and noise development at Amsterdam Airport Schiphol.

Based on new insights, the WHO has issued new recommended values for noise from various sources, including roads, rail and aviation.¹⁷

Because policy changes can have far-reaching effects, both for new infrastructure and housing projects and for existing situations, all interests must be carefully balanced. A careful, quantitative elaboration of practical policy options is essential in order to draw responsible and proportional conclusions to the WHO recommendations. The RIVM¹⁸ has identified possible leads

Figure 6: Scarcity of space in an urban context



¹⁷ WHO, Environmental Noise Guidelines for the European Region, 2018.

¹⁸ Letter to Parliament on regulations on spatial planning and the environment (Parliamentary Paper 29 383, no. 343).

4.6 Vibrations

Local residents can experience nuisance from vibrations caused by rail traffic. Whether vibrations occur will depend on different factors such as the soil conditions, the type of train traffic, the condition of the track and the type of foundation of buildings built close to the railway line. The level of nuisance is difficult to predict, so that generic standards and measures are ineffective.

Efforts are made, in consultation with stakeholders, to find good solutions to mitigate the nuisance from vibrations. Investments are being made in measures at source, and through the use of innovations, including vibration-resistant foundations. Municipalities and developers responsible for track-side construction projects make use of the New Building and Railway Vibrations Guidelines published in 2019.

In Europe's Rail Joint Undertaking, the new European research programme for railways, ProRail is co-leading the research into railway vibration. In due course, this programme is expected to deliver a range of new solutions for tackling vibration nuisance. The focus is above all on improved track and train maintenance.

4.7 Use of natural resources

The construction and maintenance of infrastructure elements has serious consequences for the environment in terms of the use of large volumes of natural resources. The Dutch government is working towards a fully circular construction economy by 2050. The National Circular Economy Programme for roads and civil engineering construction aims to halve the environmental impact by 2030, compared to 2019.

4.8 Effects for accessibility policy and the mobility system

Steps have already been taken to ensure that our mobility system causes less damage to the climate and the living environment. Based on current and proposed policy, these efforts may be expected to continue. The rate of improvement is fast enough to comply with European standards on nitrogen and particulate matter. The analysis in the sections above reveals three main tasks for the mobility system:

- 1 The measures for CO₂ reduction must be intensified, in order to meet the climate objectives set, beyond 2030.
- 2 The positive developments in the total and average national emissions can draw attention away from the local situation. Take for example the distribution of noise around airports, possibly added to noise from other sources and the reduced quality of life due to air pollutant emissions. Or such issues as infrastructure-related noise and vibration nuisance in the vicinity of the rail infrastructure. These aspects are even more difficult to express in terms of national totals and averages, than air quality. Improvements in totals and averages can in certain cases in fact represent stagnation or even decline in specific areas. This makes it necessary to closely monitor the situation in specific areas, as is the case with accessibility (see chapter 2). The area-specific approach has consequences for the approach to mobility in the future. We will discuss this in more detail in the next chapter.
- 3 Whereas there is improvement in the transport and traffic system regarding environment and liveability, no such improvement can be observed over the past few years in respect of traffic safety. On that issue, as well as on CO₂, there will have to be a clear policy focus in order to improve the system in the short and medium to long term.



5

Effective management relationships and instruments

A more integrated mobility policy has consequences for management, namely:

- a interdepartmental and administrative cooperation and the involvement of stakeholders;
- b broadening and strengthening an effective mix on policy instruments:
 - area-specific approach
 - investment policy
 - influencing behaviour.

Many policy instruments implemented by various authorities impact on accessibility. This calls for a coherent approach in which clear choices are made: which instruments effectively and efficiently foster accessibility? Behaviour is another key factor. It must be recognised that travel is based heavily on individual choices, and that private means of transport are an important factor. The individual preferences of citizens and businesses, both users of the mobility system and local residents, will be taken into account from the perspective of a wellbeing economy.

5.1 Cooperation

To strengthen the cooperation, steps can be taken in the following areas:

- within national government: strengthening ties between mobility policy, spatial policy and facilities policy (such as healthcare, education and research, commercial estates) to foster an integrated approach and greater social value;
- with regional and local governments: together we can elaborate an approach for accessibility from and in areas, with attention for cohesion between main networks and underlying networks, building on the approach in the accessibility programmes;
- with employers and public institutions (such as healthcare and education): reinforcing the approach to working from home and the spread of working and teaching hours. We can reach agreements on mobility budgets for home-work travel and the replacement of lease contracts with shared mobility; about start times, working from home and hybrid working; and about methods of travel;
- with the logistic sector: agreements on combining transports and the allocation to means of transport, influencing behaviour of individual clients for transports, focusing on greater sustainability in transport, and identifying and tackling bottlenecks to efficient transport operations. A solid foundation was laid for these objectives through the Logistics Alliance, the Top Sector Logistics programme and the integrated corridors programme;
- with mobility stakeholders: elaborating steps between now and 2050 in the field of flexibilisation, mobility as a driver for societal challenges, optimum freedom of choice, safety, sustainability, data and digitalisation, and innovations. The Delta Plan 2030 of the Mobility Alliance represents an excellent starting point;
- with housing associations and project developers: about harmonisation with area development;
- with interest groups and nature organisations: about opportunities for sustainability, the living environment, safety and inclusivity.

5.2 National frameworks, area-specific approach

We opt for an approach in which:

- the integrated accessibility objectives are elaborated at national level, together with administrative and civil society partners, including the requirements for arriving at a successful area-specific implementation strategy;
- with the regional partners, an area-specific package of measures for the various types of areas will be laid down in an integrated regional accessibility strategy.

The area-specific approach is a key element of the approach to accessibility for the future. The fact that we are focused on the mobility system while bearing system responsibility means that we also bring the various stakeholders together. This is mostly being done under the flag of the Multi-Year Programme for Infrastructure, Spatial Planning and Transport (MIRT), but also at round tables on public and railway transport across the country. In those consultation groups, we are already facilitating discussion with the regions. It is worthwhile to examine which area breakdown we can best use in the MIRT in order to tie in with the challenges of the future. This will require a carefully argued area typology, based on the specific characteristics and bottlenecks to accessibility and the needs of the local population in those areas. We must also investigate whether the current funding of the mobility system, is appropriate for those area types in the framework of the MIRT approach.

Block 24 Road managers and public transport providers join forces in an area

With the area-specific approach, we recognise that accessibility bottlenecks above all emerge as regional problems. Citizens and businesses wish to see these problems solved, no matter who is responsible for them. The travel or transport pattern of the user is not concerned with administrative boundaries, the difference between the main network of roads and waterways and the underlying network of roads and waterways, nationally operating carriers or regionally operating carriers. It is good to be aware that the world in which the users live differs from the world of the mobility system. The system world operates according to clearly demarcated authorities and responsibilities, with the accompanying information provision and instruments. In practice, however, multiple road managers and public transport providers are active in any given area, which means that the accessibility problems can almost never be successfully tackled along the lines of these authorities. As a rule, multiple stakeholders will be needed in order to find a solution. An area-specific approach means that the different road managers and public transport providers in an area act in concert. That in turn requires a clear understanding of the needs of the user.

5.3 Integrated investment in accessibility

Integrated investment in infrastructure networks

Infrastructure networks are a primary pillar beneath any mobility system. Quite literally, they are the carriers of mobility. This applies to road construction and civil engineering structures and digital networks, as well as to airspace and the soil and underground, all of which can be seen as elements of the infrastructure. To make it possible to make good use of that infrastructure now and in the future, long-term investments will be needed in these networks – in particular given the predicted growth in mobility.

Block 25 The basic quality of the networks

Many roads, bridges, viaducts and locks were built in the mid 20th century, and are now due for large-scale maintenance, renovation or replacement. In the current environment, they are also subjected to more severe burdens, due to additional traffic on the roads. Moreover, much maintenance has been postponed. With that in mind, additional funding has been released in the Cabinet's Coalition Agreement for the maintenance of our networks. In addition to maintenance, it is also important that we innovate in our infrastructure, replace and renovate out-of-date locks and hydraulic engineering structures, build new roads and solve traffic congestion hotspots.

At the same time, this provides reasons to think about the infrastructure of the future. Innovations in cars mean that in the course of time, not all road signs will be needed, while autonomous cars will require additional lines on the road. New developments in technology also offer opportunities for improving our infrastructure. Not only the basic infrastructure, but also the surrounding services. Take for example route information, traffic management and roadside hospitality locations.

We are working to create networks that will have a long service life. For a country with an ever growing population, with people who all wish to move around, and for whom supermarkets must be restocked. With one million additional homes, all of which must be accessible. With an infrastructure that must be resilient to increasingly extreme weather events such as heat, drought and heavy rainfall. Sustainability objectives and developments in cybersecurity are also placing additional requirements on our infrastructure.

The basic quality level (BKN) is the foundation stone for all our networks. Using the BKN, we are working gradually towards a stable and long-term level of maintenance. We can offer a level of quality on which users can rely, thereby improving overall reliability. The result is a futureproof foundation that offers greater certainty to the users, Rijkswaterstaat and the market parties involved in construction and maintenance. We are also working on a basic quality level for the railways.

Investments in the main road network, the main waterways network and the railways will be standardised, allocated and managed via the Mobility Fund. That fund will also be used to finance measures and facilities aimed at increasing the efficiency or safety of the infrastructure. Any decisions on projects and programmes of the Ministry of Infrastructure and Water Management in the physical domain will be taken via the MIRT. The rules of play for MIRT describe the methodology, roles and tasks of stakeholders and the requirements for arriving at decisions. Possible solutions will be widely examined, including non-infrastructure solutions.¹⁹

When investments are made in the infrastructure, it is increasingly common for a link to be established with other societal objectives. The Dutch government has for example made €7.5 billion available for improving accessibility to new homes. In the distribution of these funds, explicit attention was paid to the spatial layout, but also aspects such as water and soil, nitrogen and effects on commercial activities. Within the National Growth Fund, infrastructure investments are considered on the basis of their contribution to the future earning capacity of the Netherlands.

It is important that when making new investments, we broaden the objectives, and seek close ties with other domains. The national accessibility objectives are still the guiding factors in these considerations. The question is which investments make the most effective and efficient contributions to achieving the accessibility goals in relation to the other goals of the wellbeing economy, as described in figure 3. The social cost-benefit analyses are intended to provide a clear picture of the wellbeing economy effects of the proposed measures. As the social-cost benefit analysis system is expanded, greater support can be provided to the combination of accessibility with broader tasks, as aimed for in this Framework Memorandum.

For the maintenance of networks, we must respond to the ever changing demand for mobility, and the opportunities offered by new technologies. In essence, this relates to a greater contribution for example to quality of life and circularity, and innovations in asset management and the operation of the infrastructure. Take for example *sensing* (data gathering via sensors), the use of drones for inspections and supervision, and establishing a more sustainable fleet of vessels for the Rijksrederij (national vessel service.) Certainly given the shortage of physical and environmental space, we must continue to search for solutions that our existing infrastructure can offer.

19 Information (in Dutch) about the MIRT process is available at [Meerjarenprogramma Infrastructuur, Ruimte en Transport \(MIRT\) | Ruimtelijke ordening en gebiedsontwikkeling | Rijksoverheid.nl](#)

Integrated deployment of financial policy instruments

In addition to the investments for maintaining and developing the physical networks, these include financial instruments to be deployed for fostering the use of the network, for example for specific objective groups. Examples include subsidies (on the purchase of electric vehicles), operating contributions (to local public transport), charge capping (for train tickets) or fiscal schemes (VAT exemption schemes). To limit specific use, taxes (in the form of duties) will be levied. Participations, guarantees, etc. will also be used to safeguard public interests. Figure 7 features the most relevant financial instruments.

As there are so many accessibility objectives, and as different levels of government are responsible for different elements of the policy, a wide range of financial (and other) instruments will be deployed, many of which interact with each other. It is worthwhile further examining opportunities for improved budgetary management through a smart combination of instruments. The role of private parties (and semi-private ones) should also be further investigated.

Pay per use and truck toll charging

In line with the agreements in the Coalition Agreement, the Dutch government is currently investigating different variants of ‘pay per use’ in car mobility. This serves two purposes:

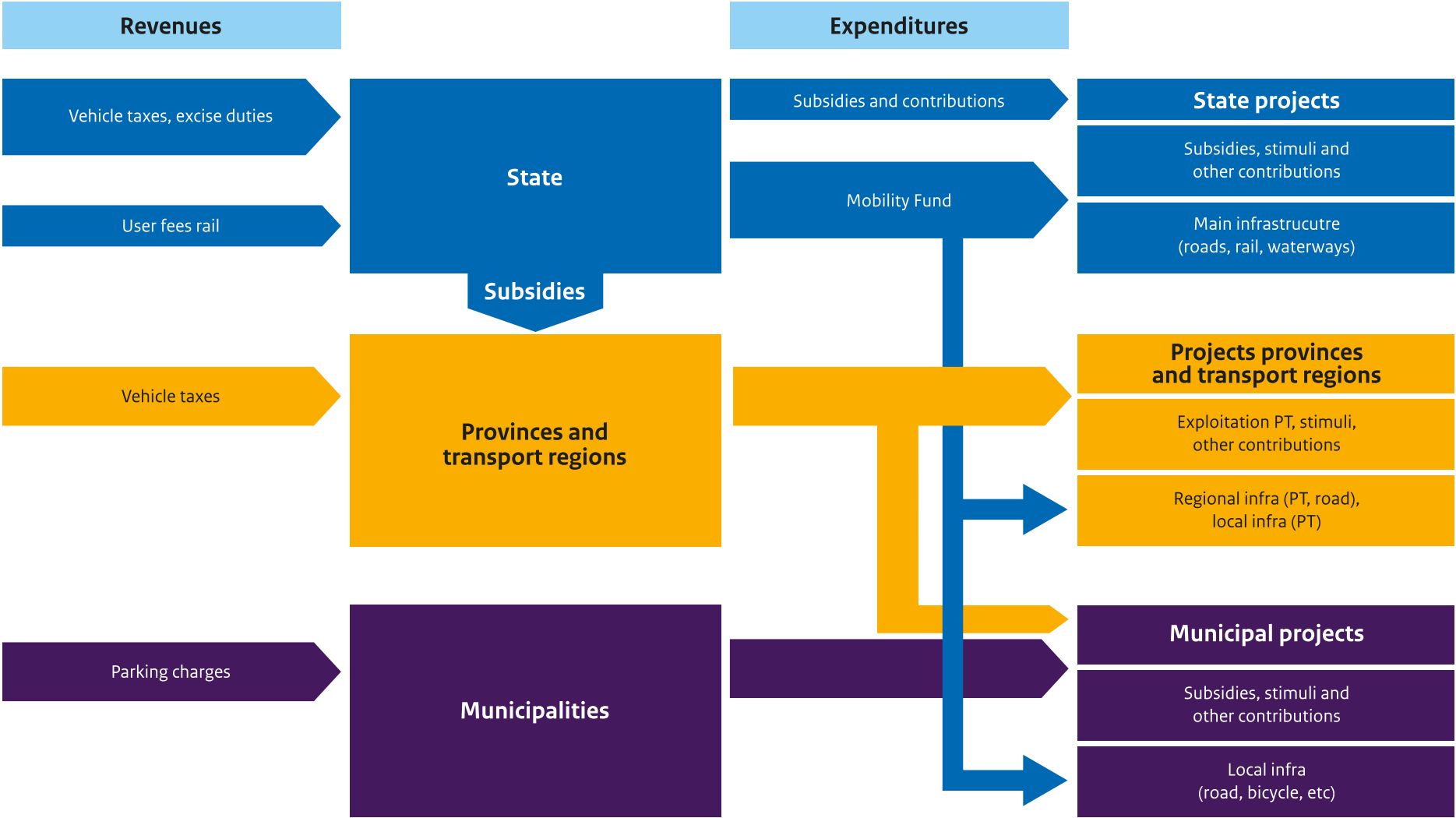
- compensating for the erosion in the base for car tax;
- reducing CO₂ emissions by 2030.

In the various calculations, we have identified effects on car ownership (which rises in most variants) and effects on the number of kilometres driven in the Netherlands (a downturn, but to differing extents depending on the variant). The studies have also shown a shift from car to cycling and walking, and from car driver to passenger.

The Dutch government has opted for a relatively simple and privacy-proof system of pay per use, in 2030. In line with this Mobility Vision, we will have the opportunity to investigate how the price instrument can make a long-term contribution to achieving the integrated accessibility objectives.

The Heavy Goods Vehicle Charge Act means that domestic and foreign heavy goods vehicles will be required to pay a charge per kilometre driven on Dutch motorways and a number of provincial and local roads. The charges will be based on the CO₂ emission of the vehicle. This will be a means for paying for use of the road. The net revenue from the charge will be invested in sustainability and innovation in the transport sector.

Figure 7: Overview of the most important government income and expenditure on traffic and transport (source: KiM, 2022)



5.4 Focusing on mobility behaviour

Goods transport

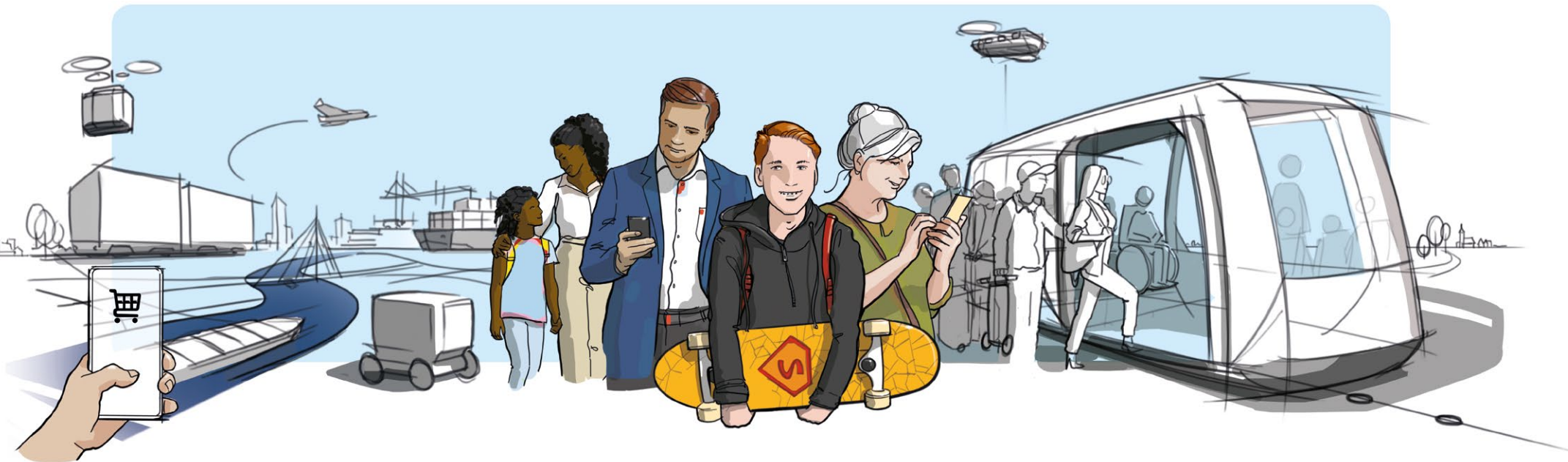
Behaviour-based management is at the core of the approach to the use of other modes of transport in goods transport – the so-called modal shift. This will be brought about by subsidising shifts from transport by road to inland shipping and rail, by tackling bottlenecks that prevent such a shift and by expanding the transport infrastructure to support the development of the pipeline network.

The subsidy programme will be an initial subsidy to cover the additional costs clients must pay for these changes. The choice in favour of inland shipping and rail will also be encouraged through digitalisation of transport and the sharing of data. This is an important method for removing bottlenecks.

Passenger transport

The COVID-19 crisis has shown how great the impact of working from home and remote education can be, on mobility. The measures taken to slow down the spread of the COVID-19 virus and certainly the urgent recommendation to work from home led to a huge reduction in traffic volume on the road and pressure on public transport, during rush hours. Working from home is therefore a promising possibility for limiting congestion and reducing the emission of harmful substances.

In the most recent MIRT policy consultation, the promise was made to investigate how we could formulate possible objectives for spreading traffic, and avoiding peak hours. The Ministry of Infrastructure and Water Management is working closely alongside the Ministry of Social Affairs and Employment and other ministries on an agenda for the future of hybrid working. The Dutch government will encourage this by reaching custom



agreements with regional governments to facilitate employers in their region. Together with the Ministry of Education, Culture and Science and regional governments, agreements will also be reached with educational institutions.²⁰ The aim is that everyone is guaranteed excellent access to educational institutions and that rush hour congestion is prevented as far as possible. We will continue to work with regional governments, transport operators, educational institutions and employers on spreading and avoiding peaks in various regions.

5.5 Focus on elaborating the policy spearheads

Based on this Framework Memorandum, an agenda will be drawn up for converting the policy spearheads into specific actions. This will include an explanation of how the policy spearheads from this memorandum influence the policy of the Ministry of Infrastructure and Water Management and other ministries. It will result in the elaboration of the integrated objectives, the completion of a number of core elements of the integrated approach (including the area-specific approach) and a translation into visions in the field of accessibility and mobility, or affecting the field of accessibility and mobility, such as the Spatial Planning Policy Document as a new national environment and planning vision, which brings together the various functions that require space.

²⁰ See letter to Parliament on agenda for the future of hybrid working (Parliamentary Paper 25883-443).



Appendices

- 1 Analysis framework on accessibility objectives (Netherlands Institute for Transport Policy Analysis)
- 2 Analysis of relevant objectives of civil society sectors
- 3 Analysis of the strength of modes of transport (Arcadis)
- 4 Analysis of frameworks (TNO)
- 5 International comparison of mobility visions (MuConsult/Panteia)

These appendices are available at www.tweedekamer.nl/kamerstukken and www.rijksoverheid.nl/documenten



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