

Action Plan Sustainable Energy





Introduction

The transition of the energy supply in Europe is obvious. This is also the case in the Netherlands, where the energy landscape is changing too. In the near future, the energy supply will be fundamentally different: more sustainable, more flexible, generated in a much more decentralised way and with more integration between the various energy sources and much more active participation of large and small customers.

This transition is driven by technological developments in all areas of the energy sector. This concerns the extraction and conversion of energy as well as its use. In addition to these technological developments, the requirements that society sets to the energy supply, and especially to the reduction of its environmental impact, are key drivers of the transition. These requirements are laid down in compulsory targets for reducing emissions and increasing the share of renewable energy. To achieve these targets, the electricity sector will have to make an enormous shift in the coming years. This is only possible with action-oriented plans.

Many parties contribute to this transition in different ways. We, too, the grid operators united in Netbeheer Nederland, are constantly working on the reliability, sustainability and affordability of our services. Not only to ensure the availability of energy, but also to make the transition to a sustainable energy supply possible. In recent years, Netbeheer Nederland, often in cooperation with other parties, has made several plans to this end, such as Grid of the Future, the Roadmap Smart Grids and a Green Deal with the national government.

This Sustainable Energy Action Plan: Towards the Energy System of 2030 of Netbeheer Nederland provides a clear overview of what is needed to have a sustainable, reliable and affordable energy system in 2030, and how the grid operators together with their stakeholders can contribute.

For us as grid operators, the action plan is our common reference framework and a step towards a joint action plan with the stakeholders in the energy world. We will use this action plan to determine the common target visions together with the stakeholders, to tailor our activities and to learn continuously from each other's experiences. We are very much aware of the fact that we can only succeed in this role if we work closely together with all these parties that are involved in giving shape to the energy transition. The grid operators therefore see this version of the action plan as a starting point to enter into a dialogue with the community, to further study the vision of the future, and to come to a common target vision, but most of all to get to work together.

All interested parties are therefore cordially invited to join us to discuss the energy supply in 2030. Our ambition is to be the facilitator and co-driver of the energy transition.

Netbeheer Nederland
The Hague, December 2013



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Steps towards the Energy System of 2030

Action Plan Sustainable Energy Supply

Customers have freedom of choice whether they are active in the energy supply and how (customer is partner) and they can select service level (reliability and availability)

Network operators react to developments/changes in society by providing or supporting user-friendly, efficient and flexible products and services in a timely fashion

Energy supply is integrated (Gas, Heating, Cooling, Electricity), sustainable, more decentralised and European and features new energy systems

Network operators increase the transparency of the free market (open source) for energy supply and lower entry barriers

Network operators provide services which lead to system optimisation across energy carriers

New products and services are available in the energy market and this helps with choices as far as basic needs and other wishes are concerned

Network operators actively facilitate the free energy market

2030

Greater sustainability and greater flexibility, generation from decentralised locations far more commonplace, with more integration between the various energy carriers and far greater active participation from large and small customers

1

Customer: consumer and producer

Optimum freedom of choice and diversity

In 2030

... customers will be able to choose from different service packages

... customers will have a choice of different service levels for energy supply security and stability

... most of the end users will be both the customer and the producer of energy

... virtually all customers will be part of the 'smart grid'

... the customer will be able to buy energy from different suppliers simultaneously

... local and regional initiatives will receive proactive and professional support

2

Transport and distribution network

Optimum use and development

In 2030

... the supply of information will be an integral part of energy transport

... the gas and electricity networks will be linked smartly

... a clear assessment framework will be in place that determines access to the system

... existing hardware will have been enabled to meet the new requirements

... heat networks will be regulated in a similar manner to the gas and electricity networks

... entirely new network designs will be commonplace

3

Balance, capacity and data management

Adequate system control

In 2030

... there will be a functioning capacity management system that safeguards the optimum (technical) operation of the energy system at all relevant levels

... as part of the capacity management there will be an intelligent price mechanism used to regulate transport, distribution and (temporary) storage of energy.

... there will be a capacity management system safeguarding the transport, distribution and (temporary) storage of energy

4

Market facilitation

From collective to individual

In 2030

... billing will be based on actual use and actual production

... the role of market facilitator will be fulfilled in such a way that the energy system will function at its optimum level from a social point of view

... the network operators will provide a platform where suppliers and users on the different markets can meet

... there will be all kinds of new products and services on the market, also in the field of energy conservation and energy management

5

Legislation and regulations

Effective, smart and flexible

In 2030

... legislation and regulations will be consistent with social ambitions in relation to sustainable energy supply

... there will be uniform standards and protocols for every type of equipment (at customers' sites, in the transport and distribution network, IT, etc.)

1

The customer: consumer as well as producer

Further research into dual-firing technology. The customer can choose between different energy sources. Application of 'dual firing' may also play a significant role in the balancing of the grids.

All customers are connected to the public grid (gas and electricity) via a smart meter.

Research that should provide more insight into customer needs and the type of customer.

Grid operators will start a 'learning community' in the areas of customer needs, behaviour and influence. Each stakeholder involved is invited to join and to exchange knowledge and experiences.

Grid operators will involve their customers (consumers and producers) in the development of their service provision. They will develop into an organisation that is customer-oriented, that listens to their needs and takes the position of a service provider.

Grid operators will share more information in order to gain more insight into the possibilities and impossibilities of certain requirements of the customers and then actively support them in finding alternatives. They will improve and increase communication on the functioning of the various markets within the energy system, so customers can make better choices.

Grid operators initiate the development of new products and services that contribute to the optimisation of the energy system as a whole. The grid operators also contribute to the development of platforms to enable customers to use these new services and products. This way, the grid operators want to guarantee a free market in which the end users are free to make choices without vendor lock-ins.

2

Transmission and distribution grids

In order to make the entire grid more intelligent and also for the benefit of further developing the capacity management (voltage and pressure), a study (experiments!) will be conducted in the short term to:

Develop competencies to handle 'Big Data' and to convert this data into real information.

Research into the potential of Open Data (of the grid operators) based on which market parties can develop services. The current research will be continued and expanded.

Developing a tool that allows for a transparent and objective assessment and calculation of sustainable area development. This to support, among others, the local authorities that should assess these plans.

Together with social partners, a social assessment framework will be created that the grid operators will use to guarantee the access to the grid. This assessment framework enables social and financial cost-benefit analyses.

Study with hardware producers how the existing hardware can be adjusted to make it suitable for the intelligent grid and the intelligent connections.

Studies and pilot projects in the field of power-to-gas.

Further and larger-scale studies and several pilot projects in the field of decentralised generation of electricity using natural gas.

Setting up studies and pilot projects to accommodate other gases (such as biogas, LNG).

Study into how energy losses can be greened.

Conducting studies into the CO₂ footprint of the grid operators and their chain partners to achieve a reduction in CO₂ emissions.

3

Balance, capacity and data management

Developing and trying out rules for the cooperation between all players at all levels and between all energy sources in order to achieve adequate control of the entire energy system.

Developing services that will contribute to an effective balance and capacity management across the entire energy grid at local, regional, national and international level.

Constantly setting up and conducting pilot projects to gain experience with - the conversion of electricity into hydrogen or methane (power-to-gas) - the introduction and the use of green gas and the introduction of hydrogen into the gas grid.

Launching demonstration projects to develop gas receiving stations for the handling and distribution of green gas.

Making the pilot project of the gas receiving station between the national and regional grids bidirectional, so the intake of green gas in regional grids can also be guaranteed in case of low usage by using the flexibility of the national grid.

Constantly experimenting with different storage systems.

Translating learning points and experiences of pilot projects into national and international policy recommendations.

4

Market facilitation

As part of the exploration of calculations into the actual usage and the actual production:

- design methodologies to measure this (electricity, heat, cold, gas)
- prepare regulations that enable this
- design and implement the technology (real time)
- launch pilot projects to experiment and learn.

Conducting a study in which the different profiles are analysed and the impact on the system is determined.

Developing an open platform to facilitate services in the field of energy saving and management.

Launching pilot projects to facilitate and/or develop a decentralised market.

5

Laws and regulations

Identifying in the short term what the consequences of the target visions are for the law, regulations and standardisation. By analysing the dilemmas and problems, impediments will become visible, and it becomes clear in which areas there is still a need for further harmonisation and standardisation. The opportunities for 'quick successes' also become apparent.

Grid operators strengthen their position to influence laws and regulations in the Netherlands and Europe, thereby working closely with their partners in the value chain.

Grid operators in close collaboration with their partners strengthen their position in developing and perusing uniform technical and non-technical standards in the Netherlands and in Europe.

We will develop a knowledge exchange platform for Dutch stakeholders that will include international standards. By bundling Dutch efforts, we, as a small country with a vision, can realise the necessary influence in Europe. This will also provide us with the right position (policy and strategy of our representatives in the various committees and groups).

WHAT TO DO

NEW PRODUCTS AND SERVICES
ARE AVAILABLE AND HELP
MAKING CHOICES

Executive summary

The 'Sustainable Energy Action Plan: towards the Energy System of 2030' provides an overview of the issues that are important in order to guarantee a reliable, secure and sustainable energy supply in 2030. (Note that this version has been developed by the joint grid operators and includes, in particular, the issues that are important for grid operators.) The cooperation between the grid operators and all other contributing parties to the energy transition is essential. The present plan is the starting point for an in-depth dialogue with all parties involved to arrive at concrete implementation plans.

Future vision

This action plan focuses on a future vision for a sustainable energy supply in 2030, but it is not a blueprint with a prescribed route. This plan will name themes and areas that will change substantially. For example, customers will increasingly produce energy and entirely new services will be developed. To arrive at a common future vision, it is necessary that all parties involved in the energy transition learn from each other and coordinate their efforts.

The energy supply in 2030 will be different

In 2030, the energy supply will have changed significantly. The outline of the national transition agreement, which was established by the SEC (Social and Economic Council), clearly point in that direction. In anticipation, both a market and customer orientation are essential. For the grid operators, this requires a change in the way they work, based on the vision that the energy supply in 2030 will be different in the following elements:

- The energy supply will be integrated, sustainable, more decentralised, European, and new energy sources will have developed.
- The customer has a need for privacy, has the freedom of choice as to whether and how he or she is active in the energy supply (just as consumers or also as a co-producer) and he or she can opt for different service levels. Compared to today, there will be many new companies, services, products and propositions.
- Grid operators proactively facilitate the free energy market by adjusting the characteristics of their grids and service provisions in a timely manner. They offer services that lead to system optimisation over the energy carriers.
- It no longer involves a power grid, a gas grid and a heat/cold grid, but rather these grids merge towards 'the energy grid'.
- Grid operators make intensive use of data communications to quickly respond to customer needs.

These changes have a major impact on the energy system. For this system to work properly, a lot will be arranged in 2030 in terms of balance management in order to coordinate supply and demand, capacity management for efficient transport and data management in order to have the necessary information available.

Coordination with social partners

In 2030, grid operators will also have social responsibility with regard to having the transport and distribution grids function optimally. The definition of optimal will be determined in consultation with the various parties. Due to the relatively neutral position of the grid operators, they are extremely capable of facilitating the required cooperation between all partners who will determine the future of the energy supply. Using a common vision, this cooperation can prevent unfruitful investments of the grid operators in this capital-intensive industry, for which the investment horizon and technical life cycles are decades, not years.

Large-scale pilot project

The switch that will need to be made in the coming years in order to achieve the objective of sustainable energy production and its implementation is very ambitious. To achieve this, technologies must be developed in an accelerated manner while new roles and processes must be defined and applications must be developed to use these technologies optimally.

One of the main concrete actions arising from this action plan is the initiation of a large-scale pilot project by the grid operators where international research institutions, ICT & technology companies, energy and other suppliers, customers and governments can gain experience.

The grid operators will take the lead in using this large-scale pilot project together with interested parties. This way, Netbeheer Nederland provides the podium to coordinate the actions arising from this plan.

Elaboration and ultimate goal

The action plan is further elaborated into five themes:

1. The customer: consumer as well as producer
 - optimal freedom of choice and diversity;
2. The transport and distribution grids
 - use and expand, optimise;
3. Balance, capacity and data management
 - adequate system control;
4. Market facilitation
 - from collective to individual;
5. Laws and regulations
 - goal-oriented, smart and flexible.

The energy grid is a crucial link between energy production and energy consumption. The guiding objective for the transport and distribution grids in 2030 is: adding value, optimising use and expanding smartly. Thus, the grids are adapted to the future requirements of flexibility and large amounts of sustainable generation, while the reliability and safety remain guaranteed.

Cooperation with all parties involved in the energy supply is essential to achieve this. The ambition is to – based on this action plan – generate a broad dialogue on the future visions and to come to a common target vision with the parties involved and then establish the actions that will bring us towards a sustainable energy system in 2030.

Introduction

This action plan outlines a future vision of the Dutch Energy Supply in 2030. The future vision 2030 is the point on the horizon on which the grid operators focus their activities. It is not a blueprint with a prescribed route, because the social and technological developments are advancing too fast for this, and they are too unpredictable. The road to 2030 is adventurous and is characterised by experimentation, pilots, uncertainties, unexpected windfalls and dead ends. Techniques and possibilities that are currently insignificant may soon turn out to be decisive. In such a situation it is necessary to create a platform in which the different parties involved in the energy transition learn from each other, coordinate their efforts and possibly act as a unit.

With this future vision, the members of Netbeheer Nederland share their vision. It allows them to take a next, more action-oriented and future-oriented step in their process. This action plan will be used to prepare detailed work plans in consultation with the partners. It aims to be an invitation to initiate the creation of a platform where all stakeholders in the energy transition can enter into an open discussion.

This action plan describes the ambition of the joint grid operators. They do so in the knowledge that cooperation with many different parties will be required in virtually all areas. The grid operators will take the initiative to further develop this action plan and initiate actions together with these parties and examine what it means for the cooperation during the implementation.

Fundamental change

Grid operators are facing a fundamental change, on all fronts and in all areas. Their position within society changes, the relationship to manufacturers and customers is incomparable to that of a few years ago and will have changed substantially in 2030. Rapidly, the ability to respond to the demands of society and having an externally oriented, customer-friendly, cooperating attitude has become just as important as maintaining and monitoring the technical quality of the grid. The structure of the workforce will require much more attention for competencies in areas such as consulting skills, service provision, IT and cyber security than in the past.

This action plan evidences the complexity of their task. Wanting to be an intelligent and progressive grid operator with a focus on the market and the customer requires a change in attitude, behaviour and working method of the grid operator. This action plan provides them with this incentive as well as the possibility to also learn from each other.



RESPONDING TO SOCIAL
DEVELOPMENTS BY
OFFERING EFFICIENT
PRODUCTS

Chapter 1:

Future vision

Vision 2030

- The supply of energy will be integrated (Gas, Heat, Cold, Electricity), sustainable, more decentralised and European and there will be new energy systems.
- Customers have the choice whether and how they operate in the energy supply (the customer is a partner) and can choose the service level (reliability and availability).
- Grid operators are responding to developments/changes in society by offering or supporting timely, user-friendly, efficient and flexible services and products.
- New products and services are available in the energy market, and this helps to make choices in basic needs and other wishes.
- Grid operators increase the transparency of the free market (open source) of the energy supply and reduce the entry barriers.
- Grid operators offer services that lead to system optimisation over the energy carriers.
- Grid operators proactively facilitate the free energy market.

Energy supply in 2030

The difference between consumer and producer has faded

In 2030, an end user, whether it is an individual household, a collective or a large-scale business, will still have energy at their disposal in a simple, safe and reliable way. Their houses will be heated and lit, and the equipment is working; the energy supply is guaranteed and affordable.

However, behind this seemingly unchanged picture, a lot will be fundamentally different in 2030. The separation between the consumer/end user and producer will have faded. Many energy consumers will have also become a producer of energy in one way or another. Sometimes individually and on a small scale, sometimes as part of a cooperative and sometimes very substantially with which they often supply more energy to the grid than that they consume themselves.

The growth of the decentralised and sustainable energy generation with a variety of existing and new technologies is fast and will show an exponential growth the coming years. Sun and wind energy, biogas and geothermal energy are increasingly taking the place of the energy generated from fossil fuels. The generation of energy occurs in many more places and by many more parties, locally, regionally and on a European level. The generation of energy is a task of the market; access to the public grid is guaranteed, provided it can be realised at a socially acceptable cost. The customer is a market player in this. By 2030, he will have changed from a passive consumer to an active participant. Not only as an energy producer, but also as a supplier of essential information on the consumption and supply of energy. The customer is a key factor for a fast response to fluctuations in the energy

supply, for example by opting for a different energy source (gas instead of electricity and vice versa), or by temporarily switching off a device that consumes a lot of energy. And in 2030, the customer will offer the possibility to convert the energy temporarily to another form of energy and store it if there is an excess in the supply. In 2030, a customer is both a consumer and a supplier of energy and supporting regular services.

The transport and distribution grids in 2030

In 2030 we will be able to handle greater fluctuations in supply and demand. Sophisticated centralised and decentralised storage capabilities and intelligent transport and distribution grids make this possible. Through the integration of gas, heat, cold and electricity, we can quickly and quietly switch between different energy sources. The exploitation of the 'dumb grids', as they were built in the 20th century, will have become more sustainable, cheaper and more customer-oriented by the addition of ICT, without sacrificing the traditional values such as reliability and stability. The hardware and technology will have been adapted and complemented with smart ICT in such a way that rapid changes in supply and demand can be handled. A sophisticated Supervisory Control And Data Acquisition (SCADA) system will constantly supply all kinds of data, required to continuously select the optimal transport routes, energy deliveries and energy generation.

In 2030, the energy grids will form one integrated smart grid. In 2030, the energy system will be capable of locating the various forms of sustainable, decentralised energy generation in such a way that supply and demand are always in balance and that the system as a whole will use the most sustainable solution that best suits the market participants. In 2030, we will no longer speak of a power grid, a gas grid and a heat/cold grid, but of 'the energy grid'.

Preconditions: managing balance, capacity and data

These changes have a major impact on the entire energy system. Not only in technology, but also in the way the different parties involved play a part in a safe, stable, guaranteed and sustainable energy supply. For the system to work, a lot must be arranged by 2030.

Balance management in 2030

In many periods, the production of sustainable energy from natural resources such as water, wind and sun will not keep pace with the demand for energy. Sudden changes in wind speed and brightness will result in massive, acute fluctuations in the supply, which must be managed by other production means and sources, storage or controlling demand. This will occur on all levels: locally, regionally, nationally and on a European level.

The ongoing flow of available information from the entire chain will provide the market participants with the opportunity to continuously adapt their demand and supply to the current situation. For example, by exporting a surplus of sustainably produced supply, storing it in batteries or converting it to hydrogen or methane and then store it in order to use it or offer it to the market at a later time. The market participants use their flexibility options and in this way contribute to maintaining the energy balance of the grid.

Capacity management in 2030

In 2030, constant choices will be made on all sorts of varying levels in order to transport energy as effectively and efficiently as possible. The need to handle the larger fluctuations in supply and demand and the ambition to always choose sustainable and cost-effective solutions require smart capacity management within the grid. To this end, switching will take place between the different forms of energy such as gas, heat, cold and electricity and multiple storage options will be used. Naturally, this process will largely be automated, based on transparent protocols and control systems.

Data management in 2030

Effective balance and capacity management is not possible without continued availability of a wealth of information about the current and future supply and demand. These data are continuously generated, collected, analysed and stored. Many market participants make use of the data to provide users and producers with new services.

The collection and analysis of key data that are essential for the optimal functioning of the energy supply is one of the key tasks of the grid operators that are responsible for the functioning of the entire grid in 2030. Based on these analyses, producers, users and transporters of energy can make their own choices.

Standardisation in 2030

In 2030, there will be clear guidelines, rules and protocols at European level that describe the requirements all equipment must meet. A Europe-wide 'level playing field' will have been realised to which the market can respond. Uniform regulations allow for optimum operation of the energy system.

The management and operation of the physical grids in 2030

The hardware and software of the transport system in 2030 will be adapted to the demands made to the transport

system by the decentralised generation of energy, the large fluctuations in supply and demand and the increased flexibility and freedom of choice on the part of the end users. This is always subject to a social cost-benefit assessment. The rules and procedures for spatial integration and social acceptance of the changes in the grid limit the possibilities. However, within this framework, the physical grid will be managed and operated in such a way that access is guaranteed, balance and capacity management is possible, and the necessary data can be collected continuously.

The regular and financial administrative flows in 2030

The financial administrative system will be very different in 2030. After all, end users are often also producers, energy is produced, stored and transported on all kinds of different levels. The price mechanism, depending on time, location and quantity, is used to match supply and demand to each other and to enable capacity management. All this requires a sophisticated and transparent system in 2030, with near real time data, which guarantees careful processing of the financial flows.

The importance of ICT for effective capacity and balance management and the associated increase in data streams means that the relationship between the grid operators and telecom sector will be incomparably different in 2030. How it will look exactly and where the boundary between the role of the grid operator and the task of the telecom sector will be impossible to predict. Grid operators and telecom companies will become closely linked.

Development of knowledge and expertise

The need for knowledge on all issues regarding the operation of the energy system remains undiminished. Governments, industry, consumers, civil society organisations: all will have questions of a substantive, technical and legal nature.

Role of the grid operator of the grids

The interdependence is high

The functions as described above are inseparable. They are conditions for the functioning of the energy system. Without effective and efficient balance, capacity and data management, and without a transport and distribution system that is managed, operated and utilised optimally, there will not be a safe, reliable and stable energy system. Also in 2030, the grid operators will have the social responsibility to have the intelligent transport and distribution grids function optimally.

Role of grid operator: provide access

From this responsibility, the grid operator monitors the technical and other requirements for access to the grid in 2030 as well as the preconditions of all equipment that is connected to the grids – directly and indirectly – must meet. To ensure the social function of the grid, the grid operators remain responsible for an uninterrupted energy supply at a certain quality and at an acceptable cost. This way, the grid operators guarantee the integrity of the grid.

Many different parties, including the grid operators, will provide all kinds of new functions and services in 2030, such as advanced measurement and control systems to better and faster match supply and demand of energy at all levels.

Grid operators will also be an essential link in the energy system in 2030. Because of their independent and facilitating role, they provide chain considerations, where the public interest is paramount.

Role of the grid operator: facilitate various markets

Grid operators are the public party that let the market do its work. The grid operator shall ensure that the transactions established in the market will actually lead to the supply of energy and allows parties to handle the administration thereof. This allows the grid operators to contribute to the creation of open markets, to which producers have easy access and customers always have ample options without incurring high switching costs. This is an extremely complex task. It entails bringing together suppliers and consumers of energy, the 'commodity market'. However, bids of the market participants are also used to maintain the balance in the system. This requires the role of a 'market manager' who brings demand and supply together. Currently, it is not yet clear who will take on this role.

The cohesion between the markets is large, both from a technically-substantive perspective and in terms of administrative support for the operation of these markets.

Role of the grid operator: actively managing the system

In 2030, the grid operators not only aim for a secure, reliable and affordable grid in their social endeavour, but also for an optimally functioning, complete energy system. The definition of optimal will be determined in consultation with the different stakeholders of society. Grid operators are now more than ever aware of their communities, work closely together with all social partners and deal professionally with the different roles they have. In 2030, the grid operators will be customer-oriented, listen to the needs and requirements of the customer, consumer and producer. They are innovative, professional sparring partners who support their customers in finding the best solution.

There is not a single optimal route, but there is a need for a tour guide

The exact route with concrete technologies that will dominate in 2030 is not yet known. The grid operators have no crystal ball to predict the future. Several scenarios were designed by various parties to provide insight into the various developments and their potential impact on the market, the grids and the system as a whole.

This Sustainable Energy Action Plan also takes account of the uncertainties in the future. There are several ways to achieve the described future vision in 2030. Certain decisions, which now appear to be relatively insignificant, may have major consequences and block alternatives that are attractive at that time. Investments, which now seem logical and sensible, may eventually prove unnecessary. All parties involved in the energy transition live with this uncertainty and this unpredictability.

Role of the grid operator: facilitate cooperation

Because of their relatively neutral position, without market-related, financial or general self-interest in, for example, the production or the method of ultimate use, the grid operators are able to encourage and facilitate the necessary cooperation between all social parties.

In addition to all the adjustments in technology, the application of smart systems and facilitating the market in other ways, this facilitating role for cooperation will be their most significant contribution to the realisation of a sustainable energy supply in 2030 in the coming years. By doing so, they take on the role that is expected of them on a European level: actively facilitating and stimulating the energy transition.

One of the examples of the developments that are both very unpredictable and have a very large impact on the entire energy system is the emergence of electric vehicles. The rate at which electric vehicles will enter the market en masse is impossible to predict. If this is on a large scale, this may result in large peak demand in local grids. At the same time, it also means that decentralised electricity storage may become available in the batteries of these electric cars.

GRID OPERATORS
TO INCREASE TRANSPARENCY
AND LOWER ENTRY
BARRIERS

Chapter 2:

From action plan to realisation

Working together, managing together

With their future vision, the grid operators want to take the initiative to establish a broad-based target vision. None of the parties necessary to achieve the target vision for 2030 is capable of realising the ambitions from the target vision by itself. It requires cooperation between all parties, on all fronts and at all levels.

With this shared vision, the grid operators are following the path of joint management, a path of administrative commitment to a shared ambition. They feel responsible for realising this action plan together. They do this mainly by anchoring this plan and the corresponding target visions within the visions and plans they make as parties alone or in concert. The grid operators themselves will remain administratively responsible for initiating, developing, elaborating, implementing, co-financing and financing their 'own' projects. However, they associate this autonomy to the commitment to adjust and coordinate their actions with one another, both in terms of content and in planning. And especially the commitment to learn from each other's experiences and experiments. With this, Netbeheer Nederland provides the platform for the exchange, coordination and alignment regarding the implementation of the actions arising from this action plan.

The five core themes of the action plan

In the Appendix, the future vision has been further elaborated according to five core themes. A more detailed description of the situation in 2030 has been outlined for each core theme. Each chapter ends with a first inventory of activities and projects that will be carried out in the coming years pursuant to this core theme. Together with the various stakeholders within these core themes, Netbeheer Nederland will prepare detailed work plans.

The five core themes are:

1. The customer: consumer as well as producer
2. The transport and distribution grids
3. Balance, capacity and data management
4. Market facilitation
5. Laws and regulations

Within these core themes, projects and activities with a similar content will be clustered:

- Projects and activities in the cluster of the customer focus specifically on the service provisions and support to the end user, who will also be a producer of energy and services, in addition to being a consumer. For this core theme, thinking from the needs of the customer is crucial.
- The core theme 'transport and distribution grids' has the most technical character. Here the smart and intelligent technical solutions are devised and implemented that enable the sustainable energy supply in 2030 and ensure access to the grid.

- Balance, capacity and data management are essential activities for the functioning of the entire energy system. Within this cluster, complex, technical control systems will be developed that are necessary for an optimal working system.
- Market facilitation mainly accommodates all the administrative actions, such as organising and controlling the financial flows and preparing supply and delivery agreements.
- Within the 'laws and regulations' cluster we will find all lobbying and legal activities, necessary at all levels, from local to international.

The implementation of the activities

There is ample overlap between these five clusters of activities. The implementation of the activities for the various core themes is sometimes the responsibility of one individual grid operator, more often of a group of cooperating grid operators, but also very often of groups and project groups in which numerous different chain partners work together.

For other activities, people are already responsible and active, such as for national and international lobbying and communication. Representatives of the grid operators are already active in international consultations to harmonise the laws and regulations or to promote the standardisation.

Netbeheer Nederland will ensure that all these activities are coordinated more effectively, and that they are mutually reinforcing.

Activities that have been started in recent years

Grid operators have been active in the facilitation and realisation of a sustainable energy supply for several years. The roadmap Smart Grids from 2009, prepared by Netbeheer Nederland, is used as an overview and a guide for the action points to be undertaken, where three types of actions have been taken up:

- *Technical action points*: impact of new sustainable and other technologies and generation on the grids and studies into efficient storage options to maintain the balance between supply and demand.
- *Laws and regulations*: research into legal problems and possibilities of the expansion or modification of laws to make new market roles and services possible in the future.
- *Customer and social dialogue*: raising awareness about the changes in the energy world, including through the development of a 'Smart Grid Game' and the more active involvement of all stakeholders, especially customers in the thinking about desirable solutions towards a sustainable energy supply.

Many action points have been taken up over the last five years from various 'pilot projects' in the Netherlands. These are areas where concrete demonstrations of sustainable generation, storage and/or new services such as electric vehicles take place. Important lessons are taught in this area by different consortia, such as the Smart Energy Collective, IPIN and various citizens' initiatives. These are lessons in terms of integrating the technologies for sustainable generation properly into the grids, good acceptance of new services by customers and other stakeholders and describing the necessary laws and regulations.

Knowledge exchange and large-scale pilot project

In order to realise the future vision, there is a great need in the coming period for more intensive knowledge sharing within and among the current small-scale pilot projects. Evaluation of these results will provide insight into what actually works in practice. In addition, Netbeheer Nederland is considering contributing to the creation of a large-scale pilot project.

Grid operators consider the target vision formulated above as a joint dot on the horizon, the point to which they direct their activities. It will require a lot of development and experimenting to get there. All kinds of experiments are currently being performed in many areas and on different levels. However, in the Netherlands or even in Europe, there are hardly any large-scale experiments to gain experience with capacity management, balance management and data management of an integrated energy system with a high degree of interaction between producers and consumers, and a large number of actively participating small players. And this is, after all, the core of the challenge the grid operators are facing on the way to 2030.

Large-scale experiments could include up to half a million customers who test new technologies, products and/or services. It is of the utmost importance to scale up the current small-scale pilot projects in the short term in order to suit the ambitious climate targets of the European Union for 2020 and to create an incentive for market participants to actively participate. This will make it attractive for the market to participate in financing and developing the products and services that can effectively facilitate a sustainable energy supply. In this context the term bridging the 'valley of death' is sometimes used, since the market participants are still in a pre-commercial phase, in which the market area and future success are still uncertain. The large-scale pilot project can contribute to bridging this uncertainty.

It follows from the above discussion that one of the first intermediate results the grid operators will concentrate on in the next few years is the launching a large-scale pilot project, where national and international research institutions, ICT and technology companies, energy and other suppliers,

customers and governments can gain experience. This will allow them to find out what is required to have the energy system of 2030 function as outlined above. The grid operators will gladly take the lead in designing and realising such a large-scale pilot project together with interested parties, preferably with the support of the European Commission.





FREEDOM OF CHOICE OF THE
CUSTOMER IN HOW THEY
WILL BE ACTIVE IN THE
SUPPLY OF ENERGY

Core theme: 1.

The customer: consumer as well as producer

Optimal freedom of choice and diversity

It is likely that customers in 2030 will essentially have the same wishes as those of 2013 or 1990: have certainty about the details of their comfort needs. Small-scale customers (consumers) simply want to have a warm house when they come home, be able to use the internet and turn on the lights. Large-scale customers still wish predictability and certainty. And this at the lowest possible cost. The main condition for this, though, the energy supply, will change considerably.

And upon closer inspection, the relationship between the customer and the grid will also have changed considerably in 2030. Households and businesses will not only purchase energy, but also all kinds of additional services that enable them to optimise their energy consumption. They purchase these services from the grid operators (see below), but also from market participants who will use the wealth of information that is collected to develop their own services.

Customers can choose, for example, a lower level of services to enjoy the associated lower costs. Still others will set higher demands for the stability of the energy supply. Many large customers have invested so much in their own energy production that they only consider the public grid to be a 'back-up' service. Others may make intensive use of the supplementary services the grid operator has to offer: choice between different providers and between different packages.

In 2030, customers will live in a lower energy or even a zero-energy home, and are often energy producers themselves in different ways. This can be individually, because they have solar panels and/or an on-site micro combined heat and power plant. But it can also be collectively, because they are a member of a cooperative or association, which operates windmills or solar panels. Their equipment can be used all over Europe; working with various adapters and plugs is something of the past. The so-called 'dual-firing' technology (the ability to heat the house with both electricity and gas) offers them the possibility to choose between different energy sources.

Without noticing or realising it, customers form part of the smart grid. For instance, they have efficient storage options that contribute to the effective utilisation of the grid at home or in cooperatives. This also makes them service suppliers to the public grid. Examples include price incentives, where customers supply temporary storage capacity and information, and have the choice to temporarily switch large appliances

on or off. This converts them from passive end users into active participants in an integrated energy system.

More detailed specification

The customer can choose from different service packages in 2030.

When making choices, they are advised through their 'customer portals' and they can make their choices online and in real time.

Examples of service packages:

- *Traditional:* the customer chooses a traditional package, in which energy is guaranteed according to specifications.
- *Low cost:* the customer with many power consumers (washer, dryer, auto charging station, heat pump, heating, etc) chooses a package that automatically selects the cheapest energy producer at that moment and/or is only activated if energy is available at a certain price level.
- *Minimum:* the customer is largely self-sufficient and has only a 'back-up' contract with the nationwide provider/grid operator/intermediary.
- *Optimal freedom:* the customer decides whether and when to use equipment and/or lets its use depend on the current energy price.
- *Energy-efficient:* the customer chooses a form of service provision that, based on the data from his own 'home control centre,' will provide him with regular advice on minimising energy use.

In 2030 customers can choose from different service levels when it comes to the security and stability of the energy supply.

The time that a uniform supply standard applied to all customers in the Netherlands will have ended by 2030. Security and a minimum level of certainty will, of course, be guaranteed, but in addition, customers can choose from different levels.

In 2030 a majority of end users will be a producer of energy in addition to being a consumer.

In 2030 customers, large and small, are also energy producers in many cases, sometimes as individuals, sometimes as a participant in a local initiative. Some will produce only for private use. Many will also have access to the public grid, provided that the quality of their energy meets the agreed requirements. They have clear business agreements with the grid operator about this. The grid operator or any other party may request advice on the best way to store or supply back to the public grid the energy produced in surplus, but also commercial parties will manifest themselves in this area.

In 2030 virtually all customers will be part of the 'smart grid'.

In 2030 the customers will constantly supply current data to the smart grid through their smart meter, which co-enables the optimal utilisation of the grid. If allowed by the customer, the smart meter allows two-way transmissions: if the demand is too high in a given period, the customer receives a price or other signal over the internet, which allows the customer to decide whether to temporarily switch off devices requiring a lot of energy, or if an automatic switch to a different energy source takes place: the electricity-demanding heat pump is switched off, and heating will temporarily switch to gas. At other times, when the supply is high and the price is correspondingly low, the customer gets the right incentive to switch on power consuming equipment or charge his or her electrical car.

In 2030 the customer can simultaneously purchase energy from different suppliers.

Via the grid, the customer can simultaneously order energy from different suppliers. For example:

- A different supplier to charge the company car, because the employer has a fixed-term contract with them.
- Deliveries through cooperatives for the generation of sustainable energy, in which he or she participates.
- Deliveries via private, centralised or decentralised storage at the times the delivery via the cooperative is insufficient.
- The delivery via the public grid as a back-up.

Local and regional initiatives will be supported proactively and professionally in 2030.

Grid operators are committed and open: the social partners consider them an open, reliable and committed partner, who actively thinks along about an efficient and cost-effective way to support national, regional and local initiatives for the energy transition. In case of large-scale construction and/or renovation projects, they actively cooperate with the optimisation of the entire energy system. (Area development.)

Actions to achieve optimal freedom of choice and diversity

As part of the aforementioned elaborations, the focus for the next few years will lie on implementing the following actions and groups of actions. Netbeheer Nederland will continue to work on an implementation plan in consultation with the direct stakeholders.

Action:

- All customers are connected to the public grid (gas and electricity) via a smart meter.

Action:

- Research will be performed to provide more insight into customer needs and the type of customers.

Action:

- Accordingly, the grid operators will start a 'learning community' in the areas of customer needs, behaviour and influence. This learning community is not exclusive to grid operators, but each stakeholder involved is invited to join and to exchange knowledge and experience.

Action:

- The grid operators try to assess the long-term wishes of the end users. This will, also depending on the market model, be done in consultation with the end user or the parties providing services to end users and groups of end users, such as energy suppliers and ISPs (Independent Service Providers).

Action:

- Grid operators will share more information in order to gain more insight into the possibilities and impossibilities of certain requirements of the customers and then actively support them in finding alternatives. They will improve and increase communication so customers can make better choices.

Action:

- Grid operators will initiate the development of new products and services that contribute to the optimisation of the energy system as a whole. The grid operators also contribute to the development of platforms to enable customers to use new services and products. The system must contain new functionalities that guarantee a free market with free choices for the end users, free of vendor lock-ins (= situation in which the customer is practically obliged to use the services of a certain supplier and switching suppliers requires substantial additional costs).

Action:

- Further research into dual-firing technology. The customer can choose between different energy sources. Application of 'dual firing' may also play a significant role in the balancing of the grids.



Core theme: 2.

The transport and distribution grids

Optimal use and expansion of the hardware

It is quite certain that 75% of the current transport and distribution grids will also be used in 2030. The major difference is that gas, heat, cold and electricity grids will constantly complement each other and compete for best applicable given local circumstances. Thus, energy carriers may replace each other depending on regional situations and -developments. The different transport- and distribution grids will be fully integrated and the intelligent use of the grids will be optimised using information technology (IT) capabilities.

The mandatory free access to the energy grid still applies, however, it is interpreted such that an assessment can be made of the social costs. To enable the increase in the decentralised generation of energy, the grids will be accessible, provided that the producer complies with the minimum technical requirements and that the benefits to society outweigh the costs. And it is up to society to make this consideration. Grid operators feel obliged – and are well capable – to properly explain where and why access to the grid is allowed or denied as well as the consequences of that choice. They will always consult the parties that wish access and inform them about the best way to achieve this.

For the Netherlands, the demands imposed on the grid in terms of stability and safety in 2030 will be similar to those in 2013. However, it will be possible to change this. For whatever reason, the choice may be made for some regions or by some end users to opt for a lower or higher level of availability and/or different energy carrier.

It is unlikely that these additional requirements only be achieved through the expansion of the capacity. Regardless of whether it is possible from an economic perspective, the development towards decentralised, sustainable energy seems to be going too fast to facilitate it through the expansion of the capacity. After all, the expansion of the capacity requires a lot of consultation and coordination at all levels of government; the planning for capacity expansion largely depends on all the rules and procedures for spatial planning.

The best approach will be decided on a case-to-case basis. In one case, simply increasing the capacity of the grid may be the best solution. In another case, it will just have to be used optimally: it will then become a smart combination of grids, optimised for the local and central production and local and central use of energy. This also implies an active

role in area development projects. The guiding objective for the transport and distribution grids in 2030 is therefore: use and expand optimally.

More detailed specification

In 2030 the provision of information will be an integral part of the energy transport.

In 2030 the supply and demand is continuously measured and analysed at numerous locations. There will be a comprehensive system for data management: collecting, analysing and managing all data. Grid operators play a central role herein, on the one hand because of their independence, on the other hand because of the strategic importance of an adequate supply of information for a working energy system (also see 'Balance, capacity and data management'). There are clear agreements on the (commercial) use of the data by a variety of different parties to develop services based on these data. Obviously, these agreements are within the applicable laws and regulations with respect to privacy and security.

In 2030 the gas and electricity grids will be linked together in a smart manner.

Also in the longer term, gas will play a role in the heat demand by continuing provision during the peak demand for heat. A high demand for heat does not lend itself for switching to 'all electric' due to the high costs of expanding and strengthening the existing electricity grid. By linking both grids to each other in a smart manner, it is always possible to use the energy source necessary for an optimal use of the energy system.

In 2030 the existing hardware will be suitable for the new requirements.

The existing energy grids will be much more flexible, efficient and able to switch more quickly between many different sources, centralised and decentralised storage options and transportation options. New grid components will be introduced, especially in the field of power electronics, which allow for switching, controlling and conversion. The existing separate grid components will be adapted to the requirements of the smart grid. Where this is not possible they will be replaced. The gas, heat, cold and electricity grids will be interconnected. Smart use will be made of concepts such as Power2Gas, CHPs (Combined Heat and Power) and fuel cells.

In 2030 heat grids will be regulated in a similar manner as the gas and electricity grids.

Due to transparent social trade-offs, grid regulation will be objectivised and balanced and all grids (gas, heat, cold and electricity) will be assessed objectively using integrated and integral chain considerations.

In 2030, significant completely new grid designs will be used.

An integrated grid design is used in line with the requirements of the smart grid for each new grid. This holds also for renewing the grid or components of the grid. A completely new set of selection mechanisms and regulation is used to enable choices between the traditional solution with cables and pipes (nowadays aluminium and plastic) on the one hand, and the application of intelligence on the other hand.

Actions to achieve a smarter grid

As part of the aforementioned elaborations, the focus for the next few years will lie on implementing the following actions and groups of actions. Netbeheer Nederland will continue to work on an implementation plan in consultation with the direct stakeholders.

Action:

- An important element in achieving a smarter grid is the knowledge about the impact of new technologies on the energy system, especially on the grids. This includes the impact of other gases, such as green gas and crude biogas, and solar panels, electric vehicles, heat pumps, energy saving, etc. This knowledge can be used to work on an optimal social integration. This involves making choices between grid expansions, smart arrangements and geographic installation and connection policies.

Action:

In order to make the entire grid more intelligent and also for the benefit of further developing the capacity management (voltage and pressure), a study (experiments!) will be conducted in the short term into:

- Which types of intelligence can be used at which points in the grid and where can this be applied in an economically responsible way?
- What 'smart' ways are there for maintaining the quality of the electricity and gas?

Action:

The architecture of the information provision will be elaborated in the context of designing a smart grid (research and experiments):

- Which information is required, where and for what purpose?
- What are the laws and regulations for the collection and sharing of this information?
- Which data will be collected and how, when and where?
- How should incomplete and unreliable data be handled?
- How can it be achieved that customers will make their data (smart meter) available?

Action:

- Large quantities of data will become available. Competencies will be developed to deal with this 'Big Data' and to convert this data into real information.

Action:

- The research into the potential of Open Data (making the data of the grid operators available) based on which market parties can develop services will be continued and expanded.

Action:

- A tool will be developed that allows for a transparent and objective assessment and calculation of sustainable area development. This to support, among others, the local authorities that should assess these plans. Depending on the region, different energy sources and infrastructures will be more profitable and interesting. Such a tool will provide insight and facilitate making the right choices.

Action:

- Together with social partners, a social assessment framework will be created that the grid operators will use to guarantee the access to the grid. This assessment framework enables social and financial cost-benefit analyses.

Action:

- It will be studied with the hardware producers how the existing hardware can be adjusted to make it suitable for the smart grid and the smart connections.

Action:

- Studies and pilot projects will be conducted in the field of power to gas.

Action:

- Further and larger-scale studies and several pilot projects will be performed in the field of decentralised generation of electricity using natural gas. One example is the micro combined heat and power plant. Micro generation using fuel cells or micro CHP is very flexible and allows for local matching of supply and demand and to perform capacity management.

Action:

- Studies and pilot projects will be set up to accommodate other gases (such as biogas, LNG).

Action:

- A study will be conducted into the way energy losses can be greened.

Action:

- Studies will be conducted into the CO₂ footprint of the grid operators and their chain partners to achieve a reduction in CO₂ emissions.

Core theme: 3.

Balance, capacity and data management

Adequate system control

Sustainable sources such as sun and wind mainly produce electricity. The large-scale availability or unavailability of these sources creates huge fluctuations in energy supply and thus an imbalance in supply and demand, which is impossible for the electricity grids and power plants to solve themselves. Because the end user will actively participate in the entire grid, a small shift in the demand pattern can be established, but this will be insufficient to tide over days, let alone weeks or seasons. Furthermore, the transport of energy over long distances in the form of electricity is very expensive compared to gas. Unlike the transport of gas, the transport of electricity always results in significant grid losses. Due to its natural storage capabilities, gas can be a good option to maintain the balance.

Therefore, proper integration between these grids will be ensured in 2030. New technologies such as power to gas, where sustainably generated electricity is converted into hydrogen or methane, offer good opportunities. This can then be stored in the existing gas infrastructure (gas storage) and be transported and used flexibly in a relatively inexpensive way, such as gas for high-efficiency boilers, or to reconvert it to electricity with gas-powered electricity plants.

Balance not only plays a role in the electricity grid, but with the local injection of green gas and other gases, a smart gas grid has also been developed, in which the gas grid will continue to operate in a balanced manner.

In 2030 enormous fluctuations in the energy supply and demand will be normal. The provision of real time and complete information and the corresponding price incentives affect the behaviour of the market participants. This data management, combined with intelligent control systems, ensures that supply and demand are always in balance and that the energy balance in the grid is maintained.

Balance, capacity and data management play a role at an international, national, regional and local level. Balancing and capacity management is required for national and regional grids and also for the connection between these grids, where local energy cooperatives or large customers are largely self-sufficient and only use the 'public' grid as a 'back-up'.

More detailed specification

In 2030 there will be a working capacity management system that guarantees the optimal technical and regular performance of the energy system at all relevant levels.

Real-time information, smart ICT and software and sophisticated data management will ensure that the voltage and pressure balance in the grid is continuously guaranteed.

As part of capacity management, there will be an intelligent price mechanism in 2030 that regulates the transport, distribution and storage – being temporary or permanent – of energy.

The idea that transport of energy is 'free' will have been adjusted. It will be generally accepted that energy transport and keeping the entire energy system working costs (a lot of) money. There will be incentives that encourage market participants to increase demand and/or supply and to store energy centrally or decentrally.

There will be a capacity management system in 2030 that guarantees the transport, distribution and – temporary and permanent – storage of energy.

In 2030, clear protocols will be used that govern the priority on the transport and distribution grids.

Actions to achieve adequate system control

As part of the aforementioned elaborations, the focus for the next few years will lie on implementing the following actions and groups of actions. Netbeheer Nederland will continue to work on an implementation plan in consultation with the direct stakeholders.

Action:

- Rules will be developed and tried out by different actors for the cooperation between all players at all levels and between all energy carriers in order to achieve adequate control of the entire energy system.

Action:

- Services will be developed that contribute to an effective balance and capacity management across the entire energy grid at local, regional, national and international level.

Action:

Pilot projects are constantly set up and conducted to gain experience with the conversion of electricity into hydrogen or methane (power to gas). This includes:

- The introduction and the use of green gas.
- The introduction of hydrogen into the gas grid.

Action:

- Demonstration projects will be launched to develop gas receiving stations for the handling and distribution of green gas.

Action:

- The pilot project of the gas receiving station between the national and regional grids will be made bidirectional. This is to guarantee the intake of green gas in regional grids in case of low usage by using the flexibility of the national grid.

Action:

- Continuous experimentation will take place with different types of storage systems.

Action:

- Learning points of pilots will be translated into national and international policy recommendations.

Core theme: 4.

Market facilitation

From collective to individual

Keeping the energy system working not only entails a technical component (see balance, capacity and data management), but also an administrative component. To keep the system operating, numerous administrative and other systems will be needed in 2030, including the mutual financial settlement between customers and suppliers of energy, services and data. In 2030 this settlement will take place based on the actual metered usage. The smart meters will provide the necessary data for this. In addition, there are numerous contractual and non-contractual agreements between customers and suppliers, which have implications for the transport and distribution of energy and therefore must be known and compatible in one way or another.

If a supplier and its customers enter into an agreement on the supply and consumption of energy, this agreement must comply with the agreed technical requirements for the transport and distribution of energy. In this case, the transport and distribution grids will make such agreements possible. This means that in this case agreements are made between the supplier, customer and carrier/distributor.

An important role of the market facilitator in 2030 will be providing advice on the agreements between customers and suppliers, the corresponding technical requirements and then enabling that these agreements can be fulfilled by the transport and distribution grids.

In 2030 grid operators will facilitate the different existing markets: the market where supply and demand of energy come together, the market of supply and demand of the transport capacity, the market of supply and demand of services required for balance management and, finally, the market of supply and demand of data and information. Grid operators guarantee a smooth operation of these markets.

In addition to the aforementioned markets, other necessary services and products will be developed in the energy market. Especially in the field of energy saving and management (comfort) this already takes place. Such products and services often use measurements and data that can or cannot be supplied by the grid operator (e.g. smart meters).

More detailed specification

In 2030 payment will take place based on the actual consumption and the actual production.

In 2030 the profile method will have been abolished, and payment will take place based on the actual consumption, the actual production of energy and on the services received

and provided. A sophisticated and intelligent administrative system makes this possible.

In 2030 the role of market facilitator will be such that the energy system functions optimally from a social perspective.

In 2030 the market facilitator will ensure an optimally operating system. Not only from a technical point of view, but also from a social and financial point of view. The question of who the market facilitator is has yet to be answered.

In 2030 the market facilitator will provide a platform where suppliers and consumers on the different markets can meet.

In 2030 there will be all kinds of new services and products on the market, including in the fields of energy saving and management. To facilitate the entry onto the market of these products and services, the grid operator will provide a standard infrastructure (connection, measurement, telecommunications, data storage) for customers to whom the commercial parties can easily offer their services.

Actions to achieve optimal facilitation of the market

As part of the aforementioned elaborations, the focus for the next few years will lie on implementing the following actions and groups of actions. Netbeheer Nederland will continue to work on an implementation plan in consultation with the direct stakeholders.

Action:

As part of the calculation into the actual usage and the actual production, the following will be done:

- Methodologies will be designed to measure this (electricity, heat, cold, gas).
- Regulations will be prepared that enable this.
- The technology will be designed and implemented (real time). Pilot projects will be launched to experiment and learn.

Action:

- A study will be conducted in which the different profiles are analysed and the impact on the system is determined.

Action:

- Development of an open platform to facilitate services in the fields of energy saving and management proactively.

Action:

- Pilot projects will be launched to facilitate and/or develop a decentralised market.

Core theme: 5.

Laws and regulations

Goal-oriented, smart and flexible

In 2030 there will be a well-functioning 'control loop', both at national and European level. Experiences gained in the development and the implementation of various components of this action plan will be translated into priorities for effectively influencing policy decision-making. Based on an analysis of the probability of success and the need to adapt certain laws and regulations, coordinated actions will be undertaken to achieve the adaptation of the laws and regulations.

This way, the national and international laws and regulations in 2030 will have joined the technical possibilities of that time. There will be a well-functioning national and European platform, which constantly tests laws and legislation against the social developments. The laws and regulations (including the technical codes and standards) will be uniform so accessibility to the market is optimal. They are smart because they contribute to the desired transition and flexible because the technical and social developments in 2030 will still advance so fast that laws and regulations that are too inflexible will quickly prove to be attenuate and counterproductive.

In 2030 there will be a comprehensive European set of standards for technical and other standards to which all kinds of equipment connected to the grid or used within the grid must meet. The same applies to local and regional 'autonomous' grids. Based on the work performed, a protocol will also have been developed for this, which allows the national grid to serve as a 'back-up'.

When developing standards and protocols in 2030, the optimisation of the entire energy system is continuously taken into account. Several partners in the system will have found an effective way to line up common interest and their own interest.

More detailed specification

In 2030 the laws and regulations will be in line with the social ambition regarding the supply of sustainable energy.

An effective lobby exists, both at national and European level, to ensure that the national and international legislation will permit the ambitions for sustainable energy systems.

In 2030, there will be uniform standards and protocols for all types of equipment (at the customers, in the transport and distribution grids, IT, etc).

On an international and European scale, the aim is continuous uniformity. This ensures a level playing field and market access for suppliers of services and products who make a functioning energy system possible.

Actions to achieve smart and flexible rules and standards

As part of the aforementioned elaborations, the focus for the next few years will lie on implementing the following actions and groups of actions. Netbeheer Nederland will continue to work on an implementation plan in consultation with the direct stakeholders.

Action:

- In the short term, the consequences of the target visions for the law, regulations and standardisation will be identified. By analysing the dilemmas and problems, blockages will become visible, and it becomes clear in which areas there is still a need for further harmonisation and standardisation. The opportunities for 'quick successes' also become apparent.

Action:

- Together with their partners, grid operators strengthen their common position to influence laws and regulations in the Netherlands and Europe.

Action:

- Together with their partners, grid operators strengthen their common position to pursue the establishment of uniform technical and other standards and play an active role in the formulation of these standards.

Action:

- The grid operators will develop a knowledge exchange platform for Dutch stakeholders with relation to international standards. By joining the efforts in the Netherlands, we, as a small country with a vision, can realise the necessary influence in Europe. This will also provide the grid operators with the right position (policy and strategy of our representatives in the various committees and groups).

THE SUPPLY OF ENERGY
WILL BE INTEGRATED,
SUSTAINABLE, MORE DECENTRALISED,
EUROPEAN AND THERE WILL BE
NEW ENERGY SYSTEMS





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