The Dutch version of this document must be considered to be the official version

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Subject Mission-Driven Top Sector and Innovation Policy

Dear Madam President,

On 13 July 2018, I informed you about the government's mission-driven innovation policy (Parliamentary Paper 33009, No 63), which centres on the economic opportunities presented by societal challenges and the ambition to play a leading role in a number of key enabling technologies. In this way, the government aims to harness the innovative capacity of the top sectors to tackle major societal challenges and at the same time strengthen our country's competitiveness. This policy will also contribute to our 2.5% GDP spending target for R&D. By doing so, we are building on the solid basis that was laid in the Top Sectors strategy, which gave rise to intensive collaboration at the level of public-private partnerships.

In the letter, it was announced that the ministries concerned would define missions as part of the mission-driven top sector and innovation policy, addressing the social themes of Energy Transition and Sustainability; Agriculture, Water and Food; Health and Care; and Security. They did so in the past three months, and the missions have meanwhile been adopted by the government. The missions aim to reinforce the common approach to societal challenges and take full advantage of the economic opportunities that are presented. In addition, it was announced last year that long-term programmes would be drawn up for key enabling technologies. An action plan has been developed for this purpose.

In this letter, I will provide details of the missions and the approach for the key enabling technologies, on behalf of the government. I will also describe the follow-up process. The missions will be implemented further by the various stakeholders. With this regard, the top sectors play an important role. They are currently preparing knowledge and innovation agendas, which set out how they can contribute to achieving the missions as well as developing and implementing key enabling technologies. The knowledge agendas will see a shift of focus from the sectors to the social themes and key enabling technologies. I will explain this aspect further in the present letter. In addition, the top sectors will address both human capital and internationalisation aspects, so the approach is broader than innovation alone.

Mission-driven approach as a starting point for top sector and innovation policy
Healthier ageing, affordable health care, an adequate supply of clean water, efficient use of natural resources and respect for the environment, lower greenhouse gas emissions, affordable and sustainable energy, plastic-free waters, sufficient and healthy foods, a safe country in which to live and work; these topics are just a selection from the targets that we have set ourselves for 2020, 2025 and 2050.
Such ambitious goals do not have an immediate, ready-made solution and transcend established boundaries. To ensure that our feet stay dry, that we have sufficient food and clean water, or that we use alternative energy for heating and production, we need both large and small discoveries and innovations from scientists and entrepreneurs who identify opportunities, as well as a

government that provides direction and urgency. Public-private partnerships (PPP) via the top sectors are an essential condition for achieving this aim.

Box 1: Regenerative medicine as a contribution to an improved quality of life
Health care currently focuses on treating chronic conditions; for example, by means of kidney dialysis. Regenerative medicine makes it possible to advance from merely treating chronic diseases to curing them. It uses the body's own resources to restore degenerated, diseased or damaged tissues and organs. The RegMedXB (regenerative medicines crossing borders) initiative was created to develop these solutions. RegMedXB is a public-private partnership in which 40 public and private partners have joined forces to define their combined ambition and agenda. The first steps have already been taken in the fields of kidney diseases, type 1 diabetes, osteoarthritis and cardiovascular diseases, with the principal aim of improving patients' quality of life. At the end of 2018, all the partners committed to the further upscaling and expansion of RegMedXB.
RegMedXB is an example of the PPPs that the Life Sciences & Health (LSH) Top Sector initiates and encourages in order to bring innovations to the market. Civil-society organisations, such as the health funds, play an important role in this respect. RegMedXB is an example of a new type of collaboration between all the partners, which promotes the translation of excellence science to business opportunities with the ultimate aim of finding solutions for patients and society.

Dutch solutions
Dutch history is full of practical solutions and ingenious ways forward. Take the Delta Works, for example. Proclaimed as one of the Seven Wonders of the Modern World, it was born out of pure necessity to meet the very Dutch problem of high water levels. The solution took some time to be implemented, however. Plans were first drawn up as early as 1942. The 1953 North Sea flood made action imperative. Constructing the network of storm surge barriers, dams and sluices with which we are now familiar as the Delta Works took more than 43 years to complete. Yet even this defence is not enough to guarantee the lasting protection of the Netherlands against the danger of flooding or even water shortages, as the threat of climate change makes all too clear. This situation also typifies the Netherlands: never give up, but instead channel your efforts into developing inventive, pragmatic solutions to challenging conditions. It was born out of a national need, with a prominent role for government, developed further with research and translated into lucrative business opportunities all over the world by entrepreneurs.
This global leadership in water management takes Dutch researchers and businesses to every corner of the world. For instance, in the aftermath of Hurricane Katrina, Dutch water experts were flown in to New Orleans and engineering firm Arcadis was awarded high-value contracts to develop a delta plan based on Dutch-designed storm surge barriers, dykes and pumps. The above example and many others show the potential of this sector, which is also present in many other fields including energy, sustainability, agriculture, food, health care and safety. In other words, we are not starting from scratch!

Top sector approach fostering collaboration between public- and private-sector parties
Since 2011, we have combined our strengths and resources into nine top sectors in which the Netherlands excels. This strategy brings large and small businesses and entrepreneurs, scientists as well as the government together around the same table. The objective is to capitalise on international opportunities, support innovations and mobilise financial resources.
It took us time to grow into this collective approach. The first step was to understand each other better and to mobilise all the relevant parties. Step two was to increase the involvement of private-sector companies with the investments being made in public research and development, to set mutually agreed priorities and to establish unexpected links between sectors. At the same time, it became clear which talents we would need. All these steps took time and we learnt a lot during the process.

Societal challenges
Building on the experience gained in recent years, we have placed the economic opportunities arising from societal challenges and key enabling technologies at the heart of the mission-driven top sector and innovation policy. This step focuses on the concrete translation of societal challenges to missions, resulting in a combined approach to achieving these missions. The aim is linking the highly developed top sectors to these missions and innovation challenges, such as reducing CO_2 emissions, enhancing digital security and increasing the years of healthy life for everyone.
To produce groundbreaking solutions, we also need smart factories, strong sensors, powerful biochips and tailor-made technology, meaning that investments in the development, application and scaling up of key enabling technologies will be needed. These technologies will be created in the Netherlands, with market opportunities stretching far beyond our national borders.

Box 2: Economic opportunities in 7 million km of climate-neutral asphalt
The N211 trunk road is a good example of this public-private partnership in action. The South Holland provincial executive ruled that this road, which cuts through the Westland region, should be made CO_2-negative. This outcome had never before been achieved, anywhere. Costing and timing were yet to be tested. The challenge was accepted by BAM Infra, together with various other businesses in the region. Along the way, they kept coming up with new solutions for reducing CO_2 emissions and solving problems.
From lampposts and bus shelters that generate their own energy, fungi being used to decontaminate old, tar-containing asphalt and sheet piling requiring less steel thanks to a sustainable solution for rust-proofing the steel, to capturing heat from the road surface and distributing it to businesses located nearby and sourcing renewable building materials or reusing materials from the old trunk road, 21 different measures to reduce CO_2 emissions and save energy were ultimately produced. Thanks to an extra flat gradient and the right texture, road users now benefit from average fuel savings of 2.5%. The original goal of 4,000 tonnes of CO_2 reduction was smashed, with a reduction of 13,000 tonnes being achieved. With over 135,000 kilometres of public road in the Netherlands and almost seven million kilometres of road throughout Europe, the opportunities for the businesses involved to profit are immense. Joining forces turned out to be the only way of accelerating and reinforcing the process, let alone completing it in these cases.

Solutions for tomorrow
Improvement, growth and sustainability do not come about by themselves. All the stakeholders have their own role to play: the entrepreneur who identifies a business opportunity; the scientist who studies new technologies and ideas; the designer who works to improve the sustainability of our towns, cities and landscapes; and the government that creates the right conditions for putting new solutions into practice. This approach calls on us to go further than we have previously done and demands that we not only invest in new technology but also in its wide-scale roll-out. In doing so, we must not overlook the importance of social and cultural aspects. Our ultimate aim must be to obtain the maximum social and economic impact from every euro, idea and solution. The goal is to ensure that these solutions are interesting and lucrative enough to generate revenues for large companies, SMEs, start-ups and scale-ups, also outside the Netherlands.
Work is already under way on the solutions for tomorrow, the year after and the next decade. These missions reinforce the ambitions and require additional efforts from entrepreneurs, researchers, civil-society organisations as well as the government.

Missions relating to four social themes
The missions for the mission-driven top sector and innovation policy have now been defined. On the government's initiative, they have been drawn up by the relevant ministries in consultation with the top sectors, knowledge institutions, businesses, civil-society organisations and regional authorities for the four defined themes. The core of the missions for each theme is set out below[1]. These missions see to the translation of major societal challenges into concrete goals and ambitions. Missions resemble a dot on the horizon. The level of ambition sometimes goes beyond the current
policy objectives, making them an inviting prospect.
Various missions are also aligned with the Sustainable Development Goals (SDGs). These missions challenge the top sectors to produce concrete solutions, while also calling for a commitment from the government to create the right framework conditions for innovation. As the intensive interaction of recent months between the ministries and the top sectors has proven fruitful, we intend to continue this process.

Energy transition and sustainability
Our society is sustained by what the planet and the economy can offer us. In order to ensure that we have a habitable and sustainable planet in 2050, we need to take action now on the climate issues facing us. We aim to cut the country's greenhouse gas emissions by 49% in 2030, rising to 95% in 2050, compared with 1990. In addition, we need to be more inventive with the raw materials that we now have. We currently waste many of these raw materials, without giving them a second life. Premised on reuse and recycling of raw materials, a circular economy knows no waste.
As a result, we will commit to improving the sustainability of the electricity system and the built environment, eliminating reliance on natural gas, as well as achieving a carbon-neutral and competitive industry, zero-emission mobility, a fully circular economy and carbon-neutral

[1] A detailed description of each mission can be found on https://www.rijksoverheid.nl/documenten/publicaties/2019/04/26/missies.

agriculture, among other things. Two missions have been formulated under this theme. The first mission is directly linked, one-on-one, to the national Climate Agreement; this mission is further elaborated in the Integrated Knowledge and Innovation Agenda (IKIA) for Climate and Energy. In addition, the underlying document contains several additions to this mission outside the scope of the IKIA, relating to sustainable mobility in respect of smart mobility, sustainable aviation and a sustainable maritime sector. The second mission is linked to the government-wide programme *A Circular Economy in the Netherlands by 2050* and the
Raw Materials Agreement. The missions are:

- to cut national greenhouse gas emissions by 49% in 2030, increasing to 95% in 2050, compared with 1990. This mission breaks down into:
    - an entirely carbon-free electricity system in 2050;
    - a carbon-free built environment in 2050;
    - a carbon-neutral industry based on the re-use of raw materials and products in 2050;
    - zero-emission mobility for people and goods in 2050;
    - a net carbon-neutral agricultural and nature system in 2050;
- a sustainably driven, fully circular economy in 2050. The objective for 2030 is to achieve a 50% reduction in resource use.

Agriculture, water and food
The Netherlands is a leading country in the field of agriculture, water and food, water safety and the maritime sector. However outstanding our achievements may be, we nonetheless face significant challenges in terms of food production, climate change, water quality, and the sustainable use and management of large bodies of water. In the Netherlands, the product distribution chains to the customer for agriculture and food production operate efficiently and at low cost. A disadvantage is that margins are low, which makes the sector economically vulnerable and pressure on the environment high. In order to ensure that the Netherlands can produce food in a sustainable, green and carbon-neutral manner, we need to close cycles even better. Around the world, a rapidly growing, prosperous and urbanised population is placing increased pressure on natural resources such as water. An offshoot of urbanisation is that a growing proportion of the population no longer knows where their food comes from, resulting in reduced appreciation for food and increased food wastage. Furthermore, modern consumption habits are causing health problems such as obesity, making them a major cause of diseases that include cardiovascular diseases or diabetes. Agriculture also faces the challenge of reducing greenhouse gas emissions.
As a delta country, the Netherlands has many large bodies of water such as the North Sea, rivers and lakes, plus territorial waters in the Caribbean. While the economic importance of these waters is growing, the downside is that spatial and ecological pressures are increasing significantly. The challenge for the shipping industry is to become safer and smarter as well as to achieve zero emissions. Finally, there are major challenges facing the Netherlands in terms of water management and efforts to make the country climate-resilient. The rate of the rise in sea levels is uncertain and the incidence of extreme weather is increasing. This change has implications not only for the planning of rural and urban areas but also for water-dependent sectors such as agriculture and shipping. The Global Risk Report 2019 of the World Economic Forum highlights the global failure of climate mitigation and adaptation, extreme weather events, water-related crises, loss of biodiversity and the collapse of ecosystems as specific risks.
Innovative and comprehensive strategies are needed to safeguard our food security, biodiversity, health, water quality and freshwater supplies as well as to ensure water safety now and in the future. To this end, the following missions have been formulated.

- Circular agriculture: By 2030, the use of raw and ancillary materials in agriculture and horticulture will be substantially reduced, while the value of all end and residual products will be maximised.
- Climate-neutral agriculture and food production: By 2050, the agricultural and nature system will be net climate-neutral[2].
- Climate-proof rural and urban area: The Netherlands will be climate-proof and water-resilient by 2050.
- Healthy, safe food that people value: By 2030, we will produce and consume healthy, safe and sustainable food, while supply chain partners such as farmers will get a fair price for their produce.

[2] This mission is identical to the climate-neutral agriculture component under the Energy Transition and Sustainability theme.

- Sustainable North Sea, oceans and inland waterways: There will be a balance for marine waters by 2030, as well as for rivers, lakes and estuaries by 2050, between ecological capacity and water management (water safety, freshwater supplies and water quality) on the one hand and the challenges for renewable energy, food, fisheries and other economic activities on the other.
- The Netherlands is and will remain the best-protected and most viable delta in the world, even after 2100, by ensuring that we take timely future-proof and comprehensive measures at a manageable cost.

Box 3: High Tech to Feed the World: deployment of key enabling technologies for agriculture, water and food
The High Tech to Feed the World crossover brings together the AgriFood, Horticulture & Propagation Materials, High Tech Systems & Materials (HTSM) and ICT Top Sectors in deploying various key enabling technologies to support the missions in "agriculture, water and food". The objective is to address technology development as well as the application of technology in agriculture, water and food. Precision agriculture is a good example where the combination of various key enabling technologies is already making a contribution to one or more missions. The focus is on the deployment of digital technology and robotics: the use of multiple data sources (satellites, drones, sensors) to grow products using new agricultural tools with minimum input and emissions, while also making a contribution to nature-inclusive agriculture.
Another example is an ongoing project in which various top sectors take part: "Data-Intensive Smart Agrifood Chains". This public-private programme aims to leverage data and ICT in making a contribution to various societal objectives, such as reducing energy consumption and using agrochemicals in agriculture and horticulture, increasing food security and safety, improving transparency in chains and creating new business opportunities.

Health and Care
A fit and healthy Netherlands cannot be taken for granted, given the growth in the number of patients with one or more chronic conditions, the ageing population, labour market shortages and the rising costs of health care, among other things. Health & Care missions have been formulated to promote the health of all citizens, to enhance the quality of life for people with a chronic disease or lifelong disability, and to improve the affordability, accessibility and quality of care.
First, a central mission was formulated which was aimed at enhancing the health of all citizens and reducing health inequalities, with a time frame up to 2040. It includes four missions which address the underlying factors of the central mission, such as lifestyle, living environment, and the quality and accessibility of care. The first of these four missions has a time frame up to 2040, the other three up to 2030. This choice of different time frame reflects the fact that it may take many years before the health impact of the first underlying missions become visible in the central mission. Current demographic and epidemiological trends in combination with the envisaged further increase in healthy life expectancy mean that dementia in particular will become an increasing problem for our society. To this end, dementia requires specific attention in realising the central mission.
This theme concerns the following missions.
- Central mission: By 2040, all Dutch citizens will live at least five years longer in good health, while the health inequalities between the lowest and highest socio-economic groups will have decreased by 30%.
    - By 2040, the burden of disease resulting from an unhealthy lifestyle and an unhealthy living environment will have decreased by 30%.
    - By 2030, care will be provided 50% more (or more frequently) in people's own living environment (rather than in health-care institutions), jointly with their personal network.
    - By 2030, the proportion of people with a chronic disease or lifelong disability who can play an active role in society according to their wishes and capabilities will have increased by 25%.
    - By 2030, the quality of life for people with dementia will have risen by 25%.

Security
The Netherlands must remain a safe country for its citizens in which to live and work. However, a safe and secure society cannot be taken for granted. Over the decades ahead, the Netherlands faces a series of complex challenges. The Netherlands is confronted by various military threats directly, but also in its role as a NATO and EU Member State, for instance. The safety of major commercial and transport routes is under pressure. Terrorism poses a direct threat to our national security. Organised crime presents a threat to society. The fast pace of development in technology and digitisation similarly poses new challenges and threats, including cyber attacks. Foreign interference and attempts to influence our society through misinformation pose a threat to our

democracy. Countering these threats is therefore central to the formulation of missions in relation to Safety & Security.
For an effective response to these threats, we seek innovations which make use of the latest scientific insights, key enabling technologies and applications. These innovations can be provided through permanent, intensive collaboration between the government, businesses and knowledge institutions, including at the European level. Only then can we remain one step ahead of potential adversaries, and be "*always ahead of the threat*". These missions include:

- a comprehensive, integrated approach to organised crime. By 2030, the visibility of illegal activities and money flows will have increased to such an extent that organised crime will be considered hardly worth the risk;
- maritime cutting-edge technology for safe seas. By 2035, the Netherlands will have a navy fit for the future, which will protect Dutch values and prosperity as well as guarantee safe and secure access to global waters. It will be capable of responding to unpredictable and unimaginable developments in threats and technology, while it will perform its missions effectively, efficiently and flexibly;
- safety in and from space. By 2030, the Netherlands will have a fully operational space defence and security capability, which will include satellites, ground infrastructure as well as information processing capabilities[3].
- cyber security. The Netherlands will be in a position to capitalise on the economic and social opportunities offered by digitisation safely and securely. By focusing on developing cyber security knowledge and innovation, the Netherlands is targeting a top 10 ranking in both the Global Cybersecurity Index and the National Cyber Security Index within five years;
- networked action on land and from the air. By 2030, the armed forces will be fully networked with other services and with the integration of new technologies such as unstaffed systems, the electromagnetic spectrum and social media, enabling us to complete the 'decision loop' faster and better than our adversaries;
- collaborative and faster innovation for adaptive armed forces. To accelerate the innovation process aided by collaboration, it will be necessary to create a permanent intricate innovation network that brings together supply and demand to implement short-cycle, successful innovations. Stimulating innovations based on key technology leads to civil applications and the exploitation of solutions by civil organisations;
- Data and intelligence. By 2030, security organisations will collect new and better data, with the resulting smarter analyses enabling the right interventions so they are not overtaken by events;
- The security professional. By 2030, the role of security professional will be among the 10 most attractive professions in the Netherlands.

Key enabling technologies as a basis for the future
While globalisation is accelerating innovation processes as never before, exploiting these processes requires considerable knowledge and capacity to act. Technology increasingly determines how we live in this rapidly changing world. In the future, technology and innovation will have a major impact on the societal challenges that we face.
Globalisation calls for more focused choices in innovation policy to create strong, internationally distinct positions in business and the knowledge infrastructure. As a small country, the Netherlands is at the forefront of many scientific developments in key enabling technologies and has several companies that enjoy a strong technology position. Without focus on key enabling technologies such as artificial intelligence, photonics, quantum technology and nanotechnology, however, the Netherlands will not be able to create sufficient mass. This mass is needed to remain competitive compared with other countries in the further development, diffusion and scaling-up phases, which attract heavy investment internationally.
The question also arises to what extent the Netherlands wishes to be reliant on foreign (non-European) technology giants. For example, although the vast amounts invested in China and the US cannot be matched, the Netherlands can avoid the trap of over-dependence by targeting and investing in key and vital technologies. While we are strongly committed to collaboration in Europe, the question is also where we ourselves wish to invest in the Netherlands and where we are happy to let other countries take the lead.

In other words, to sharpen focus on the portfolio of key enabling technologies for which the Netherlands has public funds available, it is vital that choices are made to guide private and public

[3] The Netherlands is also at the forefront of space applications in areas such as climate research, for instance. This position can be utilised for the missions relating to Energy Transition and Sustainability as well as Agriculture, Water and Food.

investments. The government supports setting up long-term programmes in which companies, public authorities and knowledge institutions collaborate on the development of key enabling technologies. These technologies can build on national agendas such as the National Photonics Agenda, for instance. To this end, the top sectors will develop a knowledge and innovation agenda for key enabling technologies, under the leadership of the High-Tech Systems and Materials Top Sector. Relevant ministries and other departments as well as the scientific field will also be involved. An action plan to define the knowledge and innovation agenda for key enabling technologies has been drawn up, including criteria for making choices[4]. The choices are laid down in the Knowledge and Innovation Contract.

Digitisation
The application of digital technologies is crucial for solving societal challenges and increasing competitiveness. Digital technologies such as artificial intelligence, encryption and blockchain will play an important role in the long-term programme for key enabling technologies The mission documents set out which knowledge and innovation questions can make a contribution to achieving the missions. Digital technologies are widely referenced in relation to all social themes. The ICT team maintains close contact with all the top sectors and ministries to enable the establishment of concrete programmes and projects for this purpose. This mission is also part of the Dutch Digitalisation Strategy that the government sent to the House of Representatives in 2018[5].

Follow-up approach
To implement the missions, the government will work with the parties concerned. The top sectors have an important role to play. Businesses, knowledge institutions, civil-society organisations and public authorities join in the top sectors to collaborate on innovation, human capital and internationalisation. Missions are only achieved if innovations are actually implemented in society as well as in businesses and if behavioural changes have occurred, so the framework conditions for that implementation need to be firmly in place. To achieve genuine transitions, much more is therefore needed than research alone. The government has significant means and instruments available in the current financial frameworks to ensure this result, such as regulations, procurement policy or financial and fiscal instruments. All government departments share the task of ensuring that the missions are realised and enabling the related innovations.
Through the missions, the top sectors contribute to the policies of this government, such as the Climate Agreement, the government-wide programme *A Circular Economy in the Netherlands by 2050*, the agricultural vision and the National Prevention Agreement.

2020–2023 Knowledge and Innovation Agendas (KIA)
The top sectors have commenced work on producing concrete Knowledge and Innovation Agendas as part of a broader agenda aimed at strengthening competitiveness in these sectors. These Knowledge and Innovation Agendas will set out on which knowledge and innovation challenges the top sectors will focus over the years ahead, and what their priorities will be. For this purpose, we need to make decisive choices about the challenges on which to focus. The missions and key enabling technologies will guide this decision-making process. A Knowledge and Innovation Agenda will be produced for each of the four themes as well as the key enabling technologies. This procedure contrasts with the past, when individual agendas were prepared on a sector-by-sector basis. In this way, cross-sector collaboration is firmly anchored in the approach. While the new mission-driven top sector and innovation policy will focus on the formulated missions and key enabling technologies, the Knowledge and Innovation Agendas will also continue to accommodate key programmes in the top sectors which primarily support earning potential, for which there is considerable private commitment and/or which are of great importance to the top sectors. The importance of these programmes for the top sector concerned needs to be clear. These programmes are described in a separate section of the Knowledge and Innovation Agendas for the themes or key enabling technologies, in so far as they align with the respective theme. Only where the latter is not the case can they be brought together in an additional 6th Knowledge and Innovation Agenda. This agenda should retain overall consistency with the guiding character of the missions and key enabling technologies for the Knowledge and Innovation Agendas.

[4] See https://www.rijksoverheid.nl/documenten/publicaties/2019/04/26/aanpak-sleuteltechnologieen.

[5] See also the Dutch Digitalisation Strategy (Parliamentary Paper 26643, No 541), in which the government adopted a comprehensive and integrated approach to ICT. This approach is aimed both at seizing opportunities and at addressing issues such as privacy, cyber security, ethics as well as the power of platforms.

An Integrated Knowledge and Innovation Agenda (Integrale Kennis- en Innovatieagenda, IKIA), which contributes to the missions described above, has already been drawn up for the Climate Agreement. The period up to 1 July 2019 will be used for the further elaboration of the IKIA and the long-term mission-driven innovation programmes defined within it in partnership with the top sectors, applied research institutes, the scientific community, businesses and government.

Drawing up these agendas will be the initiative of the top sectors, in consultation with all the relevant partners in the field, such as businesses, ministries, the broad scientific community, knowledge institutions, NWO and regional public authorities Where synergies exist between the bottom-up approach of the National Research Agenda and the mission-driven innovation policy, they will be exploited in order to achieve optimum results. Attention is also paid to synergies with European and global programmes in terms of the opportunities for collaboration, but also in view of the question what we want to develop here in the Netherlands and what knowledge is better sourced from abroad.

In addition, the mission-driven approach calls for new networking with new parties, including civil-society organisations and challengers as well as sectors that were not previously involved such as the construction sector. Attention will be focused in particular on establishing connections with start-ups, scale-ups and SMEs. This approach will require strong cross-sectoral collaboration and a multi-disciplinary approach, linking technological innovation to non-technological innovation. It also calls for close collaboration and the involvement of the innovations' recipients. This process can also benefit from the design strength of the creative industry. Finally, key values such as ethics, privacy, security and sustainability will be taken into account as well. Consideration must also be given to environmental safety.

The Knowledge and Innovation Agendas will be finalised by 1 July 2019. In line with the wish of many parties to make long-term arrangements, the Innovation and Knowledge Agendas will have a term of four years (2020–2023), with the possibility of interim review and adjustment after two years.

Valorisation and market creation
The new approach will only be successful if research and development result in the actual implementation of new solutions. This outcome, which is in the common interest of both public and private parties, determines the effectiveness of the missions. It requires that developed knowledge is actively transferred and applied, which we refer to as valorisation, on the one hand and that a market is created for these innovations on the other. To this end, the top sectors will include a specific strategy for valorisation and market creation in the Knowledge and Innovation Agendas.

Start-ups and scale-ups are very important for economic development. At the same time, these companies can come up with innovative ideas for societal challenges. There are several instances of good experiences in various sectors over the past few years, such as the LSH Top Sectors with the lifescience@work accelerator programme or the Agri&Food and Horticulture & Propagation Materials Top Sectors, which finance start-up funds in the field of high tech and ICT. In the period ahead, we intend to scale up these activities in order to include all sectors and themes. For example, steps are currently being taken to create an investment fund for start-ups. This initiative came from the HTSM Top Sector.
The top sectors will work closely with StartupDelta. Their ambition is to strengthen the start-up and scale-up ecosystems as well as connect them with the networks of the top sectors[6]. These networks provide opportunities for start-ups and scale-ups to meet knowledge partners, investors and potential customers. You will be informed of the steps that the government is taking to strengthen the ecosystem and the follow-up to StartupDelta before the summer.
This strategy is also highlighted in the thematic Knowledge and Innovation Agendas. Strengthening collaboration with knowledge institutions in this area is envisaged as well, not just with universities but also with applied research institutes.

In sum, valorisation concerns the further exploitation of developed knowledge towards its effective application. How do we ensure that science actually creates new innovative solutions which in turn generate new business activities? Improved knowledge circulation is important with this regard, in interaction with SMEs, public authorities, civil-society organisations, consumers and other users. The same is true of the agricultural sector, where it is important that developed innovations can be

[6] Current status of start-up and scale-up policy (Parliamentary Paper 32637, No 343).

applied on farms as well as that the developed knowledge and experiences are put to practical use in order to advance the development of knowledge at research institutes.
Valorisation can also take place by establishing start-ups from the knowledge institutions as well as by entitling new and existing businesses to use intellectual property rights. Several valorisation activities and programmes are already being organised from the top teams and TKIs for their own sector, such as the accelerator programmes of the Life Science and Health Top Sector within lifescience@work[7].

Box 4: Go-Chem makes entire knowledge chain accessible to SMEs with one-stop shop approach
The current urgent challenges call for an acceleration in our approach to innovation. SMEs are ideally positioned to do so, provided that they have access to the right knowledge from the right knowledge partners. The Chemicals Top Sector has made this goal the spearhead of its SME approach. It has resulted in the entire knowledge chain of NWO, universities of applied research (HBO), applied research institutes (TO2) and many SMEs joining forces. This result represents the fulfilment of a long-held wish among SMEs to improve cooperation with the knowledge chain: a one-stop shop will be established, covering the entire knowledge chain including the various funding instruments, which offers a single point where SMEs can articulate their knowledge needs and submit their project proposals for funding. The Taskforce for Applied Research SIA (nationaal regieorgaan praktijkgericht onderzoek SIA)[8] will form the programme agency and coordinate the efforts. A first thematic programme "Go-Chem" for Green Chemicals (Groene Chemie) among SMEs was launched on 5 December 2018. Other top teams have also shown interest in this approach. A second Go-Chem programme, addressing the digital economy, is currently under development for SMEs in the creative industries.

As stated in the policy response to the evaluation of the Valorisation Programme (Parliamentary Paper 32637, No 339), the government aims to integrate the focus on valorisation in the policy instruments for innovation and entrepreneurship. Effective valorisation depends to a significant degree on collaboration between parties throughout the knowledge chain, on themes as well as in regional networks. This requirement calls for a coherent commitment to valorisation in the Knowledge and Innovation Agendas with which knowledge institutions such as research universities, universities of applied sciences and TO2 institutes can align. As set out in the SME action plan (Parliamentary Paper 32637, No 316), and given the importance of SMEs to the application of innovation, there will also be a focus on improved collaboration and networking between SMEs and knowledge institutions to encourage the dissemination of innovation towards SMEs in general. The top sectors can make use of the instruments provided by the government in pursuing this objective. Below are some examples. The Thematic Technology Transfer (TTT) scheme is a new instrument under the Future Fund. In this manner, the government enables research organisations to join forces in the interest of thematic knowledge transfer linked to a thematic fund that makes investments[9] in the earliest stage of development for knowledge start-ups. This measure is included in the SME action plan.
In addition, NWO is currently implementing its strategy, with impact as one of the spearheads. Among other things, this strategy will be reflected an increased commitment to knowledge utilisation, including in the calls that focus on the themes and missions. This increased focus on impact was recently included by NWO in the crossover call for top sector proposals, where at least 5% of the total project budget is to be earmarked for knowledge utilisation and/or entrepreneurship. As part of the commitment to intensifying efforts for innovation in the coalition agreement, €7.5 million has been made available for knowledge transfer by the applied research institutes (TO2) to SMEs. Working sessions were organised in March 2019 with branches, applied research institutes and representatives of top sectors. This work can be further translated into concrete activities in the Knowledge and Innovation Agendas.

In addition to valorisation, creating new markets for innovations is of particular importance in the new approach, especially for start-ups, scale-ups and other challengers. The societal challenges that we face call for solutions which may not have an established market, or for which the market is still small or is slowly growing. There are three main influencing factors with this regard. First, the government can use its purchasing power; for example, by acting as a *launching customer*. The Start-up in Residence programme, the Small Business Innovation Research (SBIR) scheme and the Innovation Partnership can also be used for this purpose. Second, regulations can be amended to increase market access opportunities for innovative products. Third, financial or tax incentives can

[7] Please see https://www.lifesciencesatwork.nl/.

[8] SIA stands for Stichting Innovatie Alliantie (Innovation Alliance Foundation).

[9] The fund receives a loan from the Future Fund and makes investments in knowledge-intensive start-ups. This TTT scheme arose from the experience gained in the Oncode Institute pilot.

be built in, such as provided for in the SDE+ scheme for compensating the unprofitable part of renewable energy generation.

Regarding the available capital in the market, Invest-NL also provides opportunities for supporting the implementation of societal transition projects by companies as well as the continued growth of start-ups and scale-ups. The top sectors will set out in their knowledge and innovation agendas what they need, which will form the basis of dialogue between them and the government to explore what can be done with the recommendations. This process will be facilitated by the Ministry of Economic Affairs and Climate Policy.

Box 5: Market creation for sustainable energy generation
A major source of zinc emissions is the corrosion of sacrificial anodes on sea-going or other vessels, lock gates and wind turbines. The anodes are zinc blocks that are attached underwater to prevent the oxidation of steel parts. This zinc in the anode corrodes instead of the iron; it is "sacrificed" and dissolves in the surroundings. The decision to construct the Borssele Offshore Wind Farm in 2016 gave the government the opportunity to promote alternatives. Prohibiting zinc anodes and identifying best practices simultaneously had the effect of increasing the market for innovative environment-friendly alternatives. Innovative SMEs in the offshore industry benefit from these developments while also contributing to sustainable energy objectives. The Energy Top Sector has encouraged research into corrosion solutions in several PPP projects.

Regional public authorities and the regional development corporations are important partners in the valorisation and market creation process; for instance, by establishing test beds and field labs as well as through the involvement of SMEs. Smart Industry is an example of where valuable experience has been gained in this respect. We will intensify this collaboration further, as I will set out below.

Knowledge and Innovation Contract (KIC)
The Knowledge and Innovation Contract includes agreements between public authorities, businesses, knowledge institutions and potentially civil society organisations on the use and distribution of public and private funds for research as well as on valorisation and market creation. In the past four years, a total of €10 billion in public and private funds was invested in such contracts.
The new Knowledge and Innovation Contract will be drawn up on the basis of the Knowledge and Innovation Agendas described above, with the process scheduled to be completed by 1 November 2019.
The term of the Knowledge and Innovation Contract matches that of the Knowledge and Innovation Agendas, which is four years in principle, with the possibility of interim adjustment after two years. Among other things, any adjustment will include a review of the need for mid-term updating and the period for which partners can commit.

Organisation
The new approach also requires undertaking a review of the organisation of the top sectors. We have chosen to build on the existing organisation, which is based on public-private partnership in the golden triangle. In order to safeguard the mission-driven nature of the new approach, the role of the ministries concerned will be firmly anchored, as will the need for cross-sectoral collaboration on the themes. In the months ahead, this anchoring will be elaborated in joint consultation, with consideration also being given to the involvement of other partners such as the regions, start-ups and scale-ups as well as other parties with challenging new ideas. The organisational model must provide a clear framework for all the parties involved, while also allowing for a tailored approach by theme or sector.

Human Capital
A skilled workforce that is capable of adapting to changing circumstances is essential for a dynamic economy. Technological innovations have revolutionised our way of living. In all jobs, this revolution requires new ways of working, new knowledge and other skills, in which continuous development opportunities for everyone through training are a crucial element. The present labour market shortage means that everyone is needed: long-term employability of employees is a key concern. As a result, the focus on Human Capital by the top sectors will be continued, with an emphasis on certain new aspects. In substantive terms, consideration will be given to the additional challenges entailed by the specific missions. For instance, the Climate Agreement has produced increasing demand for wind turbine engineers. The connection between the agenda of the

top sectors on the one hand and the topic of social innovation and long-term employability on the other will also be further explored. One resource that can be used for the elaboration of the social innovation theme is the Socially Responsible Innovation programme of NWO.
In terms of approach and working method, the intention is to build on the previous period, during which the top sectors developed their shared ambitions and objectives on the basis of a joint road map as well as raised their common interests within the Technology Pact and with other stakeholders. During the second quarter of 2019, the top sectors will be asked to prepare a Human Capital Agenda for the 2020–2023 period.

Internationalisation
Top sectors have an excellent starting position to play a leading global role in meeting societal challenges while also capitalising on international economic opportunities. This position aligns with the government's Trade Agenda, in which the Sustainable Development Goals are a key starting point[10]. The challenge for top sectors is to develop a collective internationalisation strategy. In recent years, there
have been several good examples of collective, comprehensive programmes (trade, acquisition, innovation collaboration) that focus on the international opportunities of a sector's proposition, on a specific theme or a specific country. Some examples are participation in important strategic fairs such as the Hannover Messe under the joint branding of Holland High Tech and the development of the Holland Logistics Library.
It is important for the top sectors to organise coherent public and private support for implementation. The Confederation of Netherlands Industry and Employers (VNO-NCW) continues to play a coordinating role in this respect, together with the Ministry of Economic Affairs and Climate Policy as well as the Ministry of Foreign Affairs. Top sectors have different ambitions, priorities and private commitment, making tailored approaches essential. An analysis will be conducted to determine the coherent effort by companies, science, knowledge institutions, NWO, the government, NL in Business, De Werkplaats, Trade & Innovate and others that is needed for each top sector. The objective is to develop and implement collective internationalisation strategies that target combinations of regions and top sectors.

Collaboration with regions in the Netherlands
Collaboration with the regions is an indispensable element in the mission-driven top sector and innovation policy, with societal challenges also manifesting themselves at the regional level. This new approach provides opportunities to strengthen collaboration with the regions as well as to achieve a more coherent programming of activities and resources in relation to common priorities. Compelling examples are the approach with regard to Smart Industry, Photonics, Brainport Action Agenda, Regenerative Medicine, Sustainable Food Initiative and the MIT scheme. In the period ahead, I intend to join with the top sectors and ministries in further developing collaboration with the regions as well as to explore the additional opportunities that I have identified for valorisation and market creation, particularly in relation to SMEs.
In recent months, the provincial executives shared their thoughts on the missions and the approach regarding key enabling technologies. I have agreed with them that we will collaborate further on developing the Knowledge and Innovation Agendas as well as the Knowledge and Innovation Contract, by organising targeted consultations in the months ahead between the top sectors and regional players with the aim of aligning substantive and financial efforts. Work will also be done with the aim of examining how to achieve the collaboration and substantive alignment of the missions as well as key enabling technologies with the Regional Innovation Strategies and the ERDF programmes, which are being prepared for the new ERDF period.

Monitoring & Impact Measurement
A Monitoring & Impact Measurement framework already exists for Enterprise Policy. This framework must be updated and expanded to show as clearly as possible what the contribution is of the top sectors to achieving the mission targets. For this purpose, the framework will be updated with the parties concerned.

Finally

[10] Parliamentary Paper 34952, No 30.

The development of the missions and the framework for key enabling technologies has provided the mission-driven top sector and innovation policy with a solid basis. It is now the responsibility of the top sectors to take this work further. Continued intensive collaboration between the top sectors and ministries will be needed with this regard. I will provide you with further information on the Knowledge and Innovation Agendas as well as the Knowledge and Innovation Contract in the autumn.

Yours faithfully,

Ms M.C.G. Keijzer
State Secretary for Economic Affairs and Climate Policy