Public Consultation on the development of a comprehensive, integrated Research, Innovation, and Competitiveness Strategy for the Energy Union

Fields marked with * are mandatory.

Introduction

Objective of the consultation

The objective of this public consultation is to collect the opinions of stakeholders and interested parties, including EU citizens and private and public organisations, with regard to the development of a comprehensive research, innovation and competitiveness strategy for the Energy Union, as the fifth pillar of the Energy Union Communication (http://ec.europa.eu/priorities/energy-union-and-climate_en). This aspect is particularly important given the objective to drastically reduce EU's emissions and use of energy, while at the same time maintaining the competitiveness of economic sectors including energy and transport but also industry, agriculture/bioeconomy and construction, and providing modern, user-friendly, safe, sustainable and secure solutions to EU citizens and businesses. In this sense, this strategy will provide an important element to contribute from the EU perspective to the Paris Agreement achieved on last 12 December 2015 as the outcome of Conference of Parties (COP21) under the United Nations Framework Climate Change Convention (http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf).

The replies submitted to this public consultation will be analysed, aggregated for specific sectors and taken into consideration during the development of an Integrated Energy Union Research, Innovation and Competitiveness Strategy foreseen for end of 2016.

More targeted consultation processes of specific stakeholders for the energy and the transport area will also be put in place through existing fora, such as the Technology Platforms, and through the establishment of Expert groups. These specific consultations will provide inputs to how the on-going Integrated Strategic Energy Technology Pan (SET-Plan)[2] and the idea for a Strategic Transport Research and Innovation Agenda (STRIA)[3] should be seen in the context of an overall Integrated Energy Union Research, Innovation and Competitiveness Strategy.

Background

Research and Innovation are paramount to achieve the objectives of the Energy Union. They underpin its four first dimensions- decarbonisation, energy efficiency, energy security, and a fully integrated internal energy market - since Research and Innovation aim to provide solutions to challenges faced in each of them.

Over the last decade Europe has steadily progressed toward its 2050 goal (http://ec.europa.eu/clima/policies/strategies/2050/index_en.htm) of a largely decarbonised continent. As the transformation of its main economic sectors advances, it has become apparent how the challenges ahead have become more complex and interlinked. Achieving greater levels of decarbonisation and decoupling EU economic growth from increased emissions will require profound technical, economic and societal changes. But a change of gear in the development and deployment of new solutions alone will not be sufficient. The transformation of a complex system, fostering the cooperation among different sectors while taking into account the increasingly limited natural resources at our disposal will be crucial.

The Energy Union vision provides the framework to respond to these challenges. It is built on a set of climate and energy targets to be realised by 2030(http://ec.europa.eu/clima/policies/strategies/2030/index_en.htm): at least 40% domestic reduction of greenhouse gas emissions, at least 27% share of renewable energy consumed in the EU and at least 27% improvement in energy efficiency. Reaching and exceeding these intermediary objectives will allow the EU to pursue the goal of a 80-95% decrease in greenhouse gas emissions by 2050.

Where targets indicate the pace and ambition of the change, a clear strategy specifying the modalities of the (re)evolution is needed as well. In this regard the Energy Union Communication highlights the central role that Research and Innovation (R&I) will play in realising this transformation. It identifies the economic sectors that are called to provide the greatest contribution.

An overarching Integrated Energy Union Research, Innovation and Competitiveness Strategy is essential in order to ensure that the overall goals are not lost in the trade-offs between the individual sectors. New e-mobility solutions for reducing CO2 in transport cannot result in transferring the problem to the energy sector if there the electricity supplied does not come from clean sources. Exploiting the potential of biomass for energy cannot result in the unsustainable use of natural resources or jeopardising food security or raw materials availability for industrial products.
Research and innovation shall contribute to make Europe the world's number one in renewables & low-carbon technologies and solutions as well as to maintain and reinforce a strong and competitive industrial base.

Although technological development and innovation are at the core of the transition to a low carbon economy, the deployment of innovative solutions depends on factors such as new approaches to investment, carbon pricing, a favourable business environment that supports new and even disruptive businesses and innovation-friendly regulatory frameworks.

Efforts are also necessary to effectively engage Member States, local authorities, stakeholders and consumers to allow this transition to take place and move forward societal and economic growth. For this reason, partnerships and close cooperation with key players around common objectives of public interest is mandatory as well as the alignment of strategies and resources at European, national and regional level.
[1] COM(2015) 80.
[2] C(2015) 6317 final
[3] As announced in the Energy Union Strategy Communication COM(2015) 80, the STRIA contribute to the attainment of the Energy Union goals, and in particular of the goals under the dimension of an Energy Union for research, innovation and competitiveness, by supporting the development and deployment of key low carbon transport technologies.

Instructions for completing the questionnaire

Please note that the questionnaire consists of six parts.
Part I asks for information about the respondent and some questions in Part I are mandatory.
Part II asks to you as general public what efforts should be prioritised for achieving the energy and climate targets.
Part III asks focused questions on aspects of research, development and innovation elements important for the transformation of the specific sector of your interest or activities. In replying to this part, you should take into consideration the specific field of your activity, for example if that is "energy", the "security" challenge to be faced should be read as "security of energy".
Part IV asks questions on aspects of integration elements that should support an integrated strategy.
Part V asks focused questions on aspects of competitiveness of EU economic actors and new business opportunities.
Part VI will allow you to share any other thoughts or comments.

Disclaimer

Please note that this document has been drafted for information and consultation purposes only. It has not been adopted or in any way approved by the European Commission and should not be regarded as representing the views of the Commission. It does not prejudge, or constitute the announcement of any position on the part of the Commission on the issues covered. The European Commission does not guarantee the accuracy of the information provided, nor does it accept responsibility for any use made thereof.

Part I - Information about the participant

* Please provide your name (first name and surname)

The Netherlands, Ministry of Economic Affairs

Please provide your email address

* 1. In what capacity are you completing this questionnaire?
- o As a private individual
- o On behalf of a research and development institute (!) On behalf of a university
- o On behalf of a micro, small or medium-sized enterprise O On behalf of a large enterprise (!) On behalf of a business association O On behalf of a non-governmental organisation (NGO)
- o On behalf of a standardisation organisation
- o On behalf of an interest group organisation / association (e.g. trade union, consumer association)
- ✓ On behalf of a national public authority
- o On behalf of other public administration
- o Other-please specify below

Please specify:

100 *character(s) maximum*

Please specify your economic sector:
- o Manufacturing
- o Construction
- o Infrastructure
- o Consultancy
- o Agriculture
- o Utilities
- o Mining
- o Insurance or banking
- o Data/information provider
- o Other

* 2. Please specify your main field of interest:
- ✓ Energy
- ✓ Transport
- o Buildings
- ✓ Agriculture / Bioeconomy
- o Manufacturing
- ✓ More than one of the above
- o Other

Please specify:

Please specify in details your field of activity:
- o Road
- o Rail
- o Maritime
- o Inland navigation
- o Aviation
- o Cross-modal
- o Other

Please specify:
- o Driving: heavy duty vehicles
- o Driving: light duty vehicles
- o Cycling

* 3. Please indicate your country of residence:
- o Austria
- o Belgium
- o Bulgaria
- o Cyprus
- o Czech Republic
- o Germany
- o Denmark
- o Estonia
- o Greece
- o Spain
- o Finland
- o France
- o Hungary
- o Croatia
- o Ireland
- o Italy
- o Lithuania
- o Luxembourg
- o Latvia
- o Malta
- ✓ Netherlands
- o Poland
- o Portugal
- o Romania
- o Sweden
- o Slovenia
- o Slovak Republic
- o United Kingdom
- o non-EU Member State

4. Please indicate the relevant country or countries of operation
- o EU-wide
- o Global
- o Austria
- o Belgium
- o Bulgaria
- o Cyprus
- o Czech Republic Germany
- o Denmark
- o Estonia
- o Greece
- o Spain
- o Finland
- o France
- o Hungary
- o Croatia
- o Ireland

- o Italy
- o Lithuania Luxembourg Latvia Malta
- o Netherlands
- o Poland
- o Portugal
- o Romania
- o Sweden
- o Slovenia
- o Slovak Republic
- o United Kingdom
- o Other, non-EU Member State

Please specify the non-EU Member State

5. What is the name of your company/organisation/association or authority?

The Netherlands, Ministry of Economic Affairs

6. Is your organisation registered in the Transparency Register of the European Commission?
- o Yes
- o No

Please indicate the identification number

The Transparency Register of the European Commission is accessible on:
http://europa.eu/transparency-register/index_en.htm
Please note that received contributions, together with the identity of the contributor, may be published on the Internet, unless the contributor objects to publication of the personal data on the grounds that such publication would harm his or her legitimate interests. In this case the contribution may be published in anonymous form.

*7. Please indicate your preference for the publication of your response on the Commission's website:
Note that whatever option is chosen, your contribution may still be subject to requests for 'access to documents' under Regulation 1049/2001[1]
- ✓ My contribution can be published including my personal information / name of my organisation
- o My contribution can be published anonymously
- o My contribution cannot be published

Explanations about the Protection of Personal Data are available on:
http://ec.europa.eu/geninfo/legal_notices_en.htm#personaldata
The policy on "protection of individuals with regard to the processing of personal data by the Community institutions" is based on Regulation (EC) N° 45/2001 of the European Parliament and of the Council of 18 December 2000.

Part II - Questions to the general public about priorities for reaching the EU energy and climate targets

The transition to an economy based on low-carbon technologies, products and services will only succeed if citizens are convinced of their purpose and use and will be ready to pay for such novel technologies[1] through upgrades to the energy system and the purchase of more energy efficient appliances, vehicles and buildings, also leading to energy and cost-savings in the long run. The questions below are aimed at identifying the priorities of citizens for the transition towards a low-carbon economy.
[1] The Communication on the Low Carbon Roadmap COM (2011)112 estimated the needs to an additional investment of around 1.5% of EU GDP per annum on top of the overall current investment representing 19% of GDP in 2009. It also found that unlocking the investment potential of the private sector and individual consumers presents a major challenge. While most of this extra investment would be paid back over time through lower energy bills and increased productivity, markets tend to discount future benefits, and disregard long-term risks. A key question is, therefore, how policy can create the framework conditions for such investments to happen, including through new financing models.

1. How important in your view is the role of the actors below in reducing societal impact on the climate

rank from most important role down to least important role

	Most important	Quite important	Partially important	Least important
Individual citizens	o	o	✓	o
Government	✓	o	o	o
Industry	o	✓	o	o
Research institutes	o	o	o	✓

Clarification
In the Netherlands there is a close collaboration between the government, industry, knowledge & research institutes as well as NGO's in the so called golden triangle on research and innovation actions to reach our energy & climate objectives. This collaboration is structured in our Topsector Energy Policy but also in the Dutch Energy Agreement. Within this collaboration, the Netherlands considers that the government plays a steering role in reducing societal impact on the climate by creating policies aimed at limiting carbon-emissions. These policies are designed to stimulate the uptake of measures by industry, individual citizens and research institutes. Secondly, industry is expected to take its responsibility for reducing its carbon-emissions, by making private investments in RD&D for developing more climate-neutral products and services. Equally important, individual citizens are expected to contribute to the energy transition via the energy bill and through individual measures, e.g. by purchasing energy from renewable resources and by taking measures to reduce their energy demand. However, the government and industry should create the conditions for allowing citizens to taking informed choices. Lastly, research institutes play a significant role by conducting RD&D on carbon-reducing technologies and practices. Whereas they play a less direct role in the implementation of concrete societal actions, they do develop the fundamental research for breakthrough technologies and innovations, through which societal impact will be realized.

2. Who should be the main financial contributor for investments into research, innovation and deployment of low-carbon energy solutions and services?

o Everybody (via energy bills) should pay their share as we are all affected by climate change
✓ Government (via taxation)
o Industry

Clarification
For research and innovation: public funding (both national and European) in combination with private investments is essential.

For deployment: everybody via energy bills (as in the national SDE+ programme via the ODE (Opslag Duurzame Energie)).

3. Would you be willing to pay a temporary increase on your energy bill in order to support more research and development into clean energy and more efficient solutions to reduce greenhouse gas emissions?

o Yes
o No
✓ No opinion

Would your willingness to pay such an increase be greater if your energy bill clearly listed the measures, technologies, innovative solutions and services that are being supported in order to reduce carbon footprint and increase energy efficiency?

o Yes
o No
✓ No opinion

4. Which of the measures below would you consider as priority to allow you as a <u>citizen</u> to contribute to the transition towards a low-carbon economy?

rank from most important priority= 6 down to least important priority = 1

	6 = Most important	5	4	3	2	1 = Least important
Being offered alternative public transport solutions for urban areas	O	O	O	O	O	O
Being offered the choice for a more energy efficient car, even if it might cost more	O	O	O	O	O	O
Being offered the choice for more efficient energy appliances, even if they cost slightly more	O	O	O	O	O	O
Being offered the opportunity to switch to a green energy provider for my home at the same price I pay today	O	O	O	O	O	O
Being offered an economically interesting opportunity to install solar panels, a geothermal system or another green energy source for my home at the next renovation	O	O	O	O	O	O
Other	O	O	O	O	O	O

Other, please specify:

Part III - Questions on the broader EU Research and Innovation challenges

The Energy Union calls for the development and widespread deployment of innovative technologies and services to increase energy efficiency and reduce greenhouse gas emissions, and support the transition towards a competitive, low-carbon economy. This requires a strategic Research and Innovation agenda aimed at fostering innovative specific technologies, solutions and services, adequate infrastructure as well as converging policies and behavioural changes, across the different economic sectors, namely in the energy, transport, industrial processes, agriculture / bioeconomy sectors.

This part of the questionnaire aims to address the broader challenges regarding research, development and innovation and identify the aspects that are the most important ones for the transformation of the different sectors that are contributing to the Energy Union strategy.
You should indicate how urgent each of the proposed challenges are for your specific area/activity, as you have indicated in Part I - Question 2.

1. What are the most urgent challenges regarding research and innovation that the EU has to face in the future to address the low carbon economy transformation?

Please select maximum 2 very urgent and 2 quite urgent challenges.

	Very Urgent	Quite Urgent	Partially Urgent	Not so Urgent	No opinion
Dependency on fossil fuels	O	O	✓	O	O
Reduction of greenhouse gas emissions	✓	O	O	O	O
Reduction of other pollutants emissions	O	O	✓	O	O
Infrastructure development	O	O	✓	O	O
Safe utilisation of innovative solutions	O	O	✓	O	O
Security (cybersecurity, protection from abuse)	O	O	✓	O	O
Expertise and skills availability	O	O	✓	O	O
Internalisation of external impacts/costs	O	O	✓	O	O
Competition from third countries	O	O	O	O	✓
Technological advancement	O	✓	O	O	O
Availability of raw materials / competition over their access	O	O	O	✓	O
Reduction of operating costs	O	O	✓	O	O
Progress on enabling technologies	O	O	✓	O	O
Solutions to cater for demographic changes	O	O	O	✓	O
Societal transformation and acceptance of innovative solutions	O	✓	O	O	O
User behaviour / awareness	O	O	✓	O	O
Accessibility of innovative solutions	O	O	✓	O	O

Availability and reliability of products and services	O	O	✓	O	O
Affordability of innovative solutions	O	O	✓	O	O
Better product design	O	O	✓	O	O
Better manufacturing processes	O	O	✓	O	O
Other	✓	O	O	O	O

Please explain any of your choices above or specify your choice of "other"?

Choice of 'other': the Netherlands considers a combination of 'accessibility of innovative solutions', 'safe utilization of innovative solutions', 'the availability and reliability of products and services' and the 'affordability of innovative solutions' as the key challenge within research and innovation that the EU has to face to address the transformation to a low-carbon economy. Reducing the costs of important innovative technologies is key to public acceptance and large-scale deployment.

Addressing these topics contributes to realizing the key issue on how to achieve a sustainable low-carbon energy supply system by 2050 that is safe, reliable and affordable. In the Energy Report, which was published by the Dutch Government in January 2016, the Netherlands describes how to realize the transition to sustainable energy by 2050 along three core principles:

1) There should be a focus on CO_2- reduction.
2) Make the most of the economic opportunities arising from the energy transition for the maintenance and development of its earning potential. The greatest challenge for existing businesses is to respond to the transition through innovation and where necessary by adapting their earning models. Thus, innovation efforts should be focused on the development, market-uptake and societal acceptance of innovative solutions (products and services) that are affordable, widely available, safe and reliable.
3) Energy should become an integral part of the public space. As the transition to a renewable energy supply will transform the appearance of housing developments, business parks and rural landscapes, innovation efforts should also address the integration of new infrastructures and products into public space.

The Netherlands is in the middle of an Energy Dialogue with society and different stakeholders after publishing the Energy Report in the beginning of this year. The aim of this dialogue is to consult all relevant parties, create a bigger sense of urgency and to come to a broadly accepted view on what next steps need to be taken by the government, but also utilities, companies, knowledge and research institutes, NGO's and citizens. This will lead to a new middle and long term policy agenda in which research and innovation will take an important place. Because of this process, the given answers are with reservations.

2. What are the most urgent objectives for which innovative technologies should be urgently encouraged?

Please select maximum 2 very urgent and 2 quite urgent challenges.

	Very Urgent	Quite Urgent	Partially Urgent	Not so Urgent	No opinion
Increasing efficiency of primary energy production	O	O	✓	O	O
Increasing efficiency of energy/fuel for transport (incl. smart grid)	O	O	✓	O	O
Reducing energy intensity in agriculture	O	O	✓	O	O
Reducing energy intensity in buildings	O	O	✓	O	O
Reducing energy intensity in heating/cooling/lightning systems	O	O	✓	O	O
Reducing energy intensity in business and administrative buildings	O	O	✓	O	O
Reducing energy intensity in the overall transport system (including freight and passengers)	O	✓	O	O	O

Reducing energy intensity in use of individual means of transport (vehicles, vessels)	○	○	✓	○	○
Reducing energy intensity in manufacturing	○	○	✓	○	○
Minimising environmental footprint of energy production, notably of low-carbon producing energy sources	✓	○	○	○	○
Increasing storage capacity and performance	○	✓	○	○	○
Increase general life cycle of products and recyclability	○	○	✓	○	○
Increase specific life cycle of products and recyclability of energy-related products (solar panels, batteries, etc.)	○	○	✓	○	○
Develop and deploy competitive new alternative fuels for transport (incl. hydrogen)	○	○	✓	○	○
Develop more efficient / lighter / cheaper batteries for electrification of transport	○	○	✓	○	○
Develop forests and other methods of carbon storage	○	○	✓	○	○
Develop technologies for re-use of carbon	○	○	✓	○	○
Other - please specify below	✓	○	○	○	○

Please specify your choice of "other"

The Netherlands considers a one-sided focus on energy efficiency as too narrow to sufficiently address the most urgent objectives for which innovative technologies should be urgently encouraged. The approach of the Netherlands is to focus on a broad variety of technologies that are needed for the energy transition, including renewable energy technologies, smart grids, energy efficiency, CCS, system integration, the biobased economy, etc. This approach should be focused on all sectors, including the built environment, industry, agriculture and transport.
This broad approach is reflected in the national 'Energy Agreement for Sustainable Growth' that was concluded in 2013 between the Dutch government and a broad variety of stakeholders (employers' associations, industry, NGO's, trade unions, et cetera) in order to reach ambitious energy-related objectives in 2020 and 2023. The main strength of this Energy Agreement is its cross-sectoral approach towards setting its sustainable energy goals, which are aimed at industry, the built environment, transport and agriculture. Existing technologies for low-carbon energy production are still very expensive compared to fossil technologies. An EU-wide push to make low-carbon energy production technologies cheaper thus has key priority. Additionally, the Netherlands aims at reducing the energy-intensity in all these sectors to reach the overall energy savings targets. Therefore, in this section, the Netherlands opts for the 'improvement of efficiency of primary energy production' and the reduction of energy intensity in agriculture, buildings, heating/cooling/lightning systems, business and administrative buildings, the overall transport system, individual means of transport, and manufacturing. Furthermore for the transport sector the Energy Agreement has called for a vision and action plan on a sustainable fuel-mix for transport for the years 2030 to 2050 in the Netherlands. This action plan has been delivered in 2015, currently the roll-out of the action plan has been prepared for 2016 and beyond. Given the ambitious targets in the fields of energy, climate and transport, it is essential to move towards a more sustainable transport system. In this system, as soon as possible a transition should be made towards low and zero emission modes of transport, where possible.

3. Please rate the importance of the following elements for a future transport system that is environmentally friendly and responds to the needs and wishes of citizens and businesses

Please select maximum 3 very important and 4 quite important challenges.

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Environmentally friendly and user responsive road transport	O	✓	O	O	O
Environmentally friendly and user responsive urban mobility	O	✓	O	O	O
Environmentally friendly and user responsive aviation	O	✓	O	O	O

Environmentally friendly and user responsive inland waterway transport	O	O	✓	O	O
Environmentally friendly and user responsive maritime transport	O	✓	O	O	O
Environmentally friendly and user responsive rail	O	O	✓	O	O
Environmentally friendly and user responsive logistics	O	O	✓	O	O
Connected and automated transport	O	O	✓	O	O
Smart mobility services (e.g. shared cars rather than individual ownership)	O	O	✓	O	O
Electrification of transport	✓	O	O	O	O
Other alternative fuels for transport (such as hydrogen or biofuels)	✓	O	O	O	O
Safe and secure transport	O	O	✓	O	O
Better infrastructure for transport	✓	O	O	O	O

Please specify your choice of "other"

The key issue of the future transport system is the availability of alternative fuels and energy for transport, mainly for vehicles, ships and planes.
Furthermore, for the transition towards sustainable transport and low/zero emissions a better insight is needed into the different benefits that the transition may bring. These benefits are in the field of climate, energy, air quality, noise pollution, energy security, energy efficiency and energy independence. An integral approach is necessary to fully comprehend the added benefits of such a transition. These benefits should be compared to the costs of the energy transition.

4. How much importance should be given in the Research and Innovation strategy to technology development to pursue climate-related objectives ?

Please select *maximum 2 very important and 2 quite important challenges.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Research on climate science	O	O	✓	O	O
Risk management	O	O	✓	O	O
Research on impact of climate change on agriculture	O	✓	O	O	O
Research on adaptation to new climate conditions, notably for crops, (transport) infrastructure, spatial planning	✓	O	O	O	O
Research on impact of climate change on environment and biodiversity and health	✓	O	O	O	O
Research on mitigation measures	O	✓	O	O	O
Research on economic modelling	O	O	✓	O	O
International cooperation with and technology transfer to most affected countries	O	✓	O	O	O
Other - please specify below	O	O	O	O	O

Would you like to explain any of your choices above or specify your choice of "other"?

The climate-objectives of the Netherlands are targeted towards adaptation to new climate conditions in agriculture, infrastructure and spatial planning. For agriculture, the development of crops is particularly relevant. Equally important, research should be conducted on the impact of climate change on the environment, biodiversity and health.

The Netherlands considers research on mitigation measures as important as well, since it covers all RD&D activities related to reducing carbon-emissions with the aim to pursue climate-related objectives. National innovation policies cover the improvement of energy efficiency, the development of renewable technologies and activities related to carbon capture storage and use (CCS/U). In the agricultural sector, each Member State should find solutions for reducing the climate impact and energy use of meat- and dairy production.

These aforementioned objectives are reflected in the priorities of Dutch international cooperation policies. As agricultural policies are international, also knowledge policies in this area should focus on international cooperation.

5. In the field of your own specific activity / work area as indicated in Part I, Question 2, what are the most important trade-offs to be addressed to achieve the low carbon economy transformation?

The following trade-offs should be addressed to achieve low-carbon economy:
- The increase of renewables poses new challenges regarding costs and flexibility of the energy grids. This requires a balanced approach between increasing the share of renewables and the required adaptation of the energy system against acceptable costs.
- The energy-transition may affect the competitive position of traditional industries in Europe. Certain industries will be able to change their business activities in the energy, transformation, however, businesses who fail to make the transition will eventually find that there is no longer a place for them in the low-CO_2 economy.
- The use of biomass in energy systems may have significant trade-offs on for example food production and biodiversity, as there will be limited land for new production.
- There is a trade-off between the stimulation of renewable energy through subsidies at the national level and ensuring that the ETS remains the driver for CO_2-emissions reduction in the EU. Renewables subsidies have had a noticeable impact on the carbon price over the last few years.
- In densely populated areas there is a trade-off between the development of renewable energy resources and public acceptance. For example, wind parks may face strong resistance from local communities.
- There might be a temporary trade-off between decreasing the CO2-intensity of the economy and increasing/guaranteeing energy security of supply.

6. In relation to the specificity of your own activity / work area, Research and Innovation at EU level should:
Please select maximum 2 very important and 2 quite important challenges.

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Mobilise significantly more public funding and investments	O	O	✓	O	O
Mobilise significantly more private investments	O	✓	O	O	O
Put greater emphasis on financial instruments such as risk capital, loans and guarantees	O	O	✓	O	O
Support innovative projects so that they can achieve large scale deployment	O	✓	O	O	O
Focus greater support to basic research	✓	O	O	O	O
Focus greater support to innovation and bringing to the market innovative solutions	✓	O	O	O	O
Focus much more on social and behavioural aspects	O	O	✓	O	O
Other - please specify below	O	O	O	O	O

Please explain any of your choices above or specify your choice of "other" ?

Within energy innovation policies there should be a broad focus on the whole innovation chain. This implies a focus on all Technology Readiness Levels (TRLs), with an equal focus on fundamental research, feasibility studies, technology development, demonstration and market deployment. The European Union could play an enhanced role in these areas, both in providing public support as well as in attracting more private investments through the creation of new financial instruments. The EU has an added value for the provision of financial instruments such as risk capital, loans and guarantees. Such instruments can help parties to bridging the so-called 'valley of death' within the innovation chain. In this sense, financial support can lead to additional private investments to help bringing innovative solutions closer to market-uptake.

7. At EU-level, support to Research and Innovation in the specific sector of your activity (*please select only 1 option*):

- ✓ needs to address all technological approaches/solutions, spreading the available financial support
- o needs to identify ways to focus on fewer specific technologies to ensure that most promising technologies can make it earlier to the market
- o needs to be driven by political choices
- o needs to focus more on addressing underlying societal needs and less on technologies/solutions
- o other / no opinion

Please explain your choice above or specify your choice of "other":

We will need all technologies in the energy transition. This means that a broad portfolio of technologies should be stimulated.

Part IV - Questions on the development of an integrated strategy for Research and Innovation

1. In relation to the development of an EU integrated strategy for Research and Innovation across sectors to address the low carbon economy transformation, what in your view are the most effective aspects to be promoted?

Please select maximum 2 very effective and 2 effective aspects

	Very Effective	Quite Effective	Partially Effective	Not so Effective	No opinion
Multidisciplinary R&I activities across sectors for new technologies / solutions	✓	O	O	O	O
Enabling technologies (ICT, materials, biotechnology, nanotechnology etc.) that can help all relevant sectors	O	O	✓	O	O
Development of standards/interfaces that enable better deployment within the different sectors	O	O	✓	O	O
Development of standards/interfaces for cross-sectorial applications	O	O	✓	O	O
Feasibility studies & demo activities across sectors for integrated approaches	O	O	✓	O	O
Cooperation among different stakeholders, public authorities, operators, users across sectors	O	✓	O	O	O
Cooperation amongst different European regions to develop European value chains on the basis of complementarities between regional specialisation strategy	✓	O	O	O	O
Preventing and limiting trade-offs between objectives / results	O	✓	O	O	O

2. Please rate the importance of the following elements supporting the emergence of an EU integrated strategy for Research and Innovation to address the low carbon economy transformation?

Please select *maximum 2 very important and 2 important elements*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Shared long-term vision across different sectors activities	O	O	✓	O	O
Stakeholder engagement	O	O	✓	O	O
Elimination of fossil fuel subsidies	O	✓	O	O	O
Public acceptance	O	O	✓	O	O
Viable technologies	O	O	✓	O	O
Safe and sustainable technologies	O	O	✓	O	O
Adequate regulatory framework	O	✓	O	O	O
Availability of suitable infrastructure as enabler to the deployment of innovative solutions	O	O	✓	O	O
Availability of R&I funding	✓	O	O	O	O
Strong partnerships among private and public sector	✓	O	O	O	O

Part V - Questions regarding the means to seize as many business opportunities as possible from the deployment of innovative, affordable and low carbon solutions inside and outside the EU

This part of the questionnaire will address the barriers and means to seize as many business opportunities as possible from the deployment of innovative and affordable low carbon solutions (technologies, products, services), inside and outside the EU. Estimations of the size of these global markets range from about €1,600 billion[1] to €4,400 billion[2], with high growth potentials in the main

relevant sectors: power generation and distribution, industry (manufacturing and construction), residential and services (buildings or built environment), transport and agriculture.

Europe is still highly competitive with European businesses offering these products on the global market, in which the EU share can be estimated at around 28%. However, the EU risks losing its comparative advantage without a comprehensive strategy, which brings together supply, demand and regulatory aspects to allow the exploitation of innovation-based business cases. In addition, businesses are facing increasing challenges to invest in new low carbon solutions to modernise their installations and processes in Europe.
[1] BMU (2012): GreenTech made in Germany 3.0 - Environmental Technology Atlas for Germany, Berlin: BMU.
[2] U.K. Department for Business Innovation and Skills (2013): Low carbon environmental goods and services (LCEGS) - Report for 2011/12, London: BIS.

1. How important are the following areas of actions to ease the <u>deployment in EU</u> of innovative and affordable low carbon solutions either provided by the EU or by the rest of the world?
rank from most important role = 6 down to least important role =1

	6 = Most important	5	4	3	2	1 = Least important
Better regulatory framework	O	O	O	✓	O	O
Better financial environment for new investments	O	✓	O	O	O	O
Better technology development, including standards	O	O	O	O	✓	O
Better market incentives	✓	O	O	O	O	O
Higher public acceptance	O	O	✓	O	O	O
Other	O	O	O	O	O	O

You have indicated **Other** as one of the most important areas of actions to ease the deployment in Europe of innovative and affordable low carbon solutions. Please specify:

You have indicated **Better regulatory framework** as one of the most important areas of actions to ease the deployment in Europe of innovative and affordable low carbon solutions. How important are the following actions in this area? *Please select maximum 2 very important and 2 quite important answers.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
More stability and predictability of the regulatory framework	O	O	O	O	O
Reduction of legal barriers	O	O	O	O	O
Less administrative burden	O	O	O	O	O
Easier and faster construction and/or environmental permit procedures	O	O	O	O	O
Lower overall regulatory costs in comparison with other regions in the world	O	O	O	O	O
Other	O	O	O	O	O

Please specify your choice of "other" ?

You have indicated **Better financial environment for new investments** as one of the most important areas of actions to ease the deployment in Europe of innovative and affordable low carbon solutions. How important are the following actions in this area? *Please select maximum 2 very important and 2 quite important answers.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Stronger synergies between financial supports and streamline funding administrative procedure	O	✓	O	O	O
Better risk sharing for new investments	✓	O	O	O	O

Preferential access to capital, risk capital and financial support	✓	O	O	O	O
More use of third investors	O	✓	O	O	O
Other	O	O	O	O	O

Please specify your choice of "other" ?

You have indicated **Better technology development, including standards** as one of the most important areas of actions to ease the deployment in Europe of innovative and affordable low carbon solutions. How important are the following actions in this area? *Please select maximum 2 very important and 2 quite important answers.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Reduction of technical barriers	O	O	O	O	O
Development of EU technical standards	O	O	O	O	O
Better coherence between EU and national technical standards	O	O	O	O	O
Facilitate business partnering/partnership/clustering across Europe	O	O	O	O	O
Better exchange of good practices, especially for SMEs	O	O	O	O	O
Stronger capacity building in terms of skills	O	O	O	O	O
Other	O	O	O	O	O

Please specify your choice of "other" ?

You have indicated **Better market incentives** as one of the most important areas of actions to ease the deployment in Europe of innovative and affordable low carbon solutions. How important are the following actions in this area?

Please select *maximum 2 very important and 2 quite important answers.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
More use of public procurement	O	O	✓	O	O
More use of price-based instruments (e.g. taxes, fees, subsidies)	O	✓	O	O	O
More use of quantity-based instruments (e.g. tradable permits, carbon offset schemes, energy certificates)	✓	O	O	O	O
More use of information-based instruments (e.g. CE marking, energy labelling, ecolabels)	✓	O	O	O	O
Other	O	O	✓	O	O

Please specify your choice of "other" ?

There is a broad scale of instruments to improve market incentives which are needed to help develop new business models for the deployment of innovative technologies. Market design should reward flexible energy use in the energy system. Incentives for flexible use should not come from the government, but should occur in the market itself.

You have indicated **Higher public acceptance** as one of the most important areas of actions to ease the deployment in Europe of innovative and affordable low carbon solutions. How important are the following actions in this area? *Please select maximum 2 very important and 2 quite important answers.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion

Better access to information	O	O	O	O	O
Better public involvement in the decision making process	O	O	O	O	O
Higher ownership of the projects by the local communities	O	O	O	O	O
More public education campaign	O	O	O	O	O
Other	O	O	O	O	O

Please specify your choice of "other" ?

2. How important are the following areas of actions that would unlock the potential for growth and jobs in Europe through the <u>domestic supply of EU low carbon solutions?</u>
rank from most important role =5 down *to least important role =1*

	5= Most important	4	3	2	1= Least important
Better regulatory framework	O	O	✓	O	O
Better financial environment for new investments	O	✓	O	O	O
Better technology development, including standards	O	O	O	✓	O
Better market incentives	✓	O	O	O	O
Other	O	O	O	O	O

You have indicated **Other** as one of the most important areas of actions that would unlock the potential for growth and jobs in Europe through the domestic supply of EU low carbon solutions. Please specify:

You have indicated **Better regulatory framework** as one of the most important areas of actions that would unlock the potential for growth and jobs in Europe through the domestic supply of EU low carbon solutions. How important are the following actions in this area?
Please select *maximum 2 very important and 2 quite important answers.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
More stability and predictability of the regulatory framework	●	○	○	○	○
Reduction of legal barriers	○	●	○	○	○
Less administrative burden	○	●	○	○	○
Better use of EU (unitary) patents	○	○	○	●	○
Stronger use of the Ecodesign instrument	●	○	○	○	○
Other: energy-labelling	○	○	●	○	○

Please specify your choice of "other" ?

The Netherlands considers more stability in and predictability of the regulatory framework, both at a national and European level, as important preconditions for the supply of low-carbon solutions on the European market. Businesses and research institutes need stability for bringing innovative research projects through the innovation chain and for the effective upscaling on both the European and the international market. Also, where possible, there should be a harmonization of policies and the advancement of 'better regulation' at the EU level, leading to a reduction of legal barriers and the administrative burden (red-tape).
Secondly, we consider the Ecodesign and energy-labelling instruments (under 'other') as highly effective, as these are cost-effective instruments to achieve energy savings while maintaining a level playing field within Europe for both European and foreign producers.

You have indicated **Better financial environment for new investments** as one of the most important areas of actions that would unlock the potential for growth and jobs in Europe through the domestic supply of EU low carbon solutions. How important are the following actions in this area?
Please select *maximum 2 very important and 2 quite important answers.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Financial support for demonstration and pilot projects for testing new technologies	○	✓	○	○	○

Stronger synergies between financial supports	O	✓	O	O	O
Better risk sharing for new investments in research and development	✓	O	O	O	O
Easier access to capital, risk capital and financial support for research and development	✓	O	O	O	O
Other	O	O	O	O	O

Please specify your choice of "other" ?

You have indicated **Better technology development, including standards** as one of the most important areas of actions that would unlock the potential for growth and jobs in Europe through the domestic supply of EU low carbon solutions. How important are the following actions in this area?
Please select maximum 2 very important and 2 quite important answers.

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Development of EU technical standards	O	O	O	O	O
Effective use of EU technical standards	O	O	O	O	O
Additional technical platform and infrastructure for SMEs	O	O	O	O	O
Facilitate cooperation and clustering of entrepreneurs	O	O	O	O	O
Stronger capacity building in terms of skills	O	O	O	O	O
Other	O	O	O	O	O

Please specify your choice of "other" ?

You have indicated **Better market incentives** as one of the most important areas of actions that would unlock the potential for growth and jobs in Europe through the domestic supply of EU low carbon solutions. How important are the following actions in this area?
Please select *maximum 2 very important and 2 quite important answers*.

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Public procurement that could define technical criteria in favour of low carbon solutions	O	O	✓	O	O
More use of fiscal instruments in favour of decarbonised solutions (e.g. taxes, subsidies)	✓	O	O	O	O
Other	O	O	O	O	O

Please specify your choice of "other" ?

3. How important are the following areas of actions to reinforce the <u>exports of EU low carbon solutions?</u>
rank *from most important role =5 down to least important role =1*

	5 = Most important	4	3	2	1 = Least important
Better regulatory framework	O	O	✓	O	O
Better international cooperation	O	✓	O	O	O
Better technology development, including standards	✓	O	O	O	O
Better promotion of EU exports	O	O	O	✓	O
Other	O	O	O	O	O

You have indicated **Other** as one of the most important areas of actions to reinforce the exports of EU low carbon solutions. Please specify:

Regarding technology development, the Netherlands expects that the added value of EU products and services will not be determined by price-competitiveness, but by a high quality, high safety, connectivity with other applications, et cetera. By providing such low-carbon solutions, the EU can reinforce its exports.

You have indicated **Better regulatory framework** as one of the most important areas of actions to reinforce the exports of EU low carbon solutions. How important are the following actions in this area? *Please select maximum 2 very important and 2 quite important answers.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Less tariff trade barriers for low carbon products and services	O	O	O	O	O
Less non-tariff trade barriers for low carbon products and services	O	O	O	O	O
Less administrative bottlenecks when exporting	O	O	O	O	O
Other	O	O	O	O	O

Please specify your choice of "other" ?

You have indicated **Better international cooperation** as one of the most important areas of actions to reinforce the exports of EU low carbon solutions. How important are the following actions in this area? Please select *maximum 2 very important and 2 quite important answers.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
More international cooperation at the research level	✓	O	O	O	O
More international cooperation for prototype and demonstration projects	O	✓	O	O	O
Better use of transfer of technologies	O	O	✓	O	O

More use of sustainability criteria in the financial support for developing countries	O	✓	O	O	O
More funding for capacity building in the financial support for developing countries in terms of skills for manufacturing, installation and maintenance	O	O	✓	O	O
Other	O	O	O	O	O

Please specify your choice of "other" ?

You have indicated **Better technology development, including standards** as one of the most important areas of actions to reinforce the exports of EU low carbon solutions. How important are the following actions in this area?
Please select *maximum 2 very important and 2 quite important answers.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Coherence between EU and international technical standards	✓	O	O	O	O
Facilitate and reinforce EU business partnerships targeting access to third-country markets	O	O	O	✓	O
Other	O	O	O	O	O

Please specify your choice of "other" ?

You have indicated **Better promotion of EU exports** as one of the most important areas of actions to reinforce the exports of EU low carbon solutions. How important are the following actions in this area? Please select *maximum 2 very important and 2 quite important answers.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Better use of free trade agreement	O	✓	O	O	O
Increased awareness of enterprises, especially SMEs, for export opportunities	✓	O	O	O	O
Set of tools for the promotion of EU exports	O	O	O	✓	O
Other	O	O	O	O	O

Please specify your choice of "other" ?

4.To strengthen the competitiveness of EU low carbon solutions, how important is it to reinforce synergies between the Energy Union and other EU initiatives/policies

Please select *maximum 2 very important and 2 quite important answers.*

	Very Important	Quite Important	Partially Important	Not so Important	No opinion
Synergies with the Investment Plan for Europe	✓	O	O	O	O
Synergies with the Single Market	✓	O	O	O	O
Synergies with the Digital Market	O	✓	O	O	O
Synergies with the Circular Economy	O	✓	O	O	O
Synergies with other sustainable policies	O	O	✓	O	O

Synergies with Trade policies	O	O	✓	O	O
Synergies with industrial policy	O	O	✓	O	O
Others	O	O	O	O	O

[OPTIONAL] Would you like to explain any of your choices above by specifying the synergies to be reinforced or specify your choice of "Others"?

Part VI - Other questions

[OPTIONAL] Any other comments or advices you would like to share on research, development or innovation or on industrial competitiveness?

As stated before. The Netherlands is in the middle of an Energy Dialogue with society and different stakeholders after publishing the Energy Report in the beginning of this year. The aim of this dialogue is to consult all relevant parties, create a bigger sense of urgency and to come to a broadly accepted view on what next steps need to be taken by the government, but also utilities, companies, knowledge and research institutes, NGO's and citizens. This will lead to a new middle and long term policy agenda in which research and innovation will take an important place. Because of this process, the given answers are with reservations.

THANK YOU FOR RESPONDING TO THIS PUBLIC CONSULTATION